

THE UNIVERSITY OF HULL

**Children's Perceptions of Climate Change in the Mekong Delta,
Vietnam**

A thesis submitted for the Degree of

PhD Geography

By

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Abstract

We are in the midst of a climate crisis (IPBES, 2022). Our reliance on burning fossil fuels as the primary energy source for the global economy is leading to atmospheric and oceanic heating, which is leading to a range of societal consequences including unstable, unpredictable, and more intense hydrological extremes such as tropical storms and associated, extended periods of drought, as well as sea level rise, ocean acidification, and ecological instability; amongst many other ill effects (United Nations Environment Programme, 2021). Perhaps most significantly, Climate Change is placing a growing number of people at heightened flood risk in low lying deltaic regions around the world, including one of the most at-risk deltas, the Mekong Delta in Vietnam (Dun, 2011a; Human Rights Watch, 2019; Huong & Pathirana, 2013; Ngo et al., 2019; World Bank, 2020b), which is home for 18 million people.

Among those people most at risk from Climate Change, both here and around the world, are children (Jones et al., 2021; O'Brien et al., 2018). Yet, these voices are often the least consulted or explored within Climate Change research, knowledge exchange and policy formulation (Beer, 2014; Malin & Ryder, 2018; Schlosberg & Collins, 2014; Smith, 2021; Son et al., 2021). Using a qualitative, creative, and place-based approach, this thesis provides an in-depth exploration of the knowledges, perceptions, and experiences that children living in the Mekong Delta hold in relation to Climate Change and hydrological extremes – paying particular attention to the socio-cultural dimensions that shape these views. The findings presented demonstrate how children psychologically distance the issue of Climate Change both spatially and temporally and highlights the suite of reasons generating disconnects between lived experiences and formal education. The findings, however, also identify many socio-cultural factors that serve as opportunities for enhancing Climate Change education across the region and suggests ways in which these could be leveraged in future education initiatives with the aim of improving decision making and longer-term Climate Change adaptation and mitigation.

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List of Abbreviations

BBC – British Broadcasting Corporation

CCE – Climate Change Education

DOE – Department of Education

DRR – Disaster Resilience Research

EE – Environmental Education

ESD – Education for Sustainable Development

IPBES – Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

IPCC – Intergovernmental Panel on Climate Change

L-T-O – Long Term Orientation

MDDP - Mekong Delta Development Program

MOET – Ministry of Education and Training

MRC – Mekong River Commission

NASA – National Aeronautics and Space Administration

SLR – Sea Level Rise

UN – United Nations

UNCRC – United Nations Convention on the Rights of the Child

UNESCO – United Nations Educational, Scientific and Cultural Organisation

UNFCCC – United Nations Framework Convention on Climate Change

UNICEF – United Nations Children’s Fund

UNISDR - United Nations Office for Disaster Risk Reduction

WENR – World Education News and Reviews

WHO – World Health Organisation

Chapter 1 Introduction

1.1 Background and Rationale

We are in the midst of a climate crisis (IPBES, 2019). With the past 4 years seeing the top 3 hottest years on record (NASA, 2021), the scientific community is unequivocal in locating the reasons for this firmly with human activity (IPCC, 2021). Our reliance on burning fossil fuels as the primary energy source for the global economy leads to excess heat being trapped within the Earth's atmosphere, creating a range of problems including rising sea temperatures, melting permafrosts and ice sheets, and an increased intensity of rainfall (Hallegatte et al., 2020; IPCC, 2021). This is leading to an array of consequences including unstable, unpredictable, and more intense hydrological extremes such as tropical storms and associated, extended periods of drought, as well as sea level rise, ocean acidification, and ecological instability; amongst many other ill effects (United Nations Environment Programme, 2021). Perhaps most significantly, Climate Change is placing a growing number of people at heightened flood risk in low lying deltaic regions around the world, including one of the most at-risk deltas, the Mekong Delta in Vietnam (Dun, 2011a; Human Rights Watch, 2019; Huong & Pathirana, 2013; Ngo et al., 2019; World Bank, 2020b).

Found in the south of Vietnam, the Mekong Delta is home to approximately 17 million people (General Statistics Office of Vietnam, 2021). Relying heavily on rice farming for economic stability, the livelihoods of its inhabitants are underpinned by the rich and fertile lands, and the annual, slow onset floods that create the perfect conditions for this agri-based economic model (Guong & Hoa, 2012; Le Coq et al., 2001; Nguyen et al., 2019). Despite humans having lived, and indeed having benefitted from the regularity of these monsoonal annual floods for centuries, Climate Change is impacting the timing and magnitude of the flood pulse (Adger et al., 2001; Adger et al., 2013; Nguyen et al., 2019). Hydrological patterns in the region are no longer as predictable, and the supply of ample water from both rain and upstream river systems is now often not enough, or way beyond that of benefit (Mekong River Commission, 2021). Rising temperatures are also increasing heat-related diseases, and saltwater intrusion that is largely triggered by sea level rise (amongst other human driven factors), is causing a wealth of issues for both those directly affiliated with farming, and those beyond (Chapman et al., 2017; Kiem, 2017; Renaud & Kuenzer, 2011). As the "rice bowl" of SE Asia (Renaud & Kuenzer, 2011), the need to maintain this delicate equilibrium goes beyond those living in the region with agricultural production across the delta underpinning regional food security. All these reasons, amongst several other human driven factors, constitute to why the Mekong

Delta is now considered one of the most vulnerable locations in the world to Climate Change (Carew-Reid & Taylor, 2018).

On a global scale, these elevated risks as caused by Climate Change are forcing governments, policy makers and societies at large, to deal with new challenges concerning climate and flood mitigation, adaption, and resilience. In terms of floods, people have adapted and mitigated these risks, and over the past 100 years these adaptations have often been via technocratic approaches (Biggs et al., 2009; Wesselink et al., 2015). However, a growing body now recognise that, in the face of such rapid anthropogenic-driven changes, technocratic defences are no longer sufficient (Almazán-Casali et al., 2021) and alternative “solutions” are being sought, particularly in resource limited settings such as the Mekong Delta (Evers & Pathirana, 2018).

Often tagged under the term community resilience, approaches to adapt to and mitigate these hydro-climatic challenges vary spatially and temporally, and will be shaped by a complex mixture of culture, socioeconomics, lived experiences and education (Frazier et al., 2013; Twigger-Ross et al., 2015). More generally, they tend to focus on individual, household and community adaptation and mitigation strategies, covering everything from crop diversification to disaster preparedness education; affordable insurance policies to community swimming lessons – all with the purpose of reducing vulnerabilities to climate related hazards and overall minimising social and economic losses (Muttarak & Lutz, 2014; Son et al., 2021). The general narrative is that many of the consequences of Climate Change cannot be avoided, and in terms of flooding, the position where communities must learn to *live with water*, as opposed to *keeping the water out*, is increasing in popularity (Global Center on Adaptation, 2021).

For appropriate support to be provided however, and to allow the development of resilience within communities via appropriate adaptation methods, the existing lived experiences, perceptions, and practices of at-risk societies need to be understood. That is because perceptions and knowledge, of which are influenced by socio-cultural and psychological functions, emotions, political alignments, religion, education and so on, interfere and negotiate people’s willingness to accept, take part in, and employ adaptation and mitigation behaviours (Adger et al., 2012; Gifford, 2011; González Hernández et al., 2019). It is human behaviour and decisions, across political, economic, social, and individual scales that will determine the fate of local and global climate impacts.

In recognising this however, one must also recognise that communication and engagement aimed at influencing behaviours, perceptions and decision making, does not begin on a blank slate and instead, communities have pre-existing knowledge's that need to be first listened to and considered. Thus, the social sciences play a key part in climate and Disaster Resilience Research (DRR) (Cretney, 2016; Lin, 2015), because appreciating the human dimensions of such phenomena are essential for understanding behavioural change, decision making, social justice and risk governance. This means, as Bercht (2021: 2) argues "[t]he notion of an autonomous, logically rational, self-aware human being behaving according to law-like regularities and static preferences has dissolved as we realise that behaviour is largely unconscious, boundedly rational, and driven by emotions and contexts" Indeed, In 2010, O'Brien (2011: 542) wrote:

...a deeper understanding of the role of human beings and their social, cultural, political, and economic relations is needed to foster the large-scale transformations in human attitudes, behaviors, and systems necessary to respond to what scientists consider to be an 'overstepping of planetary boundary conditions' in a complex, interconnected Earth System.

11 years on these words remain pertinent. Despite this growing recognition of the role of social science in addressing Climate Change impacts, between 1990 and 2018, the natural sciences were awarded 770 percent more funding than the social sciences and humanities for research on Climate Change (Overland & Sovacool, 2020). Despite ongoing discussions at a global level, and despite the impacts of Climate Change becoming increasingly visible, relatively little has sought to achieve this dimension. This thesis then, by directly consulting with those people living on the frontline of Climate Change, will consider some of the most vulnerable to the impacts of Climate Change, and thus contribute towards filling this important gap.

Not only essential for changing public perceptions, but these societal voices are laden with local knowledges that differ from more recognised scientific knowledges (Crona et al., 2013; Ehlert, 2012b). These can highlight barriers, and indeed facilitators, not obvious to policy makers, NGOs, or scientists and, these can ultimately determine the success of any initiative. Yet, they are rarely consulted with or considered beforehand (Aminpour et al., 2021), and their contributions are under researched particularly in contexts beyond the West (Sapiains et al., 2021).

Whilst there is a long history of Western people 'researching' Indigenous communities globally, these are underpinned by imperialist and colonial thought, often doing little for the

people who become the researched (Smith, 2021). Comparatively little research has sought the perceptions and knowledges of those on the front line, already dealing with the adverse effects of Climate Change and whose livelihoods rely on the successful adaptation and mitigation to Climate Change, such as those living in the Mekong Delta (Beer, 2014; Sietsma et al., 2021). With many of the impacts of Climate Change now deemed irreversible, In these locations, research surrounding local risk and adaptation behaviours are arguably just as important as research into emission producing behaviours in the West.

Some people are innately more vulnerable to climate hazards than others, and yet in a perplexing juxtaposition, these voices are often the least consulted or explored (Beer, 2014; Malin & Ryder, 2018; Schlosberg & Collins, 2014; Smith, 2021; Son et al., 2021). Amongst these vulnerable groups of people, is children (Jones et al., 2021; O'Brien et al., 2018). However, of the studies that have explored perceptions in vulnerable locations, they have largely focused on adult's perceptions and experiences of flooding and flood risk, along with the influence of local, regional, and national governance (Lee et al., 2020). There is now a growing body of evidence in favour of children as societal actors in their own right however. Indeed, such action is very visible via the ongoing global youth action movement addressing Climate Change, with children openly sharing their dissatisfaction with the status quo and behaviour of adults (Carson, 2018; Jones et al., 2021; Martiskainen et al., 2020; O'Brien et al., 2018). Clearly, children can, do, and should, make contributions to this debate, however not all children are provided the space, resources, and capital to do so (Halstead et al., 2021; Plan International, 2020; Timmons Roberts & Parks, 2007). The effect that Climate Change and associated flooding has, and will continue to have, on children is significant and their contribution to flood and broader climate adaptation, and overall community resilience both now and in the future, should not be underestimated. Indeed, these are the citizens that will go on to face these future challenges, and as those who will govern future climate adaptation and mitigation efforts, they are therefore some of the most important people to consider in such debates.

1.2 Personal Motives and Positionality

Choosing to do a PhD was not a decision I took lightly. Never considering myself as *academic*, and as a single mother with ties I thought might somewhat inhibit my capacity to conduct research in an international context, it took some convincing to believe this was something I could achieve. Nevertheless, here I am.

I chose to take on this challenge as it enabled me to contribute in some way towards my growing recognition for the anthropogenic challenges adults continue to put on the next

generation. With a first degree in Education, and subsequent positions working as a practitioner with children, I have a deep concern for children's place in the world, particularly in light of anthropogenic impacts on the world, and more so since having my own daughter.

Since becoming a mother, global media attention towards Climate Change and environmental degradation as a whole has increased, and consequently so too has my awareness, and thus my motive to take some form of action. In my undergraduate degree I began to reflect on my own education, and the shortfalls that failed to prepare me for a changing world. I vividly remember one geography lesson where we discussed global warming and how eventually, England would have a tropical climate. Without any exploration of the colossally damaging effects this would have on humans and nature, I subsequently thought global warming was great – a year-round tan without needing to hop on a plane – brilliant. Whilst I sometimes wish I could get some of that naivety back, this stuck me as a huge systemic failure. With the belief that education is the tool to societal change, and a particular interest in how education is leveraged throughout the world, international perspectives of education and social inequalities ended up being the resounding theme in almost all my submitted undergraduate essays. Society and culture have, for some time now, been my bread and butter.

Outside of education I learned about the injustices and inequalities that the climate crisis causes worldwide, not just from an age perspective but across multiple compounding and intersecting dimensions. This led me to reflect on my own personal actions and my complicity in the actions of others. In my attempt to change my own behaviours and contribute somewhat positively to the world, I have, over the years, participated in outreach and research local to home, however my curiosity for a more global perspective that considered those on the front line of the climate crisis remained. This included the voices of those considered the most vulnerable both spatially, and across various other dimensions such as poverty, age, gender, and race.

In the hopes of contributing somewhat to a better future for my daughter and the next generation, I came across this PhD, subsequently applied, and became the successful candidate. Both satisfying a personal venture for information, and a desire to contribute somewhat to policy and practice in a way that makes a difference within this realm, in working with children here in the Mekong Delta, I feel I have achieved this. Though, my use of a reflexive methodology has also enabled me to see the flaws within, and indeed what I would, and will do differently in any future research, I believe this thesis has set me on a career path that will enable me to make positive contributions towards society, advance knowledge, and

hopefully, help create a generation of climate champions ready to change the world for the better.

1.3 Research Aims

The present study provides an in-depth exploration of the knowledges, perceptions, and experiences that children living in the Mekong Delta hold in relation to Climate Change and hydrological extremes – paying particular attention to what socio-cultural dimensions shape these views. With Vietnam positioned as a priority COP26 country, and with the Mekong Delta specifically presenting a mix of geographical, social, and economic vulnerabilities (Bussi et al., 2021; Ehlert, 2012a; Hak et al., 2016; Minderhoud et al., 2017; Minh Quang & de Wit, 2020; Nguyen et al., 2015; Phung et al., 2015; Schmitt et al., 2017; Smajgl et al., 2015), an in-depth case study into the lived experiences of children in this specific location will contribute to both the local knowledge base necessary for successful adaptation and communication initiatives, and indeed broaden understandings of children’s perceptions and their interfaces with culture and society more generally.

To achieve this, the research took a qualitative, place-based, approach. Whilst studies that cross international boundaries are also important, studies that are situated within specific, localised contexts are significant because impacts and susceptibilities to Climate Change are uneven, even along regional scales (Crate & Nuttall, 2016; Crona et al., 2013; Salick et al., 2014; Taylor, 2011). Additionally, “a growing understanding that people are good natural observers of their local environment has led to an appreciation for their knowledge, which is situated in cultural and ecological contexts, and how it can provide important models and unique understandings of Climate Change” (Crona et al., 2013: 520). Further developing the rationale for such studies, local perceptions reflect tangible and actual concerns. Place-based studies highlight the nuances between local environment, culture, and society, and how people conceptualise Climate Change amongst their local challenges (Crate & Nuttall, 2016).

Indeed, there is a growing body of scholars who highlight how, particularly in sociologically based Climate Change research, qualitative approaches are essential in supplementing those of a more quantitative origin. Making this need explicit, is Bercht’s (2021) research with coastal fishers. Through the application of in depth qualitative, problem focussed, face-to-face interviews, Bercht was able to reframe questions that “allowed the sensitive target area of climate concern to be stepwise reapproached from a different angle” (Bercht, 2021: 4). In doing so, they found many previously undetected inconsistencies that they argue, would not have been possible through purely quantitative approaches. Quantitative studies, whilst often

providing larger numbers that help identify wider trends and supporting decision making, can sometimes fail to provide the multidimensional and nuanced complexities and explanations within human/global issues such as Climate Change. Deeper meaning and contextualised narratives are needed from multiple perspectives, particularly those perspectives of the most marginalised in the most impacted locations, if true understanding and change is to be achieved. Further, quantitative methods are rarely suitable for ascertaining *children's* perceptions. Working with children to obtain authentic and accurate voices takes time, relationship building, and creative, more holistic approaches than those that are typically associated with quantitative research approaches (Lundy & McEvoy, 2012). Thus, this study is much better suited to a qualitative design.

Therefore, through a qualitative, reflexive, and at times ethnographic, approach, this study aimed to uncover children's realities and combine experiences, knowledges, and perceptions, to give a clear understanding of exactly what children's understandings are, and what factors in their socio-cultural environment underpin these. Specifically, this was achieved via the conduction of open, interactive, and participatory workshops with 20 children aged 9-11 in both a rural and urban school in the Mekong Delta. Contextualising this, are field observations, and interviews with parents, teachers, head teachers, farmers, and governmental officials. This is further combined and contextualised within existing literature. Over the course of one year and three research visits, I gathered a critical and rich understanding of children's daily lives, their relationship with the annual floods and water, and their ability to make links between their environment and the future challenges in Climate Change. In doing so, I hope that future policy and practice can be adapted to take account of these additional voices and research findings; with the overall aim of heightening both children and communities' resilience in regard to the current and future challenges associated with flooding and Climate Change.

The research specifically targeted children in their final two years of primary school – ages 9-11. This is for several reasons that will be explored in further detail in Chapter 3 and 5, however the forefront reasons are:

- a) Worldviews and habits are largely formed by the age of 12 (Hofstede, 2001; Ishii et al., 2009). The years preceding this are thus essential in creating eco-conscious and aware citizens that have the knowledge, perceptions, and capacity to adapt to their changing environments in the future. Though cultural perceptions and worldviews can of course be changed throughout the life course, ensuring eco-friendly and climate conscious citizens at this age will support any future communication effort. Understanding the

current perceptions and experiences are thus essential to ensure any future projects take account of this.

- b) This is the final year of mandatory education in Vietnam. As children progress through secondary school, dropout rates increase, and thus those accessing formal education decrease. With formal education being an essential tool in communicating Climate Change, and indeed with education largely reflecting the cultural and social values of a society (Bartlett & Burton, 2016), this age group where the highest school enrolment figures are found is of pinnacle importance.

Both a social science study that utilises qualitative methods in Climate Change research, and as one that considers the perspectives of often marginalised children in a Lower-Middle Income country in Asia, this research contributes in several ways, by also demonstrating the value that qualitative social science research can contribute to the wider paradigm at large.

1.4 Research Questions

The thesis sets out to answer two overarching questions. In the context that speaking with children directly affords the most accurate representation of their lives and that understanding existing perceptions, understandings and beliefs is critical to Climate Change resilience strategies, these are:

- 1) In the Mekong Delta, what are the knowledges and perceptions of children in relation to Climate Change?
- 2) How do children's socio-cultural environment manage and mediate children's Climate Change knowledges and perceptions?

As suggested by Brannen et al. (2017), there is clear purpose and benefit to identifying cultural norms in behaviour, attitude, and interpretation, because culture is patterned. They argue: "the pattern overlays individual and environmental elements in a complex way, but identifying the patterns helps managers use it to address and learn from complexity" (Brannen et al., 2017: 29). Thus, by following up with the latter question, the social and cultural systems that surround the child are not only considered, but are brought to the forefront of the research adding to the scholastic knowledge in this important area.

1.5 Thesis Structure

The thesis is divided into eight chapters, with the first 3 providing the necessary foregrounding for the substantive findings and discussion chapters that will follow. These initial chapters will

provide the global research context, specifically drawing attention to global Climate Change and its sociological interfaces. It will then move into the theoretical perspectives of children, childhood and culture that are again, essential for understanding the research in this thesis. Chapter 4 will offer the methodological underpinnings of the study, highlighting the research process, and decisions made – particularly focussing on power dynamics and ethical considerations. The rest of the thesis will present the findings of the study, breaking it down into three substantive chapters, of which one will consider children’s lived experiences and relationships with water, another focussing on knowledge acquisition and the final focussing on perceptions. This will inform the subsequent discussion chapter, before being brought to a close, where conclusions and recommendations for practice and future research will be made. paragraph.

Chapter 2 Research Context¹

The aim of this chapter is to situate this research within the broader literature. To start, the chapter will give a brief overview of the current state of global Climate Change, before considering the specific impact this is having on deltas around the world. Following this, the more specific context of Vietnam and the research site specifically will be given, where the above enmeshed factors will be addressed. With information drawn from a broad range of sources, covering a wide range of historical and cultural literature, it includes both a descriptive and critical overview and provides the necessary starting point for understanding this research.

2.1 Global Climate Change

The Earth is currently undergoing a sixth global scale ecological crisis (IPBES, 2019) with the available science almost unanimously positioning human activity at the heart of the cause of this crisis (Peters et al., 2020; O'Connor et al., 2020). The most recent IPCC (2021) has demonstrated a need to curb global heating at 1.5 degrees above the pre-industrial baseline and highlighted a range of likely impacts of Climate Change should no action be taken, particularly in relation to reducing greenhouse gas emissions to net zero by 2050. Our reliance on burning fossil fuels as the primary power source for the global economy leads to excess heat being trapped within the Earth's atmosphere, creating a range of problems including rising sea temperatures, melting permafrosts and ice sheets, extreme weather patterns, and more frequent and intense hydrological extremes (IPCC, 2018). Though recognition for the magnitude of this issue is increasing, globally, action is lacking, and modern-day practices that favour economic growth over environmentally and socially sustainable development take precedence. Fossil fuels still reign supreme in energy production; deforestation to make way for urban spaces and monocropping continues. Policy makers and scientists are well informed about how these two factors in particular are contributing towards global Climate Change – and yet they continue at an alarming and in many cases increasing rate (Sasaki, 2021; Solarin et al., 2021).

Some parts of Earth have already experienced warming that surpasses 1.5 degrees Celsius above pre-industrial levels (Abram et al., 2016; NASA, 2019a). Though seemingly only a small

¹ Elements of this Chapter form parts of Jones et al. (2021). The passages of text within this published paper were lead authored by Florence Halstead.

increase in temperature, this has had significant and disastrous impacts on the environment and its ecosystems in numerous and complex ways, with many impacts causing a chain reaction, cascading further to many subsequent social and environmental impacts (NASA, 2019; Tehreem et al., 2020).

2.1.1 The Social Impact of Climate Change: Addressing (in)equalities

The consequences that Climate Change is having, and will continue to have, on humans is multifaceted. Extreme weather events have seen a 3-fold increase since the 1960s, resulting in over 60,000 additional deaths per year (World Health Organization 2018). All social and environmental determinants of health; clean air, safe drinking water, sufficient food, and secure shelter; are at risk (ibid). Between 2030 and 2050, Climate Change is projected to increase the prominence of malnutrition, malaria, diarrhoea, and heat stress, leading to around 250,000 further deaths annually (World Health Organization 2018). During the same time, over 140 million people are predicted to migrate within their countries' borders (Rigaud *et al.* 2018), solely because Climate Change has made their previous homes uninhabitable. Crops will fail to grow in the new conditions presented by Climate Change, sea level rise will swallow whole settlements, access to clean drinking water will cease, and other locations will become too hot to sustain human life. With these challenges, over 100 million additional people will be pushed back into poverty as soon as 2030 (Hallegatte *et al.* 2015).

The situation presented above is bleak for many, however the negative impacts of Climate Change are not equally dispersed and instead, countries in the Global South and otherwise disadvantaged groups are disproportionately affected (World Health Organization 2018). As Ribot puts it, vulnerability does not "fall from the sky" - it is socially constructed (Ribot, 2013: 164). The term disadvantaged is used here to categorise those who experience climate inequalities and bear the brunt of climate injustices; paying particular attention to the Global North/South divide and the demographic, socio-economic and political factors such as gender, race, age, ethnicity, religion, income and assets, access to public resources and involvement in public decision making; in governing the unequal distribution of negative climate impacts. The dynamics listed here are not an exhaustive list and there are many other contributing factors that predict an individuals' or communities' (dis)advantage. The climate crisis is thus particularly unjust in that the most vulnerable to its impacts are those least responsible for its creation (Robinson 2019; UNICEF 2015). As such, Sanson & Burke (2020: 343) view the climate crisis as 'an issue of structural violence and intergenerational justice' which may lead to a breakdown of human rights and a 'climate apartheid scenario in which the wealthy pay to

escape overheating, hunger and conflict, while the rest of the world is left to suffer' (United Nations General Assembly 2019: 10).

Under the premise that inequalities relating to demographic characteristics such as race, age and gender often present themselves through income and assets, Islam and Winkel (2017) suggest that disadvantaged groups, that is those who face climate inequalities, are: more *exposed* to climate hazards; more *susceptible* to damage caused by climate hazards; and have decreased *ability* to *cope* with and *recover* from climate damages. Put simply:

... the relationship between Climate Change and social inequality is characterised by a vicious cycle, whereby initial inequality makes disadvantaged groups suffer disproportionately from the adverse effects of Climate Change, resulting in greater subsequent inequality (Islam and Winkel 2017: 2).

This correlation between climate (in)justice and wealth disparities is well documented elsewhere, whereby poverty is considered a key element in determining vulnerability to Climate Change (Gerrard 2016; Givens *et al.* 2019; Hallegate *et al.* 2015; IPCC, 2018; Jorgenson *et al.* 2019; Rigaud *et al.* 2019). On an international scale, the most disadvantaged by Climate Change are poorer nations, often within the Global South, and Indigenous communities (Givens *et al.* 2019; Hallegate *et al.* 2015). Many of these regions lie in geographically high-risk areas that face increased risk from a rise in both flooding and drought. However, it is not their geographical location alone that puts them at a disadvantage. Positioning them as much more at risk than their wealthier counterparts, poorer nations are more likely to lack quality and accessible healthcare for all, adequate information and warning systems, climate resilient infra-structure and developed mitigation and adaptation strategies/technology, positioning them as much more at risk compared to their wealthier counterparts (Hallegate *et al.* 2015). Deemed to be one of the greatest threats posed by Climate Change, of particular concern to developing nations is food security (IPCC, 2018).

Often relying on small scale agriculture for both income and food, a loss of predictable weather patterns and an increase in frequency and magnitude of hydrological extremes in particular, will put developing nations and their citizens at the epicentre of this challenge (IPCC, 2018). There is no doubt that these changes will impact the poorest nations hardest, however the injustice is only fully understood when considered under the backdrop that collectively, the 10 most food insecure countries in the world emit just 0.08% of total global Carbon Dioxide (CO₂) emissions (Ware & Krammer, 2019). These nations, despite contributing so marginally to Climate Change, face much graver challenges than the world's biggest

CO₂ producers, and whilst developing countries with a high CO₂ expenditure do exist, it is usually under the pretence of supplying inputs and labour for the West (Prell & Sun, 2015). Wealthier nations are in essence 'offshoring' their emissions and environmental degradation elsewhere (Roberts & Parks, 2007). These poorer nations, as theorised within the Ecologically Unequal Exchange Concept, act as both a tap and a sink for the rest of the world; as a point to extract resources and dispose of waste within the world's economic system of extraction, production, and consumption (Givens *et al.* 2019). Such exploitation further exacerbates the environmental and ecological risks that these countries face, which in turn increases their exposure and vulnerability to the negative impacts of Climate Change (*ibid.*). Within country correlations between inequality and poverty are also apparent and are further nuanced by personal income and assets (and thus poverty), that too are compounded by social categories and identities such as race, age, social class, and gender. These identities are intersectional; that is, they 'work together to produce advantages and disadvantages across bodies and space, and ... do not act independently of one another' (Pellow, 2016: 225).

This is particularly apt for the Mekong Delta, positioned as one of the most vulnerable places in the world to Climate Change, whose social, economic, and geographic structures put them at a great disadvantage – despite Vietnam as a country contributing marginally compared to the powerhouses such as China and the US (Climate Watch, 2018). Though Vietnam has experienced mass economic development in recent history, they are still a lower-middle-income country with high levels of poverty and socially derived climate vulnerability. Through recent flood events as brought on by Climate Change, for many farmers their crop revenues have decreased, leading to a decline in their annual turnover, with those already on the fringes of poverty hit hardest (Dung Duc Tran *et al.*, 2020; Giang & Vy, 2021; Wilson, 2017). These events leave them with less economic resources to cope with any future challenges, they create hazards to their health, reduce access to clean water, and so on. The cycle of poverty and disadvantage thus continues, and amongst those groups most adversely affected, are children.

2.1.2 Climate Change and Children

The threat that Climate Change poses to children both now and in the future, is significant. Not only does approximately half of the world's children (~1 billion), live in extremely high-risk countries to the impacts of Climate Change, their physically smaller stature, and typically weaker muscle mass, puts them in greater danger during extreme weather events, and they are more susceptible to air and water borne diseases that are exacerbated in the aftermath of such (UNICEF, 2015). Less able to regulate their body temperature in heatwaves, and less able

to secure access to clean drinking water and food, drought and extreme heat poses unique issues to children (UNICEF, 2021). As food security is threatened, malnutrition poses a real threat to children worldwide. School access, gender equality and psychological stress are all issues that are heightened in the face of Climate Change (DiMento & Doughman, 2014), and as climate related migration and poverty increase, it is children's lives that will be the most disrupted, with their vulnerability to child exploitation, abuse and trafficking increasing as a result (UNICEF, 2009; UNICEF, 2015; UNICEF, 2021). All of these effects can lead to long term and lasting impacts well into later life.

Children are not only one of the groups most adversely affected by the impacts of modern-day environmental change, but they are also the generation that will continue to suffer the consequences of the human impact on the climate and environment into the future. Though not responsible for the current state of affairs, they are disproportionately affected (Carolyn Kousky, 2016; Phung et al., 2015; Rousell et al., 2017). As holders, recipients, and beneficiaries to the planet (MacDonald, 2006), they should not only be protected from these changes, but there is a growing community who believe that children should be involved in the discussions and decisions that so acutely impact them (UNICEF, 2015).

This is recognised both directly and indirectly by several international policies. For example, the UNCRC places the rights of children into international law and policy by stating that children are raised in a safe and healthy environment (United Nations, 1989: Article 2 and Article 24), and the Report on the Rights of Children and the Environment recognises a need to facilitate the participation of children in environmental decision-making processes, and protect them from reprisals for expressing their views on environmental matters (UNGA, 2018).

2.1.3 Deltas

Deltas are among some of the most populated locations on Earth, accounting for 7 percent of the world's inhabitants, despite only covering 1 percent of the Earth's land surface. They bridge the gap between land and water and are "magnets for economic development and urbanization" (Meyer & Delft, 2016: 2). As landforms created from river sediment deposits, their nutrient rich soil and intricate river networks enable them to be hubs of agricultural and aquacultural productivity, positioning them as attractive locations for trade and commerce (Szabo et al., 2016). Deltas in tropical regions specifically, are crucial to global food security as they provide a substantive contribution towards global rice production, of which over half of the continuously growing population relies upon, particularly in Asia, Africa, and Latin America (Balasubramanian, 2018; United Nations, 2015). However, deltas are inherently vulnerable to

Climate Change. Their natural features, particularly their low elevation against sea level and fluvial networks, teamed with the large populations that they harbour, mean that a great number of people are at risk from the adverse effects of Climate Change (Tessler et al., 2015). As weather intensifies, floods and droughts become more regular and extreme, and salt water encroaches onto land as the seas rise, deltas in developing countries specifically, whereby livelihoods, the economy and food security rely on agriculture and the fertile lands that deltas provide, will be hit hardest (Global Center on Adaptation, 2021). However, despite the inherent vulnerabilities and the unique challenges the inhabitants of Deltas face, there is a substantial lack of research concerning deltas in developing countries and the societal perceptions of those that reside there, and even greater a lack of studies that involve the perceptions of children.

2.1.4 The Mekong River

As one of the largest rivers in the world, finding its course through five riparian countries in Asia (China, Thailand, Laos, Cambodia, and Vietnam) with a total catchment of 795,000km², the Mekong River is critical to the livelihoods of the 60 million people that live within its basin and an estimated 300 million that live beyond (Taga & Igarashi, 2019). It supports the world's largest inland fishery, providing over 80 percent of inhabitant's protein intake (Baran & Myschowoda, 2009; Burbano et al., 2020; Orr et al., 2012) and, much like life in the Delta, for centuries the practices that took place in and around the Mekong River had long been sustainable and in sync with its natural flood pulses (Ehlert, 2012). However, with increased development in and around the river, the sustainability of the Mekong is being tested, particularly in the lower catchments. Despite the grand scale of the Mekong River, the decisions and practices upstream make a significant impact downstream and thus, the residents of the Vietnamese Mekong Delta (Taga & Igarashi, 2019). Recognition of the interwoven, connected, and sensitive nature of the Mekong was acted upon in 1957 when the lower Mekong countries formed the Mekong Committee (Mekong River Commission, 2021). 1995 saw this develop into the Mekong River Commission, whereby the governments of Cambodia, Laos, Thailand, and Vietnam signed the *Agreement on Cooperation for Sustainable Development of the Mekong River Basin* (the Mekong Agreement). This intergovernmental and transboundary contract was a milestone moment that put forth "a set of mutually accepted and fair objectives and principles of cooperation for sustainable development and utilisation of the water and related resources and environment of the Mekong River Basin" (Mekong River Commission, 1995: i); acting as a regional platform for water diplomacy and knowledge sharing. Missing from the delegates both then and now however, is China.

2.2 Vietnam and the Mekong Delta Research Context

2.2.1 Geography and Climate

Situated in Southeast Asia, Vietnam shares its borders with Cambodia, Laos and China and has a total surface area of 310,000km² (World Bank, 2020a). It is characteristic of various elevation, topography, and land cover; including low-lying deltas, mountainous regions, a large network of river and fluvial systems and a 3,260km coastline that spans the Gulf of Thailand, Gulf of Tonkin, and the South China Sea (Britannica, 2022b). With two climate systems in play, tropical in the south and monsoonal in the north, Vietnam experiences some of the most extreme weather in the world (Kreft, 2017) and places fourth for countries with the highest proportion of the population exposed to river flood risk (Winsemius & Ward, 2015), many of whom reside in the Mekong Delta.

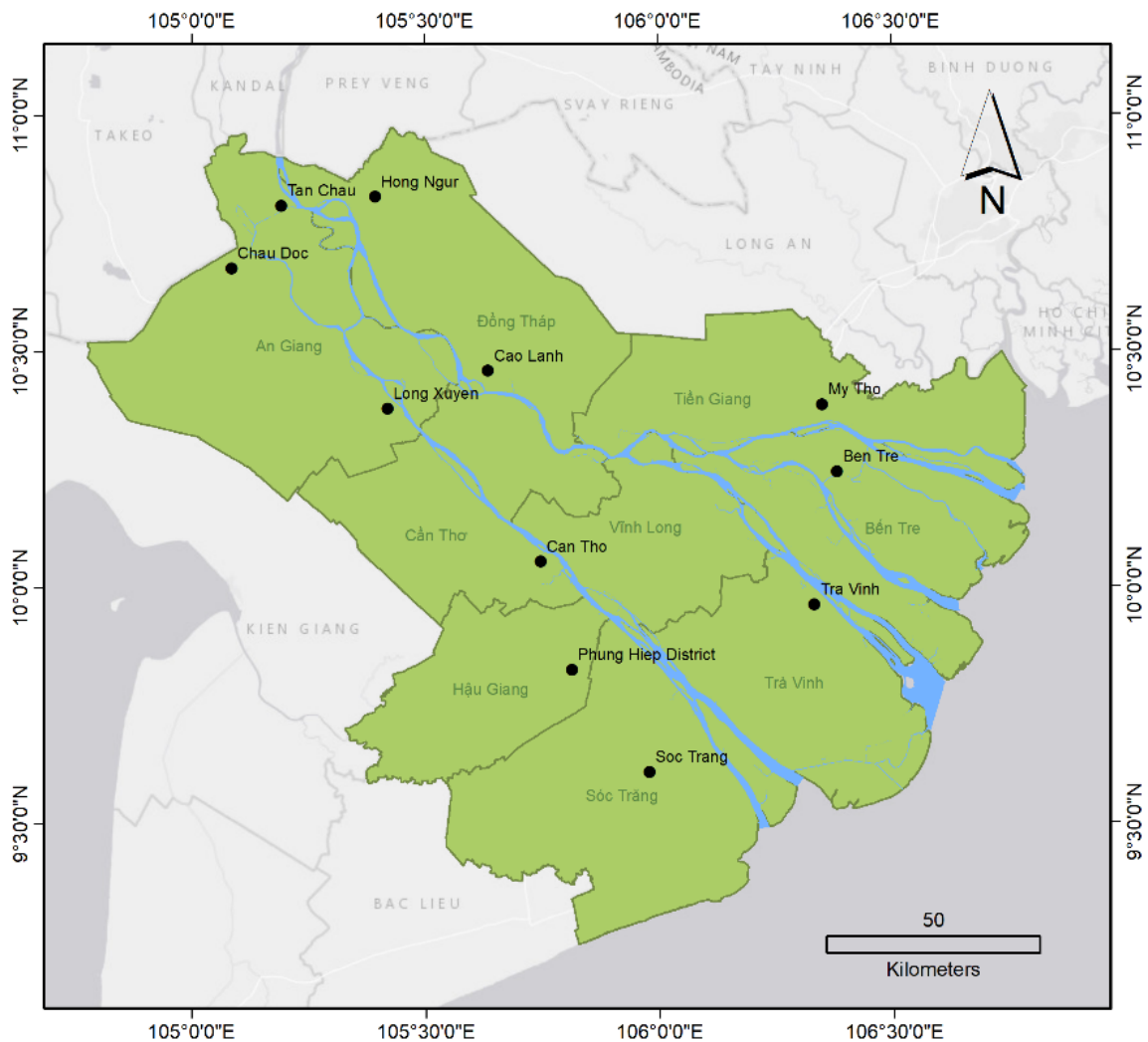


Figure 1: Map of Mekong Delta

The Mekong Delta is a coastal floodplain spanning an area of 40,810km², originating in Phnom Penh, Cambodia, where the Mekong River breaks in two to form the Mekong and Bassac Rivers respectively (Ehlert, 2012). Though originating in Cambodia, the majority of the delta is located in Southern Vietnam (General Office of Statistics Vietnam, 2016a) and therefore experiences a tropical monsoonal climate, with the dry season typically running from December to April and the rainy season, which typically accounts for 90% of total annual rainfall to the region, lasting from May to November; though in recent years this has become less predictable (Long Phi Hoang et al., 2018).

During the rainy season, the Mekong Delta traditionally experiences heavy, yet incremental rainfall that, when combined with flood discharge upstream and high tides in the East and West Sea, creates a long flood inundation period lasting between 2-6 months (Long Phi Hoang et al., 2018; Van et al., 2013).

Despite flooding being the most common and destructive natural disaster to face Vietnam (Bich et al., 2011) and that between 1990 and 2014, flooding accounted for over two thirds of all deaths and economic impacts associated with natural disasters to the entire country (UNISDR, 2015), the annual fluvial floods in the Mekong Delta bring benefit and prosperity to the region via a rich and biodiverse landscape ideal for many agricultural and aquaculture practices, particularly growing and harvesting rice (Guong & Hoa, 2012). Many of its inhabitants rely on the flood waters to provide nutrient rich sediment and alluvium soil, as well as for washing away pesticides and killing vermin; whilst the landless rely on these conditions to earn an income via inland fisheries (Ehlert, 2012). Nevertheless, there is a fine balance at play as the Deltas location, climate and human influenced characteristics mean it is also subject to hazards such as floods that go beyond the norm, droughts, extreme storms, and saltwater intrusion, all of which significantly impact upon the livelihoods of its residents, the economy, and the food security of Vietnam and beyond (Clauss et al., 2018a)

2.2.2 Demographic Overview

The total population of Vietnam is approximately 96 million, consisting of 54 identified ethnic groups, of which the Viet is the majority, accounting for around 85 percent of the total population (Tho, 2016). The official language is Vietnamese, however approximately 100 languages are spoken (Dinh, 2010), and though officially an atheist state with only 26.4 percent categorised as religious believers, the government officially recognises 38 religious organisations, with the main religions being Buddhism (14.91 percent) and Catholicism (7.35 percent) (Office of International Religious Freedom, 2018). 31 percent of the population is

under the age of 19 (General Statistics Office of Vietnam, 2020a) and the average life expectancy is 76 years, higher than any other country in the region with similar income levels (World Bank, 2020). However, Vietnam is also one of the most rapidly aging countries, with the 65+ age group expected to increase 2.5 times by 2050 (World Bank, 2020). Increasing health and living standards mean that infant mortality rate has almost halved between 1993 and 2017, however a “high and widening sex ratio at birth (115 in 2018) shows that fundamental gender discrimination persists” in favour of male born children (World Bank, 2020).

2.2.3 Population Distribution

Vietnam’s 96 million citizens are not evenly dispersed, and 70 percent of Vietnam’s population live along the coast or in low lying deltas, exposing a large proportion of the population to natural hazards, including coastal and fluvial flooding (Bangalore et al., 2017). The Mekong Delta is the second biggest administrative region in Vietnam, holding a population in excess of 17 million, of which around 64 percent live in rural spaces, whilst the remainder live in urbanised environments (General Statistics Office of Vietnam, 2020a).

2.2.4 Economy

Vietnam’s economic development over the past 35 years has been nothing if not significant (Vanham, 2018; Overseas Development Institute, 2011; Kien & Heo, 2008). Since the enactment of Vietnam’s Doi Moi (renovation) policy in 1986, Vietnam has transformed into a socialist-orientated market economy, opening up to numerous international trade agreements, and rapidly growing from one of the poorest nations in the world into a lower middle-income country with “economic growth of 6-7% [that] rivals China” (Vanham, 2018). Between 2002 and 2019, the percentage of the population in poverty dropped from over 70 percent to below 6 percent (World Bank, 2020), and in the Mekong Delta specifically, to 5.8 percent (General Statistics Office of Vietnam, 2020b), with 2019 continuing “to show fundamental strength and resilience, supported by robust domestic demand and export-oriented manufacturing” (World Bank, 2020).

As the third biggest exporter of rice in the world, rice production is essential to both global food security and the Vietnamese economy (Clauss et al., 2018b; FAOSTAT, 2019). Over one third of all Vietnam’s working age population earn their money via agriculture, forestry, or fishing, with the Mekong Delta being labelled as the “rice bowl of Asia”, specifically responsible for over half of Vietnam’s total rice production and only achievable because 64 percent of its land is used for agricultural production (General Statistics Office of Vietnam, 2019).

However, in 2020, despite a growth rate of 2.91 percent that was amongst some of the highest in the world at the time, the ongoing COVID-19 pandemic and numerous natural disasters have significantly impacted the Vietnamese economy, with 2020 presenting the lowest GDP growth level in decades (Nguyen, 2020). Rice exports were halted for several months to ensure domestic food security and many citizens lost their income (Tran et al., 2020). The true impacts of COVID-19 on Vietnam and its economy are yet to be discovered (with long-lasting lockdowns still continuing at the time of writing), however with such high rates of poverty not so long ago overcome, there is a risk that Vietnam's rapid economic growth and prosperity will be challenged (Aaron et al., 2021; Tran et al., 2020).

2.2.5 Politics

Compared to other countries, there is significantly less written on Vietnam's political system (London & London, 2014). Though only one of 5 remaining communist states in the world, London and London suggest this relative lack of information is because of a) Vietnam's relatively inconsequential size in comparison to China. Further, though research in Vietnam is increasing (explored further in Section 3.5), research of a political nature is met with great caution from the Vietnamese government and almost impossible to conduct for independent researchers. Indeed, in only 2014, London and London wrote:

The Communist Party of Vietnam (CPV) remains a secretive organization and the country's political institutions and processes remain opaque. Indeed, a great deal of politics in Vietnam is indecipherable. Yet it is equally clear that the usefulness of a "black box" approach to Vietnam's politics has its limits. (London & London, 2014: 3).

What is known however, is that Vietnam is a one-party socialist republic, run by the Communist Party of Vietnam (CVP), and currently led by General Secretary Nguyen Phu Trong and President Nguyen Xuan Phuc (BBC, 2021). Figure 2 shows the current political structure and distribution of power in Vietnam today. Though 91.7 percent of Vietnam's population have access to a mobile, landline phone or tablet (92.1 percent for the Mekong Delta) (General Statistics Office of Vietnam, 2020a), the government controls and mediates media and access to information, exerting "strict control over radio and television stations and printed publications", with authorities "block[ing] access to websites, frequently shut[ting] blogs, and requir[ing] internet service providers to remove content or social media accounts deemed politically unacceptable" (Human Rights Watch, 2019). According to Human Rights Watch (2019), "[t]hose who criticize the one-party regime face police intimidation, harassment, restricted movement, physical assault, detention, and arrest and imprisonment". Despite

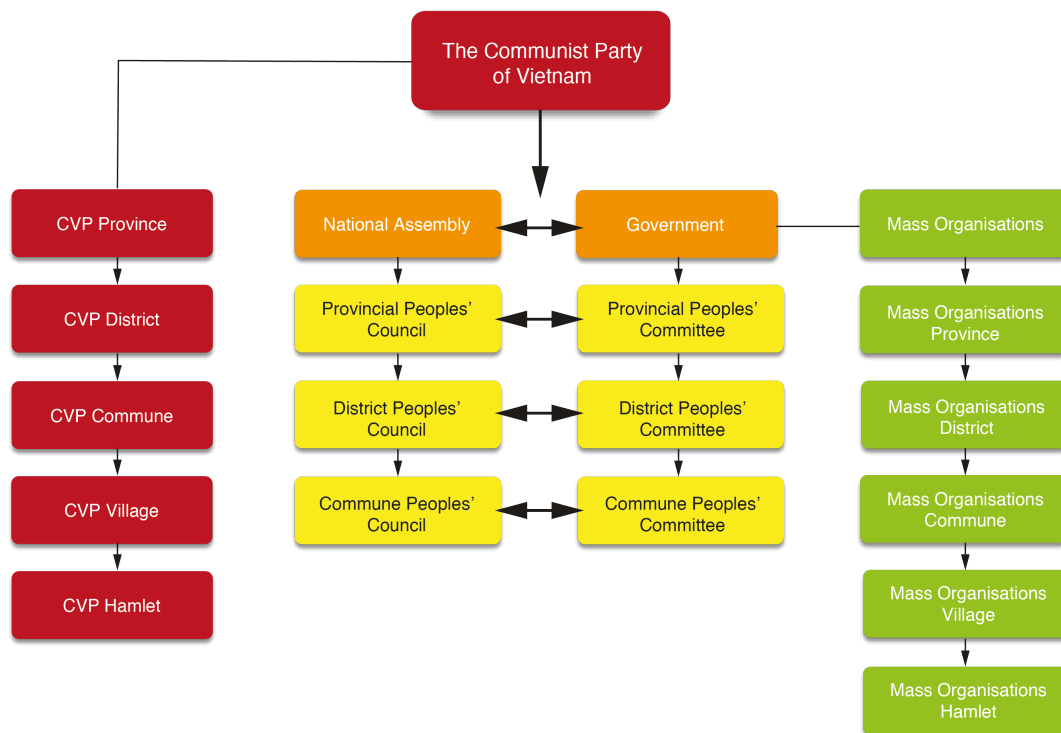


Figure 2: The Political Structure of Vietnam

much progress in economic liberty within the region since Vietnam first became a communist state, their political system remains relatively unchanged, still following an authoritarian and communist framework, despite major adaptations in economic values and world trade.

2.2.6 Education

Education in Vietnam is governed by the Ministry of Education and Training (MOET) and includes both public and private institutions that are divided into 5 levels: preschool, primary school, secondary school, high school, and higher education (MOET, 2021; WENR, 2017). Formal education consists of 12 years of education, though only 5 years of primary education from the ages 6-11 are compulsory (WENR, 2017). Grades 1-5 are funded by the state; however schools often request subsidiary costs to cover additions such as grounds maintenance, and charge for uniforms and school supplies (WENR, 2017). The majority of primaries currently follow the 2006 General Education Curriculum (GEC) that covers 11 compulsory subjects; including Vietnamese, Mathematics, Ethics, Natural and Social Study/Science, History and Geography, Music, Drawing, Craft, Technical Subjects and Gymnastics. Each subject has a correlating textbook that teachers are not permitted to divert from. Central control is high, and thus teacher autonomy is low, though a new GEC is currently being rolled out across all stages of schooling which should allow for more variability in teaching (Nguyen et al., 2020b).

In 2020, 4.03 percent of the country's total GDP was spent on Education and Training (Statista, 2021) and in the PISA league tables, they outperform many high-income countries including the USA and UK (Dang, 2021; OECD, 2018). However, these figures are not necessarily a true reflection of reality. Despite high enrolment rates in primary education, these figures decrease with age, and between the ages of 12 and 15, school enrolment reduces from 97% to 80%, with those children whose caregiver had no schooling see the greatest drop (from 86% to 55%) (Espinoza et al., 2018) With PISA tests assessing the learning of 15-year-olds in school, these figures are inflated by an underrepresentation of disadvantaged groups (Shadoian-Gersing, 2015).

Vietnam faces additional struggles, including providing quality teacher training, poor teacher/student ratios, huge inequalities between urban and rural education quality and access, and a heavily scripted curriculum whereby teachers only have access to MOET approved teaching resources (Espinoza et al., 2018; WENR, 2017). It is criticised for lacking continuity between levels and methods of education, for being overly theoretical as opposed to practical, and for applying outdated methods, testing, and assessment (General Secretary, 2013; Nguyen et al., 2020).

2.2.7 Environmental Education

Since 2009, the MOET have incorporated Environmental Education (EE) and Climate Change Education (CCE) into formal education, leading Nguyen (2019: 80) to concisely note:

Vietnam have repeatedly acknowledged that education is an essential element of the national response to environmental insecurity threats, and that EE [Environmental Education] shall be incorporated into all levels of formal education ... Their chronological legal documents have constituted the national policy framework that accelerates, reorients and transforms education towards sustainability.”

Of particular importance, in 2014 the Vietnamese Government published *the Law on Environmental Protection* (55/2014), in which article 155 highlighted education as a major driver for Environmental awareness and behavioural change, stating:

“1. Curriculum of general education levels shall convey environmental content.

2. The state put priority on training human resource for environmental protection; encouraging every organization, individual to participate in the education of environment and training human resource for environmental protection.

3. The Ministry of Education and Training shall actively coordinate with the Minister of Natural Resources and Environment to detail the educational program

of environment and provide training to human resource on environmental protection.”

However, its efficacy has been criticised for being disjointed, and for not fully embracing ESD values and principles (Nguyen, 2018; UNESCO, 2014), likely a consequence of competing priorities between industrialisation and nature. There appears to be a greater focus on secondary and university level education, with very limited explicit mention in primary schooling (see for example, *The Third National Communication of Vietnam to the United Nations Framework Convention on Climate Change* (Ministry of Natural Resources and Environment, 2019). EE is also criticised in Vietnam for focussing on single subjects, being oriented by western-centric approaches, and taking place in a system that prioritises other core subjects, leaving EE and Climate change as *add on* subjects (Nguyen, 2018; Nguyen, 2019). Many of the barriers to quality education mentioned in Section 2.2.6 also pervade as significant barriers to EE.

2.2.8 Life in the Mekong Delta: Development, Agriculture and Flooding

Since the mid-1980s the delta has experienced a substantial economic boost in the form of flood and irrigation control and the intensification of agricultural production (Ehlert, 2012). Regarded as a top-down and technocratic management issue by the government, flood waters require controlling (Shibuya, 2015). Conversely, locals have relied on the flood waters for many years, and traditionally have not viewed flooding as a risk at all, with Ehlert (2012: iv) concluding that any challenges faced by the rural population “arise from the contemporary flood management regime in Vietnam, rather than flooding itself”. As Adger et al. (2001: 3) argue:

In broad terms, the environmental stresses facing the people of Vietnam are the product of over-exploitation and mismanagement of resources, of the legacy of colonialism and war, and, increasingly, of global forces.

Therefore, a brief history of how the delta transitioned its hydrological practices from adaptive to managerial is needed. In the earliest years of settlement in the Delta, social and productive patterns were in sync with the natural flood pulses of the Mekong (Käkönen, 2008). Much like most pre-modern cultures “their lives were tied up with nature’s moods and vagaries – the availability of natural resources and sustenance, the flourishing or otherwise of crops and pastoral animals, and the impact of natural disasters” (Giddens, 1992: 60); with rivers and waterways following their natural course and humans adapting their livelihoods and practices around them (Le Coq et al., 2001; Ehlert, 2012; Biggs, 2004). However as technological

advances and modernity have taken hold of the world, adaption has turned to management. The exact point of “modernity” in the Mekong Delta, much as it is in the rest of the world, is both well theorised, complicated, and hard to pin down (Giddens, 1992; Ehlert, 2012).

Construction of the first major canal began in the pre-colonial period, in 1819, initially to expand the Vietnamese Kingdom and prevent over population in the Red River Delta in Northern Vietnam (Biggs, 2004). However, the real shift from adaptation to management came with the colonial rule of the French. Under French rule, the canal system expanded, and mass dredging and irrigation took place, with the total cultivation area of the delta increasing to over two million hectares, an increase of 400 percent (Biggs et al., 2009). As a means to “progress” the delta and with the belief that humans were superior to nature, the French applied their western technologies to what had long been traditional agricultural practices, whilst concurrently relocating many farmers from the Red River Delta to exploit the newly available arable land (Käkönen, 2008). As populations and rice production increased, flood protection and control measures were put in place, however the flood of 1937 went beyond that for which could be controlled, damaging hundreds of hectares of rice crops in doing so (Kettner et al., 2009). Still, with the firm belief that such events and water in general was controllable, this led to the implementation of greater flood control measures, further managing the environment, and sacrificing what was left of nature’s fine balance.

Following the defeat of the French colonial forces in 1954, the North and South of Vietnam separated into the Communist Democratic Republic of Vietnam in the North and the Republic of Vietnam in the South. This separation led to over one million people migrating south between 1954 and 1956 (Elkind, 2014). This challenged the regions food security, as rice production could not meet the demand of so many in the region (Le Coq et al., 2001). The Mekong Delta Development Program (MDDP) in 1968 thus aimed to increase the social conditions of those in the delta via hydrological and agricultural technologies, with flood management being key in achieving this.

Much of the work was paused during the Vietnam War², however the Green Revolution³ in the 1970s rapidly increased rice production as new variants and technologies were introduced by

² The Vietnam/American War lasted from 1955-1975.

³ The “Green Revolution” occurred when farmers in Vietnam were convinced to switch to technological approaches in farming, increasing their use of pesticides to sustain crop yields under intensive cultivation systems.

the Americans (Nguyen et al., 2020c). Despite rapid growth however, rice production was “still limited at that time by the war, amount of rural labour, and a relatively poor irrigation network” (Le Coq et al., 2001: 9). Following the war and the reunification of north and south Vietnam in 1975, the government responded to extreme food shortages by launching the “rice everywhere” campaign. This led to the implementation of a total hydraulic and fluvial management system in the delta (Biggs, 2004) and with the later launch of the Doi Moi in 1986, expansion of this system continued well into the 1990s.

However, in 2000, 2001 and 2011 respectively, the Mekong Delta suffered catastrophic floods (United Nations Development Programme, 2003). These flood events went beyond that of any benefit, leading to approximately 385 lives directly lost, and economic damages estimated to be in excess of 385 million USD (Mekong River Commission, 2015). Of those deaths, at least 82 percent were children (Mekong River Commission, 2015). The floods severely impacted those reliant on agricultural rice production in particular, as floods wiped out entire fields, rendering them with no harvest and thus thrusting them into economic hardship, whilst stagnant flood waters contaminated fresh drinking water and food supplies, of which the mortality and health consequences are anticipated to be high, though no formal data exists (Chinh et al., 2016; Luu et al., 2017). Many residents whose homes were flooded were forced to live on embankments till the waters receded, a period of months for some, with access to school and healthcare significantly reduced (Dun, 2011a, 2011b). Those already living in or on the margins of poverty were the most impacted and many have not been able to return to their pre-flood living conditions. These events, and the likelihood of them increasing in the face of climate change then, require an understanding of those voices who are living with these struggles, and whom are most significantly impacted when disaster does strike.

The need to avoid such a disaster occurring again, whilst also increasing the income of farmers, sparked a Delta wide change in its hydraulic structure and led to national government, various NGO's, local authorities, and residents, to expand the number of full and semi-dyke systems throughout the Delta (Thanh et al., 2020; Duong et al., 2016). Since French colonial rule, the official management of the delta has changed from adaptation to a strong belief in the “human mastery over the nature and water”, with planners vastly underestimating “the complexity and integrated nature of the ecology and livelihoods of the Mekong Delta” (Käkönen, 2008: 205). Full-dykes upstream have increased peak flood levels downstream and nutrient rich sediment from the floodwaters that historically acted as a natural fertiliser are no longer able to fulfil this role by inundating the paddy fields (Thanh et al., 2020; Chapman et al., 2017). This has forced farmers to rely on chemical fertilisers, as well as pesticides, adding

considerably to farmer's overheads and in turn minimising their profit margins (Guong & Hoa, 2012). Though one might hope the opportunities afforded by full-dykes to grow three crops a year (as opposed to one or two crops per annum without a full-dyke) might offset this loss, such intensive agriculture has further degraded soil quality, reducing crop yields significantly and has resulted in a vicious cycle whereby farmers are reliant on more agro-chemicals, face higher costs to fund their purchase of such and in return, receive ever deteriorating and less valuable crop yields (Thanh et al., 2020; Chapman et al., 2017). Other adverse consequences include farmer fatigue and stress from such intensive workloads, water pollution and in the rare cases of dyke breaches and flooding of third summer crops, much higher economic/health damages (Käkönen, 2008).

Despite the high socio-economic implications, particularly for the poorest of farmers who's economic stability is heavily reliant on free fertiliser, this unsustainable practice is not yet recognised by many key stakeholders, including local farmers themselves, provincial leaders and government (Chapman et al., 2017), however the future of the delta, particularly when considered in conjunction with additional human interferences, relies on the identification and implementation of sustainable practices of adaptation, and less so of management, than is currently been proposed (Käkönen, 2008). An understanding of the above is essential to contextualising children's voices. It highlights both the real and lived threat that the region faces, and the impact that colonial lands have had on the region and its people. With many farmers dealing with income insecurity, a three-crop cycle is elusive, and communicating the longer-term risks, is unlikely to have an impact when confronted with the need for short term gains.

2.2.9 The 2001 and 2011 Flood

In the flood of October 2001, waters in the Mekong Delta rose to hazardous levels. This resulted in the death of 222 people, 182 of whom were children. It led to over 105,000 people being evacuated as of thousands of houses belonging to over one million people were damaged (Hensengerth, 2018). An event like no other, this prompted huge action from governmental and non-governmental bodies to mitigate such an event from occurring again. These efforts were largely successful, until 2011. In 2011, several combined factors lead to the Delta region experiencing the worst flood since 2001 (Chinh et al., 2016). In this event alone, 85 people died, 13,000 families were displaced with many continuing to live in temporary shelters 6 months on, and over 11,000 acres of rice fields were ruined (Chinh et al., 2016). Caused by both river water levels and tidal influences, the provinces of An Giang, Dong Thap, Long An, Can Tho, Vinh Long, Hau Giang and Kien Giang were all effected, with some houses

remaining continuously flooded, and other areas flooded twice per day for approximately 5-8 hours, lasting the whole flood season of 2011 (September-December) (Chinh et al., 2015). In Can Tho City alone, this resulted in 27,800 houses being inundated, and USD 11.3 million in damages to buildings, infrastructure, agriculture, and aquaculture (Can Tho CFSC (Committee for Flood and Storm Control), 2011).

2.2.10 Additional Human Driven Factors

Intensifying the above are several other human driven environmental pressures that expose the delta to heightened risk, including upstream dams, intensive sand-mining, groundwater extraction, rapid urbanisation, population growth and, most relevant to this thesis, Climate Change (Anthony et al., 2015; Bass et al., 2010; Bussi et al., 2021; Carew-Reid & Taylor, 2018; Darby et al., 2016; Hackney et al., 2020; Käkönen, 2008; Nguyen et al., 2019; Schmitt et al., 2017; Szabo et al., 2016).

2.2.10.1 Climate Change

The Mekong Delta is at the epicentre of Climate Change. Over the coming decades, the delta is predicted to be one of the most adversely affected locations in the world, due to the culmination and complex synergy of all the above context, and most notably in terms of sea level rise and shifting tropical/monsoonal weather systems (Carew-Reid & Taylor, 2018; Connor et al., 2020; Dung Duc Tran et al., 2020; Renaud & Kuenzer, 2011; Wilson, 2017). The former, particularly when combined with the above human impacts that result in a sinking delta, poses a threat in terms of saltwater intrusion: an impact already being felt in the coastal regions (Minderhoud et al., 2017; Schmitt et al., 2017; Smajgl et al., 2015; Syvitski et al., 2009; Tessler et al., 2015). This causes fresh-water crops to die, and threatens the economic and food security of those that rely on this as an income and food source (Minderhoud et al., 2019; Takagi et al., 2016). Though some farmers are adapting and diversifying their crops in light of these changing systems, not all are aware or able to do this (Chapman et al., 2017). Sea Level Rise (SLR) also poses major challenges in terms of mass submersion over the coming years. At the current rate of sinking and SLR, a significant amount of the Delta is expected to be below Sea Level by 2050 (Dunn & Minderhoud, 2022; Minderhoud et al., 2019)

Further, long term trends confirm significant changes to both rainfall and temperature patterns in the Mekong Delta, with Duc et al. (2019: 541) concluding this as “very likely to have serious impacts on rice cultivation and productivity during the growing season due to the warming across the country and the surplus or deficit of rainfall in certain areas”. These shifting weather patterns lie in direct contradiction to the previously reliable and stable

weather cycles, challenging the indigenous and local knowledges of farmers that have long secured successful crop after successful crop in the region. Throughout the cities and rural areas, “Unlike acute shock events like hurricanes that generate high levels of damage, this type of seasonal flooding comes quietly but causes significant, indirect economic losses related to business interruptions, delays in the transport of goods, inaccessibility of jobs, and indirect health impacts” (World Bank, 2014: n.a). With these changing systems, storms and cyclonical activity is also increasing, testing the infrastructure of the area, and again, the crops and general lifeworld of those that reside here. Increasing temperatures also bring their own health challenges, with a positive correlation between increasing temperatures and children’s hospital admissions already identified as significant in the region (Phung et al., 2015). With 2019 seeing the hottest temperatures ever recorded in Vietnam and the mean annual temperature increasing by 0.4 degrees Celsius since 1960 (with the most rapid warming being in the South) (Feeny et al., 2021), and with rainfall more erratic than ever, it is clear that the Mekong Delta is already facing the impacts of Climate Change. With this scenario set to worsen, it is critical that communities understand, are engaged in, and are prepared for, their futures. Engineered structures can no longer provide the sole answer, and with the bar constantly changing as to what is required to be resilient to these present and future challenges, communities must remain prepared for both now, and for what is to come in the future. All these factors mean that the Mekong Delta is a particularly important and relevant place to conduct this research.

In the above section, I have tried to focus on the geographical and physical elements of the research context as much as possible, reserving these latter stages for the human aspects, however it is clear how the physical and the human cannot be detached. Sand mining, dam building, groundwater extraction, rapid urbanisation and Climate Change are ultimately consequences of human action, all directly driven by both global and local forces, particularly population increases and the strive for economic development. It is impossible to give a purely physical overview of the Mekong Delta without discussing how humans have managed or exploited it, or indeed how they have and will continue to be impacted. Nevertheless, the cultural context that intertwines with this requires exploration from its own dichotomy to truly understand the current state of play in the Delta, and to rationalise it as a place of importance.

2.3 Cultural Context

Culture pervades all aspects of life. Everything written above, from land and water management, through to population distribution, politics, and economics, are involved in an

interconnected and concerted relationship with both one another, and culture. Each exerts some influence over the others, whilst also being influenced itself (Adger et al., 2012; Hofstede, 1991; Masuda & Garvin, 2006; Matsumoto, 1996; Minkov & Hofstede, 2013; Triandis, 1994; Williams, 1976). The context above however, though important to highlight and understand, alone does not provide the *cultural* setting of the research; an essential inclusion in this thesis for two primary reasons:

- a) a degree of cultural knowledge is necessary for understanding the research findings, as well as how these findings may or may not be transferable to another context (Taylor, 2011) and;
- b) human perception, for which governs action and thus resilience to future challenges, is hugely influenced by culture (a more extensive overview of culture and its interface with human perception can be found in Section 3.3 (Adger et al., 2012; Carvalho & Burgess, 2005; Triandis, 1994).

Beginning first with a cultural and historical overview of Vietnam, the following section will look at some of the key fundamentals as relevant to this thesis, including general worldviews and practices relating to family life, children, education, the environment, nature, and flooding.

2.3.1 Historical Context

Chinese, French, and American occupation, worldwide globalisation, an internationally competitive economy, the Doi Moi International Trade agreement, a longstanding communist regime, multiple diverse religions, and many other influences, have interacted with traditional Vietnamese culture to create a convoluted and unique system of thought unlike any other culture in the world (Hayton, 2010; Murray, 2021). The majority of literature breaks Vietnam's rich cultural history into three major time periods:

“(1) the cultural formation period (Lac Viet cultural formation period) from prehistoric time to BCE 111,

(2) the period of disputes and cultural exchanges with China and India, in which cultural exchanges with China are the deepest (BCE 111 to the eighteenth and nineteenth century), and

(3) the period of cultural exchanges with the West (from the eighteenth and nineteenth century onward)” (Tho, 2016: 649).

The following section will pull out some of the key cultural influences that originate and transcend through all three of these cultural periods, making links to the present day throughout.

2.3.1.1 Three religions with the Same Root

The concept of *Three Religions with the same root (tam giáo đồng nguyên)*, is widely understood as the co-existence and fusion of the three most historically influential religions in Vietnam; Confucianism, Buddhism and Taoism (also known as Daoism) (Vuong, Bui et al., 2018). Arguably the greatest influences on Vietnamese culture today, the combining of these three religions with traditional Vietnamese folklore has created a specific Vietnamese worldview that dates back to Ancient China; with Confucianism believed to have created the greatest cultural shift of the three (Vuong et al., 2018).

More a system of thought than a religion (National Geographic, 2021) Confucianism made its way to Vietnam around 111 BCE. It was introduced by the Chinese Han Dynasty, whom by this time had colonised much of the Chinese Cultural Sphere (Tho, 2016). As they encroached on Vietnam, they were met with great resistance, with the then matriarchal society (Hong Van, 2020) fighting hard to protect their land, heritage, and culture. However, their effort fell short against such powers and as Chinese powers took control of the land, Confucianism was quickly adopted by local intellectuals and officers and thus, Vietnamese society gradually came to accept the core values of Confucianism, changing many aspects of Vietnamese culture (Le Thi Lan, 2016). Buddhism and Taoism were also introduced to Vietnam around a similar time, however these were assimilated much more readily as they blended and complimented the traditional Vietnamese worshiping of nature and animistic beliefs (Zhao et al., 2011). Prior to the introduction of Confucianism, Vietnam lacked a clear social or educational structure. Communities were largely separate from one another, and their practices and beliefs were “built primarily on the basis of local conventions arising from the specific conditions of life and localised agriculture” (Tho, 2016: 249) (mainly rice paddy cultivation). The Han Dynasty, on the contrary, was associated with social and political structures, of which education, authority and hierarchy was at the forefront (Brindley, 2015; Kim, 2015; Le Thi Lan, 2016). Remaining in power for so long, Chinese influence remains strong in Vietnam today.

At the centre of Confucianism is the belief of ancestor worship, humanism, and the importance of good moral character, with “cosmic harmony” reflecting one’s moral character (Zhang & Li, 2019). The belief that peace and benevolence in life are achieved by perfected morality and

that conversely, chaos and malevolence in one's life are a result of poor morality, ensures obedience to Confucianist practices and social cohesion (Kelley, 2006).

At the heart of Confucianism is the core belief of "Filial Piety", in which one is devoted and forever in debt to one's parents and family, ensures loyalty and obedience to hierarchical structures, whilst also contributing to a collective (as opposed to individualistic) mentality within the family and society in general (Errasti et al., 2018). The individualist/collectivist divide is the most frequently used measure to differentiate between Western and Eastern cultures, generally inferring "individual rights versus collective duties, with empirical evidence that characterize Western countries with individualism and Eastern countries with collectivism" (Errasti et al., 2018: 377). Relationships are based upon an age-related hierarchy, and in the traditional family home, gender positions whereby the wife obeys the husband are expected (Hwang, 1999; Chen, 2014; Graham et al., 2014; Volkmann, 2005). In propagating patriarchal relationships with women subordinate to men, the previous matriarchal Vietnamese way of life dissolved under Chinese rule (Slote & De Vos, 1998), and is generally still present in modern Vietnam (Grosse, 2015).

Cosmic harmony, moral character and filial piety all underwrite the traditionally Confucian concept of "face", known as *thể diện* in Vietnamese, whereby people "preserve their face (i.e., their self-image) by behaving in compliance with what is considered appropriate by the society" (Nguyen, 2017: 79). Face cultures, contrary to dignity cultures such as the UK and USA, view their worth through the eyes of others rather than themselves, with Borton and Ryder adding "Loss of face is painful in any society, but unbearable in Vietnam. The Vietnamese have an expression: "Better to die than to lose face" (Borton & Ryder, 2000: 24). One keeps their face by demonstrating good moral character and harmony in one's life at all times, thus extreme emotions are perceived negatively as this symbolises a lack of both (Grosse, 2015; Kelley, 2006; Miller & Shahriari, 2015; Murray, 2021). The "ying" and "yang" of Confucian, Buddhist and Vietnamese culture means that compromise over disagreement is always the preference, with the word "no" rarely uttered, because refusal causes a loss of face (Borton & Ryder, 2000).

Further intensifying this, when one loses face, so too does one's close ties; be it family, friends, or work relations (Murray, 2021). Social relationships are created on a sponsorship basis in that, if someone introduces two people to each other, the actions of those two people, whether positive or negative, are reflected onto the person who introduced them (Borton & Ryder, 2000). This creates societal cohesion and control in the form of conformity and self-

control; with a person's position within society, and thus their duties, responsibilities, privileges, and rights, being a direct reflection on their ability to maintain face and demonstrate the highest levels of social competence, respect, and morality (Borton & Ryder, 2000).

Complimenting this, the most pervasive of all Buddhism's core ideas in Vietnam, is karma (*ngiệp*) (Harvey, 2013; Hoang, 2017). Providing the spiritual underpinnings of Vietnamese society, "Karma refers to the spiritual principle of cause and effect where intentions and actions of a person (cause) will affect his future outcomes (effects). This concept is related to that of reincarnation because one's karma will determine one's fate in the next life" (Vuong et al., 2018: 4). In traditional Buddhist philosophy for example, disability is viewed as a form of misfortune that reveals past karma and thus, an indicator of "parental moral misbehaviour" (Gammeltoft, 2014: 166). This runs parallel to the core values of Confucian beliefs above and manifests itself in everyday self-restraint (out of fear for future outcomes from present actions) and the societal judgement that accompanies (Vuong et al., 2018).

Today, the majority of Vietnamese identify themselves as having no religion, however "[t]he worshipping of ancestors, historical heroes, local deities and goddesses, local festivals honoring village gods, various forms of exorcism of harmful forces, spirit-possession, the practices of divinations; the offering to deities, goddesses, even the Buddha for luck" (Vuong et al., 2018: 4), are all common and popular practices (Cleary, 1991; Toan-Anh, 2005; Kendall, 2011; Tran, 2017). Though these enmeshed practices are synonymous with religious rituals, they are not considered as such by citizens as their heritage does not align with any singular major world religion. Instead, in modern Vietnam, Confucianism, Buddhism and Taoism, along with the Vietnamese folklorist culture, blend together to form a specific worldview (Tho, 2016). The values and beliefs from these strands have worked both with and against each other in a term named *cultural additivity*, "which simply means the adding of different ideas, beliefs, artefacts into one's existing system whether or not there is reconciliation of contradictions" (Vuong et al., 2018) and have resulted in what Tran (1980) addresses as the six core values of Vietnamese thinking: diligence, heroism, creativeness, optimism, charity, and devotion. Despite major events and time shifts, these have remained core and are present in current Vietnamese culture (Nguyen, 2016; Pham, 2003) however in more recent decades, another strain of thought has come to be gradually assimilated, that of the West.

2.3.1.2 The West, Colonial Powers, and the Rise of Communism

By 1887, French colonial powers had conquered the whole of Vietnam, replacing “the Chinese based Confucian legal and administration systems with a Westernized system” (Nguyen, 2016). They made a conscious effort to eradicate Chinese influence, attempting to replace the writing systems and religion. Despite French efforts however, the existing cultural influence of China was too strong to dispel entirely, and instead what occurred was a new hybrid culture borne from the combining of, and continuous interface between, the cultural identity of the colonised, and colonisers (Bhabha, 1989), evidenced today with a Latin-scripted language with Chinese words, and with Roman Catholicism being the second largest religion in Vietnam after Buddhism (Vuong et al., 2018).

Though French rulers claimed to have improved the lives of Native Vietnamese, namely through better-quality healthcare, education, and increased gross domestic product, very few natives saw any of these benefits (Goscha, 2016). Improved healthcare and education existed only for the French residing in Vietnam, with fewer Vietnamese literate than when under Chinese control (Brindley, 2015; Miller & Shahriari, 2015; Moss, 2021). Further, though agriculture dramatically increased particularly in the Mekong Delta during the French reign, the native Vietnamese did not see the returns of such, with profits instead going to those in power (Windrow & Chappell, 1998). Thus, colonial rule and capitalism were considered synonymous with one another and, with native Vietnamese rarely benefitting from either, this prompted the resistance movement towards national liberation (Britannica, 2022) .

In 1945, leader and founder of the communist party Ho Chi Minh, introduced Marxist-Leninism to the country and led the Viet Minh Independence Movement, effectively ending colonial rule in the North of Vietnam (Vu, 2017) Marking the political division between the North (mainly influenced by the Soviet Union and communist allies) and the South (mainly influenced by the USA and anti-communist allies), communism was in direct conflict of previous colonial rule, and sought to abandon capitalism for the greater good of the people, instead reinstating traditional values and ways of life (Anderson, 2002; Chesneaux, 1969). Though Ho Chi Minh was determined to see the South of Vietnam also under Communist rule, the USA along with many other western governments, were concerned about the spread of communism throughout Asia. The USA thus intervened, leading to the American/Vietnamese war that lasted until 1975 (Vu, 2017). During this time, the majority of fighting took place in the South. Almost half the crops in South Vietnam were destroyed by either bombing or the spraying of chemicals, leaving many rural dwellers at and over the brink of starvation (Anderson, 2002). Vietnam’s social fabric was torn apart, people were separated from their families, and they abandoned their traditional rural life in the pursuit of safety in cities, severing the close family

ties characteristic of Vietnam (Karnow, 1988). Eventually, American forces gradually drew down their numbers and left completely, leaving a depleted and demoralised ARVN (Army of the Republic of Vietnam), at which point, Vietnam was officially reunified under communist rule and renamed the Socialist Republic of Vietnam (Ruane, 1998).

The new government assimilated control of the economy and public affairs, seizing private enterprises and land, with members of the Vietnamese Communist Party often being the recipients of the apprehended goods (Vu, 2017). Agriculture was collectivised in the South as it had been in the North, and farmers were forced to sell their crops to the government for a very low cost (Raymond, 2008). Trade between towns and villages was made illegal and post war food shortages continued to plague Vietnam (Duiker, 1990). With a strong doctrine that included re-education camps for those who opposed communist thought, and heavy censorship of any opinion or material that ran counter to the regime, many people succumbed to this new authoritarian way of thinking.

The war, subsequent post-war landscape, and communist influence in general, has undoubtedly impacted Vietnamese culture today, however the landscape is somewhat different today. Whilst Vietnam remains one of only 5 communist states left in the world (Britannica, 2022a), their economic aims and policies have changed significantly since communist rule was first imposed (Overseas Development Institute, 2011).

In the early 1980s, the Vietnamese government realised that the existing system would not facilitate a growing economy, and with aims of becoming a modernised and industrialised society, Vietnam adjusted their economic system (and in turn their values and beliefs) in order to compete in a globalised world (Nguyen, 2017). The Doi Moi agreement opened Vietnam up to international trade, and central planning was abandoned, meaning market forces could respond to supply and demand (Goscha, 2016). Collectivised farming ceased, and farmers had autonomy over the selling of their own crops, rapidly propelling Vietnam to be one of the biggest rice producers globally, and in a new position as a socialist market-based economy (Levinson, 2002). The economy has since continued to grow (explored in further depth in Section 2.2.4) and, with this new way of thinking and open-door policy, Vietnamese culture and society has once again modified in response (Kien & Heo, 2008). Indeed, with a particularly young population, the majority of Vietnamese citizens have no living memory of the war and instead have grown up in times of economic and social development (Duiker, 1990; Kien & Heo, 2008; Luong, 2003). As such, the current Vietnamese population is consistently identified as one of the most optimistic in the world (Nielsen, 2021). This likely impacting their

predictions for the future and climate change. Though, there appears to be no existing study that considers climate change perceptions in Vietnam from such a socio-cultural dichotomy.

Further, the “Western ideal” is now prevalent in Vietnam (Nguyen, 2016), particularly in urban areas where approximately 33 percent of the population lives (General Statistics Office of Vietnam, 2021). There is a visible difference between rural and urban values and lifestyles, with urban areas “very commercially oriented and motivated”, and rural locations following more traditional values (Cultural Atlas, 2021: no page). Though the Vietnamese do not typically arrange people by “class” (with the social hierarchy mainly being determined by age, gender, and education), the difference in wealth between rural and urban areas means there is little middle ground, creating a divide whereby people are categorised as either rich or poor (Overseas Development Institute, 2011). Terms such as “*nha que*”, translating to “country person”, carries with it negative connotations (Michaud, 2017), and this widening gap is compounding many inequalities. This particular divide between rural and urban cultures means that children’s lived experiences are likely very different. This may have an impact on their situated knowing and perceptions surrounding climate change.

2.3.2 Children and Families

In Vietnam, family is perhaps the most important aspect of life, with both ancestors and future generations considered within this collective (Dung, 2008; Hwang, 1999). As a collectivist culture, one’s roles and responsibilities to the family are more important than individual wants and needs, with the health and cohesiveness of the family being priority above anything else (Borton & Ryder, 2000; Hofstede, 2003). Reflecting this, surnames come before first names, because one’s family name is considered of greater importance (Lee & Roberts, 2009). Families are typically patriarchal, with the oldest male exerting the most authority and responsibility, delegating tasks and making final decisions (Mestechkina et al., 2013). Women, on the other hand, under Confucianist thought, are expected to be obedient and submissive (Nguyen & Simkin, 2017; Slote & De Vos, 1998).

As a society influenced by Confucianism, Vietnamese perspectives of children, childhood and family traditionally embody the core value of “filial piety”; which includes “the important virtue and responsibility for the children to respect, care for, and bring honour to their families” (Chen, 2014: 308). *Filial Piety* is taught from early childhood, meaning hierarchical structuring is reaffirmed from birth (Dung, 2008). Age related structures where age is seen as a virtue, and rarely challenged, is reaffirmed with sayings such as ‘*ứng mà đòi khôn hơn vịt*’ (the egg cannot be as clever as the duck) (Truong et al., 2017: 81).

It also embeds the core value of avoiding conflict, with disagreements considered as a loss of face (Liu, 2014; Sun, 1991). Unlike in religions such as Christianity whereby a “transcendent creator” is conceived as responsible for human life, children’s lives are an extension and continuation of their parents, and thus, it is a core belief that one should never bring their parents shame (Hwang, 1999: 169). With harmony being constantly sought this adds another layer of conformity, and ensues that outward conflict, disagreement and alternative ideological and moral opinions that differ from superiors, go unsaid as not only would ones self lose face, but so too would ones social ties (Liu, 2014).

Parents in Vietnam traditionally decide almost every aspect of their child’s life (Graham et al., 2014). Similarly, in schooling, children are expected to offer the same respect to their teachers as they would to a ruler, criticism of teacher or parents is not usually accepted (Truong & Fisher, 1997), and “there is thus a traditional and deep-rooted attitude of shaping child-related policies based on adults’ experiences and limited skills in working with children” (Phelps et al., 2014: 35). This one directional power relationship is reflected in the Vietnamese saying “Cha mẹ đặt đâu con ngồi đó” or “Children must sit wherever their parents put them”(Liu, 2004: 388).

However, as western thought penetrates Vietnam and as family dynamics change, Confucianism is not the sole influence on parenting and perceptions of children and family. In contemporary Vietnam, the above quote has been adapted and some parents are heard saying "*parents must sit where their children want*" (Vi, pers. comms. 2021), evidencing a clear shift in the adult/child dynamic. With much wider access to information and global thought, youth cultures in Vietnam are beginning to challenge traditional values (Graham et al., 2014; Mestechkina et al., 2013; Nguyen, 2016; Rachel Burr, 2006). Indeed, particularly since the enactment of Vietnams “Doi Moi” policy and the subsequent increase in international trade and globalisation, there has been a prominent shift amongst youth culture towards an increasing diversification of values particularly in reference to “individual interests, citizen’s rights, freedom, democracy, tolerance and acceptance of differences” (Graham et al., 2014: 42). This has included, for some, a specific attention towards climate change (United Nations Development Programme, 2021), though the scope of influence to which this has on children’s perceptions in the Delta specifically, is unidentified.

Interestingly, Vietnam was the second in the world, and the first in South-East Asia, to sign the UNCRC (Graham et al., 2014: 42). Since then, poverty reductions, greater and free access to both healthcare and education, and initiatives aimed at raising children’s advocacy (for example children’s rights clubs, television programmes, advocacy activities from the Ho Chi

Minh Communist Youth Union⁴ and the integration of Children's rights into the school curriculum), have directly impacted the welfare of children, and have signalled a strong desire to raise the profile and awareness of children's rights (Graham et al., 2014: 41). This apparent political will however, in action within the Vietnamese context, faces the aforementioned cultural barriers. Indeed, there is still a tendency to frame child-related policies within adults' experiences, with critiques highlighting how protection rights have been given significant emphasis over participation rights (Pham & Jones, 2005). The child's voice is often considered in a tokenistic way, with some scholars branding Vietnam's application of the UNCRC as incoherent, questioning the relevance of the UNCRC within the cultural, historical, and legal context of Vietnam (Burr, 2002; Volkmann, 2005; Rachel Burr, 2006). For Burr, this is particularly so when considering that the UNCRC "assumes that children are universally the same" and "its provisions are weighted in favour of a modern, western sense of the individual" (Burr, 2002: 49) which in many ways lies in direct contradiction of the Vietnamese family collective and *filial piety*. As Pham and Jones (2005: 5) argue:

"While the other three core rights of the CRC (survival, development and protection) have been enhanced, child participation has not been accorded equal emphasis. This lacuna can mostly be explained by a general dearth of understanding about the importance of children's participation (among both adults and children), the traditional and deep-rooted attitude of shaping child-related policies based on adults' experiences and limited skills in working with children. Children's limited participation skills may constitute an additional factor."

Overall, as a society based upon age related hierarchical structures, children's participation and access to voice is extremely challenging, for both adults and children alike, and ascertaining their perceptions of issues that are, and will continue to impact them, is increasingly important. Understanding how they view their own agency also requires identification.

2.3.3 Education and Curriculum

Whilst this literature review has already considered education in Vietnam, it has not yet done so from the position of culture. It is important to do so because educational systems and culture are tightly intertwined both reflecting and reinforcing one another. Thus, education

⁴ Under the leadership of the Communist Party of Vietnam, the Ho Chi Minh Communist Youth Union is the largest social-political organisation of Vietnamese Youth.

can have a large impact on the socio-cultural norms and perceptions that pertain to the environment and Climate Change (Masseman, 2007).

Education is held in high regard in Vietnam, often put down to several key facilitators. First, the influence of Confucian, Buddhist, and Taoist thought postulates that, more important than financial wealth, one's educational attainments, knowledge and virtue are key to achieving social and moral acceptance (Tho, 2016). This key underpinning that runs throughout Vietnam encourages parents and children alike to invest a great deal of time and money into school and education (Hema Ramanathan et al., 2010; Nguyen, 2016). Often attending lessons outside of school hours (if finances allow), with parents actively involved in their children's education, education is seen as the key to social and moral mobility, particularly important for a post war country experiencing rapid economic growth (Truong et al., 2017). This can create a focus on academic subjects in the classroom that detract away from subjects such as the Environment and extra-curricular activities (Nguyen, 2019).

Teaching is considered one of the most respected professions within the country, and thus they experience the benefits of being considered high in the hierarchical chain (Graham et al., 2014). School environments typically reflect the hierarchy, with children having limited opportunity or confidence to challenge or ask questions (Graham et al., 2014). Confucian thought not only applies high value to education, but it also navigates the method of transmission. Typically, Asian education follows a rote learning style, with students considered empty vessels (Freire & Ramos, 1970) waiting to be filled with the knowledge of which the educator bears (Nguyen, 2011).

However, since the insurrection of the Doi Moi policy era, education reform has been a key priority amongst many national renovations (Harman & Bich, 2010; Kien & Heo, 2008). Initiating their efforts in the 1990s, the main goal of the government was to change from "the traditional Confucian rote-learning teacher-centred model of education to the Western model of interactive student-centred education" (Nguyen, 2017: 1) and to increase access to education for all (Nguyen, 2011). As Vietnam moved into industrialisation, modernisation, and global integration, by reviving the education system Vietnam hoped to create a workforce of skilled, creative, and active learners prepared to lead the country as they entered the global market (Harman & Bich, 2010). However, the aforementioned cultural context still remains in Vietnam, and has made this particularly challenging (Attfield & Vu, 2013). Whilst Vietnam now has high enrolment rates, challenges such as class size, typically didactic rote learning approaches, minimised student voice and an academic focus throughout society, prevent

creative learning approaches from being commonplace and localised teaching, which likely impacts access to, and the content of, Climate Change education.

2.3.4 Nature and Environment

Traditional Vietnamese thought and Daoism both consider the human-nature relationship as a partnership (Duong & van den Born, 2019). One is not separate from nature and is instead a part of it. Therefore, to care for nature is to care for oneself, and to disrespect it, is to do the opposite (Wong, 2009). There is “desire for harmony and balance with nature in Vietnamese culture” (Duong & van den Born, 2019) however, research conducted by VI and Rambo (2003) suggested Vietnamese consciousness of nature had changed from these ancient teachings. Working with 20 urban participants, they categorised responses into two human-nature models. One viewed nature as a limited resource for human exploitation whilst the second positioned humans as interactive with nature, with humans as guardians and stewards of nature. In both these stances however, humans were positioned as controllers of nature, whether that be control be for the greater good of the environment, or not. However, this study was conducted with a small sample, and with urban participants. It was also a questionnaire, and thus did not get to the root of Vietnamese practices in relation to nature. In research with rural communities, findings suggest that they still align themselves more with a transactional relationship with nature – one of friendship and mutual care. In another study, with a largely even distribution of urban and rural sample groups Duong and Born concluded (2019: 10):

“Mastery over nature was mildly rejected, Family with nature was strongly adhered to, and more egocentric ideas were widely held as well. Some slight variation was found in that relatively nature-dependent (rubber) farmers were somewhat more nature-friendly than their rice-growing colleagues and that the young and educated were somewhat more nature-friendly than the older or less educated.”

Clearly, there are disparities in the modern-day perception of nature in Vietnam. Though historically living at one with nature, colonial rule from the French and Americans brought “modern scientific, technical and industrial approaches and, some new political ideas including individualism, State-Nation system, democratic and human rights” (Culas, 2019: 10). The western approach to nature was technocratic, and one of mastery whereby humans use and manipulate nature for their personal use and gains. Since then, in an effort to maintain a high rate of economic growth, Vietnamese governments have continued to sacrifice the environment, instead opting for industrialisation and intensive agriculture (Sikor & O'Rourke, 1996; Bass et al., 2010; Culas, 2019). This has diluted some traditional values particularly in

urban contexts, however counter to this, Taoist thought avoids interfering with nature, and the development of science and technology (Hema Ramanathan et al., 2010). This has particular impacts relating to adaptation, mitigation, and resilience to Climate Change, that will be returned to shortly.

The traditional value of nature, and the implementation of practices to protect it, however, appears to be reinforced and upheld by other traditional values that seek to work for the benefit of the collective and family - including future, not yet born, generations (Monkhouse & Birkin, Jun 6, 2019). As a collectivist, as opposed to individualistic society, the social good of all is considered in individual decision-making processes (Xiang et al., 2019). This is particularly important in the context of Climate Change, where many of the worst impacts from Climate Change are predicted to occur beyond many people's lifetimes. Their collectivist nature provides many Vietnamese people with a sense of responsibility for those future generations, however for any reasonable action to be taken, one must have knowledge about those future challenges and risks for this worldview to have any impact on actions. The links between knowledge transitioning to action within different cultural and societal contexts is thus a key area of research in terms of perceptions and behaviours in responding to Climate Change.

Though these traditional beliefs still have a strong hold over Vietnam, clearly there are contradictions in some people's actions, with unsustainable practices taking place by both overseas investors and locals alike, which threaten the future of Vietnam (Hackney et al., 2020; Hoang, 2010). Indeed, these inconsistencies are mirrored in policy documents, where strives for industrialisation and modernity compete and contradict nature, sustainability, and the environment (Hoang et al., 2020).

Also of particular relevance here, is the Vietnamese cultural perception of natural disasters. As mentioned previously, Taoism traditionally encourages people to avoid interfering with nature. Further, the idea of karma, whereby ones past deeds (including those in a previous life) predict one's future suffering or fortune, also interacts with perceptions of natural disasters and thus, Climate Change (Chuang, 2002). This belief that events are thus predetermined can create a fatalistic outlook towards problems, increasing risky behaviours and decreasing mitigating actions (Dinh et al., 2020; Johnston et al., 2013; Nguetsa & Kouabenan, 2017). This can further lead Vietnamese to take reactive, as opposed to proactive, action in the face of challenges (Avason, 2021), including those associated with nature (Global Facility for Disaster Reduction and Recovery, 2017; Leitold et al., 2021). However, equally, this lies in contradiction with Hofstede, who characterises Vietnam as a Long-Term-Oriented (LTO) culture (Hofstede,

1984). This means they are typically able to consider future gains as opposed to short term gains (Wong & Wyr, 2016) and likely links back to thought for future generations in current decisions. Nevertheless, many socio-economic barriers can inhibit action, for example household poverty, and widespread weak infrastructure⁵ (World Bank, 2020). Nevertheless, these cultural traits appear to have potential leverage in the face of climate change. Vietnam, as a society, shows promise in creating the collective will to fight Climate Change for the benefit of all. Overall, and in comparison to many other cultures throughout the world, nature is held in high regard, though admittedly, and as Culas (2019) rightly points out, thorough studies in this area are lacking.

2.3.5 Concluding Thoughts

The above section, Research Context, has provided the underpinning understanding required to inform the research programme, and the findings and discussion. Vietnam is a unique country with specific geographic, politic, economic, social, and cultural conditions that are incomparable to any other location in the world. Not only is Vietnam one of the most vulnerable countries to Climate Change impacts in terms of geography, the social and economic conditions - whereby so many people rely on stable weather patterns and fresh water supply - mean that this vulnerability is significantly amplified. Embedded in a culture where children are traditionally not afforded a strong voice, and whereby the conditions, lifeworld's, and perspectives of those living in urban and rural contexts are so different, research that considers these variables from a qualitative perspective is necessary to contextualise many of the challenges being faced. The next session considers the theoretical underpinning for the research programme, exploring, for example, the concepts of children, childhood, and culture.

⁵ Vietnam ranks 89th out of 137 countries for quality of its infrastructure.

Chapter 3 Theoretical Underpinnings: Children, Culture, and Climate Change

Children are considered one of the most vulnerable groups to Climate Change globally. Children and childhood, however, are socially constructed, with culture having a huge influence on how such terms are defined. This, unsurprisingly, impacts children's experiences and interactions with Climate Change and its associated hazards, such as flooding. The interface between these three elements, children, culture, and Climate Change requires delineation in framing the research. This chapter will address these subjects both separately and combined, to enable the reader greater comprehension of the later chapters.

3.1 Childhood as a Social Construct

In 1962, historian Aries (1962) suggested, that whilst biological immaturity in humans was universal, *childhood* (in Europe at least) did not exist as a concept until the 1800s. In his examination of medieval artworks, Aries noted an absence of children, highlighting that instead, they were depicted as 'miniature adults'. Providing further evidence that the young and the mature lead lives not separate, but closely entwined; living, working and playing in similar ways (Orme, 1995), Aries argued that the period of life we now call childhood was undistinguishable from that of adults within medieval society.

However, whilst other historical artefacts and records do indeed validate that children were closely involved in adult society, medieval medicine treated children separately from adults, and there existed laws to protect the right of orphans; leading Šahar (1990) to suggest that children *were* recognised as distinct and separate from adults. Sahar (1990) adds that they even shared similar interpretations as the modern world, viewing them as vulnerable and in need of special protection. Adding to this, from the same medieval timeframe, there exists evidence of children plotting tricks independent from, and even against, adults; and coroner reports that confirm children collectively exploring and adventuring without their elders (Orme, 1995). This suggests that children saw *themselves* as separate from adults, allowing them to embody their own distinct culture aside from their seniors. Here lies clear evidence to dispute Aries' conclusions for a lack of childhood, with most historians and sociologists alike now agreeing that the concept of childhood *did* exist within medieval times and that children were viewed to some degree as separate from adults (Morrison, 2012a).

Aries' work however, was significant in that it did afford the now rather uncontested view, that childhood *is* a social construct, morphing and changing throughout space and time; highly

dependent and responsive to the societal needs in any given place and at any moment in time (Fass, 2007; Hsiung, 2008; Stearns, 2021). The version of 'childhood' depicted in the artworks examined by Aries then, reflect that specific social context; the social system and standard of living in that place during that time, much like the research within this thesis reflects the space and time from which it has been conducted.

Indeed, even in today's globalised world where similarities between cultures grow every day, variations in childhood are huge, and definitions as to what it means to be a child vary considerably (Beaumont, 2021). Nevertheless, particularly since the enactment of the United Nations Conventions on the Right of the Child (1989), a globalised definition of child is more-a-less accepted as "every human being below the age of 18 years unless under the law applicable to the child, majority is attained earlier" (1989). In terms of Climate Change and disaster resilience, this separates this group of people from adults, and recognises them as different, requiring a unique set of rights and protection (Carolyn Kousky, 2016).

Despite this globally significant agreement however, the way societies view children and childhood, still differs, and this has several consequences pertinent to this study. First, how children are perceived by adults has implications for how research involving them is carried out, and whether it is *on*, *with*, or *for* children (Corsaro & Molinari, 2018; Hardman, 2016; Kane, 2008; Lindon & Brodie, 2016; Lundy, 2007; Lundy et al., 2011; Punch, 2002). Indeed, as will be explored in the methodology section of this thesis, my perspective of children from which I view them as unique individuals, different, but no less important than, adults, has completely shaped the research design. Second, how children are viewed by society has very significant implications for how children are (or are not) included and engaged within issues pertinent to both global and local changes associated with Climate Change (Cutter-Mackenzie & Rousell, 2018; Halstead et al., 2021; Lawson et al., 2018; Martiskainen et al., 2020; Nguyen et al., 2018) and how they may or may not be impacted by such changes both now and in the future (Carolyn Kousky, 2016; Rousell et al., 2017; Sanson et al., 2018). As such, understanding these constructs will be vital in placing the findings into a contextual framework.

3.2 Learning Theory: The Construction of Knowledge and Perceptions

The construction of knowledge and perceptions has been considered from many disciplines, from neurological science and psychology, through to sociology, anthropology, and education. Each discipline contributes towards a broader understanding of child and human development, that informs theory, research, and practice around the globe (James et al., 1998; Lindon &

Brodie, 2016; Prout, 2002; Prout & James, 2014). Though over history there have been many opposing positions and debates, there is now a general agreement amongst disciplines that both *nature* and *nurture*, that is, both biological and environmental factors impact a child's development (James et al., 1998; Lindon & Brodie, 2016), and thus their knowledge and perceptions surrounding various phenomena including Climate Change and its associated hazards (Adger et al., 2012; Crona et al., 2013; Engesser & Brüggemann, 2016; Gifford, 2011; Yildiz et al., 2021). Here I will give a brief overview to some of the theory as relevant to this thesis, namely schemas, conceptual change, and socio-cultural influencers.

Child development does not occur in a vacuum (Bronfenbrenner, 1979; Vygotsky, 1978). Prior experiences, both those of formal learning and those considered informal, impact a child's knowledge and perception towards various phenomena. In an attempt to objectively analyse and understand the "black box" of the human mind, Cognitive Psychology has condensed mental processing down into units (Anderson, 2020). Systems of knowledge comprise of *schemata* or *propositions*, that link together to form theories or concepts (Carey, 1985; Tardiff et al., 2020). A schema is "a framework of acquired knowledge implemented within a network of connected neurons in which memory traces of associated information have been stored. This schema can, when activated, alter the manner in which information is processed" (Kesteren, 2013: 15). The degree of previous learning of a schema, and indeed other schemas that inform and interact with it, will influence how new information is acquired and stored, if indeed it is acquired and stored at all.

Prior learning then, both that which is formal and that which occurs via one's lived experiences, has a huge impact on future learning, and requires consideration from educators and policy makers worldwide (Anderson, 2020; Kesteren, 2013; Rebich & Gautier, 2005). Whole education systems are built upon this premise, with educational input scaffolded upon learning transmitted the previous lesson, term, year, key stage, and so on (Bruner, 1978). Of course, each child enters a learning environment with very different schemas, not least because learning does not only occur in the classroom (Gibbs, 2014).

For Climate Change education this is particularly important, particularly in those locations where impacts are already being felt (Baker, 2012; Nguyen et al., 2012), and in a post-truth era where active "debunking" of Climate Change science exists (Matthew d'Ancona, 2017). That is because schemas are not solely made up of individual chunks of knowledge, or prepositions. They consist of beliefs, lived experiences and perceptions, often with many inconsistencies and conflicting ideas. To rectify this disequilibrium, we organise and connect our ideas in a way

that creates a coherent narrative, eventually reaching equilibrium. We thus absorb information that more readily aligns with our worldview and existing schemas, though the information we absorb may not always be correct, and as we draw our ideas together, we make connections and assumptions that Chi and Roscoe (2002) name naive knowledge, that is, preconceptions and misconceptions.

These naive knowledges can be hard to change, as they are often embedded in a system that reinforces and upholds these incorrect ideas. This has brought a great deal of attention to conceptual change, with the first step to correcting pre and misconceptions, often being the identification of such. Preconceptions are considered easily revisable naive knowledges, often rectified with the explicit introduction of new knowledge that allows for the reorganisation or replacement of incorrect ideas. Misconceptions on the other hand, are considered more robust, and persist even when confronted with “ingenious forms of instruction” (Chi and Roscoe, 2002).

These theories, however, do little to further understanding of *where* these naive knowledges are coming from, and the detail to which they interact with and inform perceptions and worldviews. With these naive knowledges being such a huge barrier to the understanding messy subjects such as Climate Change (Cross & Congreve, 2021), identifying where these originate in a child’s environment, is essential. This turns attention towards the socio-cultural aspects of child development, with one of the most influential theories for understanding external factors, being that of Bronfenbrenner’s Ecological Systems Theory (1979) (Figure 3).

At the centre of Bronfenbrenner’s Theoretical model, is the individual child. Their perceptions, understanding and beliefs will somewhat be determined by their personal features, such as age, sex, and race. These are innate, and unchangeable factors that influence the child’s cognitive abilities, how they interact with the world and indeed, how the world interacts with them. For example, in almost all societies, one’s sex predetermines how those around them treat them, and thus the social experiences they have. Whilst these determinants are not managed by their environment, they indeed influence how one’s environment responds to them. Beyond the individual, are five systems, or layers that influence and interact with the

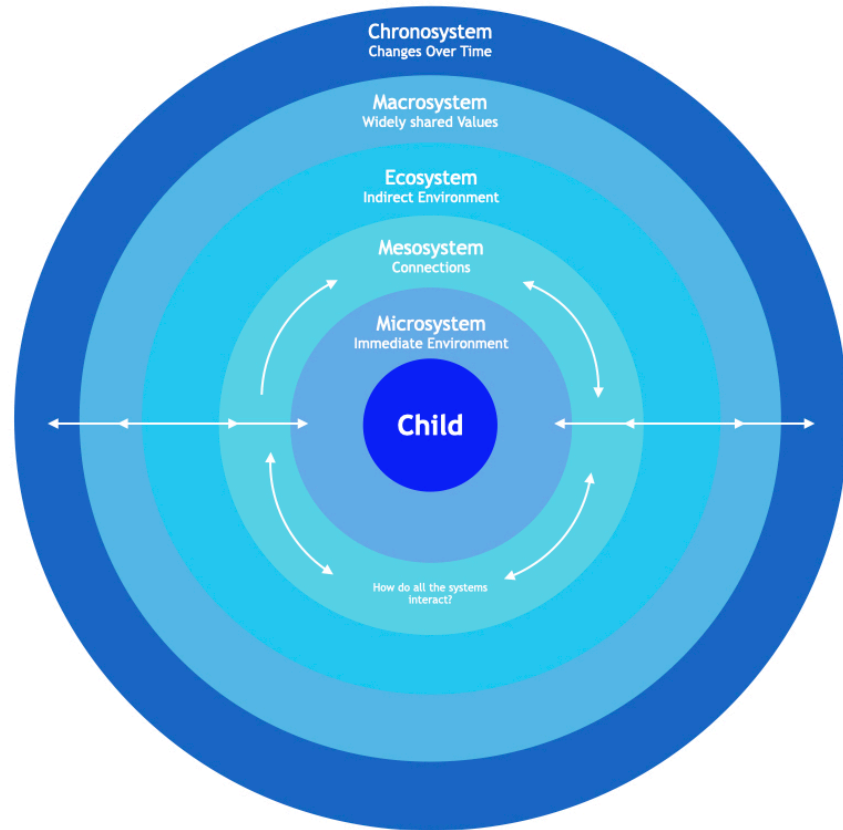


Figure 3: Bronfenbrenner's Ecological Systems Theory

child and one another to negotiate development. The first layer is the Microsystem. These comprise the child's direct environment, such as family, schoolteachers, peers, and the neighbourhood. Whilst these people and places are often considered some of the most important in a child's development, they themselves do not act entirely autonomously and are influenced, much as the child is, by the various external factors within the broader systems. The mesosystem is depicted next, to highlight these interactions between and within systems, highlighting the significance of such interconnected worlds. For example, this might include the connections between contexts such as home and school. The next system in Bronfenbrenner's model, is the Exosystem. This comprises those external influences that have more of an indirect, but not lesser, influence on the child, with Bronfenbrenner (1979: 25) explaining it as "one or more settings that do not involve the developing person as an active participant, but in which events occur that affect or are affected by, what happens in the setting containing the developing person". This could be local policies, teacher training, parental income, and so on – all of which impact the experience of the child. Beyond this is the Macrosystem, which entails the larger cultural attitudes and beliefs that most often have been embedded into a society over time, and that indeed inform the daily practices within a child's microsystem (Onwuegbuzie et al., 2013). Though Bronfenbrenner only updated to include the

final system, the Chronosystem, in 1979, this is particularly applicable to this study, as this represents changes over time. It highlights how beliefs and components of each layer are not static, morphing, changing, and responding to events over time. It puts an emphasis on changes within all of the other four systems, for example a parent's loss of job, a flood event, political shifts or, most apt here, Climate Change.

Bronfenbrenner's theory has been applied to a broad range of contexts, from disaster resilience (Boon, 2016), to the institutionalisation of children (Rus et al., 2010). However, it has not gone without contest. Indeed, Velez-Agosto criticises his initial works and subsequent revisions, for failing to provide a "proper in-depth definition of culture and an acknowledgment of its important role in human development" (Vélez-Agosto et al., 2017: 903). The theory is however, an extremely useful tool for understanding the systems that impact child development and thus analysis of both Vietnamese culture and cultural theory are included in this thesis and are drawn upon in later discussions.

3.3 Culture

An understanding of culture is critical when researching how people perceive flooding and Climate Change, because people's perceptions and behaviours are governed by social and cultural values (Hofstede, 1991). Though not every researcher chooses to investigate culture's role specifically, there is general consensus across the social disciplines to its place in governing individual choices. The overall agreement is that hazards and threats such as Climate Change and flooding are not merely viewed by individuals in an objective sense, but are instead filtered through individual lenses that are indeed shaped by our socio-cultural upbringings and environment (Benadusi, 2014; Douglas & Wildavsky, 1985; Masuda & Garvin, 2006).

The following section will first explore some definitions of culture relevant to this thesis, before addressing the key features of such. With a particular interest in its application to Climate Change and flooding, the chapter will address children's cultures, before including a specific look at education's role in both producing, and being a product of, culture. The literature included here is diverse, drawing from many disciplines throughout the social sciences; particularly Anthropology, Human Geography, Cultural Psychology, Sociology, Disaster Risk Management and Management and Organisational Theory. This is because cultural research is not confined to one discipline, and each perspective provides something to the larger understanding of culture, its functioning, how it is affected and what it affects.

3.3.1 Defining Culture

In illustrating the nuanced, subjective and widely variable interpretations of the word culture, Raymond Williams (1976: 76), a Marxist well known for his works on the subject, once referred to culture as 'one of the two or three most complicated words in the English language', before admitting three years later, 'I don't know how many times I've wished I'd never heard the damned word' (1979: 154). The semantics of the word are complex, with academic and public discourses reflecting this so much so that in 1952, when two Anthropologists Kroeber and Kluckhohn (1952) conducted a critical analysis of the existing discourse surrounding culture, they compiled a list of 164 definitions. Over half a century later, and despite the common objective amongst many scholars engaged in cultural research being to "limit, specify, focus and contain" the meaning of culture and to provide a "theoretically more powerful concept" (Geertz, 1973: 4), there seems to be even more confusion over the word today. In the words of Keesing, "modern anthropologists have not agreed on the best way to narrow and sharpen the central conceptualisation" (Keesing, 1974: 73) and instead what has been created, it a landscape with less clarity and more debate than ever before. It is in part for that reason why it is beyond the scope of this thesis to critically analyse the semantics of the word to any degree even close to that of Kroeber and Kluckon (1952) or Williams (1979; 1976; 1981). Instead however, it is necessary to discuss several key definitions before clarifying my own stance from which I apply to this research, before outlining some of the key features discussed in the literature.

Geert Hofstede (2003: 9) offers a simple but well referenced definition of culture, likening it to shared mental software or 'the collective programming of the mind which distinguishes the members of one group or category of people from another'. Kluckhohn's (1951) rather comprehensive interpretation (from which Hofstede's is built upon), describes culture as the:

"patterned ways of thinking, feeling and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiment in artefacts; the essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached values."

Overall, both Kluckhohn and Hostede consider culture in the subjective sense, or as the "beliefs, values, and internalised interaction patterns" of a society (Minkov & Hofstede, 2013: 13). Reaffirming culture as "in people's heads" (Eller, 2020), but with a note towards external language dialect, Triandis (1994: 19) defines culture as a "shared meaning system found among those who speak a particular language dialect, during a specific historic period, in a

definable geographic region". Brown (1991: 40) however, views culture as "the conventional patterns of thought, activity, and artefact that are passed on from generation to generation" thus viewing culture as a system of behaviours, or "social facts" (Eller, 2020: 25).

The main debate lies with whether or not culture is unobservable ideas and beliefs, or as the observable behaviours and products of that behaviour (Minkov & Hofstede, 2013; Eller, 2020), however perhaps the most widely accepted position, within anthropology at least, sings much to the same tune as Haviland (1990: 30); describing culture as "not observable behaviour, but rather the values and beliefs that people use to interpret experience and generate behaviour, and that is reflected in their behaviour". Whilst making a clear distinction between what is at a culture's core and what is the externally outputted consequences of such, it does provide the rationale for measuring observable behaviour in cultural research, whilst also ensuring there is not too much emphasis put on it, particularly when there are so many variables in measuring behaviour.

Alternative definitions exist to unearth answers to different questions, and thus each definition lends itself to specific lines of inquiry, discipline(s), investigation(s), method(s), finding(s) and answer(s). For this reason and much in the same vein as Sagall (1984), I do not believe a universally agreed definition necessary. Instead, what I believe is required, is to highlight my personal alignment within these definitions, in the hopes of evading any confusion in the interpretation of my findings and discussion.

There are two definitions pertinent to this research. First, is Brannen et al.:

[Culture] is a combination of interdependent, gradually changing elements – including assumptions, beliefs, values, practices and institutions – that is distinctive to a particular society. (Brannen et al., 2017: 27)

Second, is Eller:

Culture may be understood as those ways of thinking, feeling, and behaving, and the social and material products of those ways, which are shared among a group of people not on the basis of innate or physical trait but rather on the basis of common experience and mutual learning. (Eller, 2020: 26)

Though this definition offered by Brannen et al. is given within the context of Management and Organisational Theory, it nonetheless carries significant weight in the context of this study because first, much like Wolf (1982), it recognises culture as active and continuously evolving through time, whilst much like Haviland (1990), it appreciates both the tangible and intangible elements of culture. Eller's definition too encapsulates these elements, however, also adds the

caveat of cultures being based upon “common experience and mutual learning”; which in the context of this study, provides some of the rationale for focussing on schooling and education.

As made explicit earlier however, two single and succinct definitions cannot encapsulate the true complexities of culture, and for that reason, the next section will address some of the key features of cultures as theorised by various authors, making links to section 2.3, where many of the features discussed are applied within the Vietnamese context.

3.3.2 Key Features of Culture

3.3.2.1 Learned and Shared

There are various features to culture, but perhaps the two main defining ones are that culture is learned and culture is shared (Hofstede, 1984). Culture is not an innate biological predisposition and is instead a product of socialisation (Eagleton, 2016). It is historically derived and passed from one generation to the next, both in terms of explicit teaching and observation, and whilst “culture is not “in” humans at birth, it is “in” humans by the time they reach maturity” (Eller, 2020: 27). Under normative circumstances, culture is assimilated and mastered during childhood, however children are not passive in this process as once thought (Legare, 2019; Vygotsky, 1978). Cultural learners are active participants in their culturalisation, interpreting their observations and learning experiences to make meaning from them and construct their own reality, often with the support of others already competent within the society (parents, friends, family members, teachers etc.) (Vygotsky, 1978). In so doing, those learning gradually assimilate their *own* construction of the society’s values and beliefs into their everyday practices, behaviours, and thoughts (Super et al., 2013). This learning process ensures culture is *shared*, because learning of this manner cannot exist in isolation and instead depends on a *collective* group of people (better known as a society) who share similar beliefs and values and the associated manifestations of such (behaviours, symbols, thoughts, artefacts), from which meaning is made (Samovar et al., 2009).

Interestingly however, there is evidence that, though subtle changes and refinement occur throughout the lifespan, the fundamental underpinnings of an individual’s worldview, that is, their core and deep rooted values and beliefs, are formed in childhood, and significantly harder to change beyond the age of 12 (Hofstede, 2001; Ishii et al., 2009). A worldview is a core set of guiding attitudinal, ideological, philosophical, and/or religious beliefs that shape how individuals internalise their external world (Valk, 2021). They are ultimately culture *working out* in individual practice (Gray, 2011), and thus the socio-cultural conditions that children experience during these early years are of great importance to shaping future beliefs

surrounding nature and climate change. Not only do worldviews affect climate perceptions, but climate messages are more effective when they align with the audience's worldview, and are thus important considerations in climate communication (Hornsey, 2021).

Of course, worldviews can and do change beyond the age of 12 (Winterbottom et al., 2020). Indeed, now that humans have greater access to other cultures and worldviews that might stand in opposition to one another, children's worldviews are becoming increasingly hybrid, merging elements from a variety of cultural sources (Kuusisto, 2020). Children have much more autonomy in their worldviews than might once have been assumed, and these are added to, pruned, and refined throughout the life course (Helve, 2015). Further, there are whole sectors of research and practice dedicated to encouraging humans to challenge their often unconscious worldviews (e.g., Transformational learning) (Mezirow, 1991). Nevertheless, they remain significantly more robust than singular opinions and such research and practice occurs because there *are* notoriously hard to change. This affirms the importance of this age, and the events and learning that take place within it (Taylor, 2012). This is particularly so in the Mekong Delta, where rapid environmental changes are occurring. The Mekong Deltas survival is intrinsically dependent on the actions of these children as they progress through to adulthood, therefore the values and beliefs that these children manifest now will play some part in determining how these environmental challenges play out and overall, govern the future resilience of these communities.

3.3.2.2 Normalcy

Different but related to sharedness, the normalcy of everyday practices, beliefs and values is an essential part of culture. Cultural traits, when performed in the society from which they derive, are "normal" and go unchallenged, whereas deviations from this are considered peculiar, abnormal, or, as societies become more dynamic, "simply different" (Minkov & Hofstede, 2013: 22). However cultural norms are not universally shared and what is accepted as normal behaviour in one culture may be deemed divergent in another (Minkov & Hofstede, 2013). Bearing this cultural relativity in mind is imperative to the research process, particularly because I am a cultural outsider. Therefore, what Vietnamese society understand to be "good", "bad", "right" or "wrong", "may or may not reflect [the] mainstream Western models" from which I have been culturally situated (Graham et al., 2014: 41). As such:

[O]ne must suspend judgement of other peoples' practices in order to understand them in their own cultural terms. Only through such an approach can one gain a meaningful view of the values and beliefs that underlie the behaviours and institutions of other peoples and societies (Haviland et al., 2017: 343).

Normalcy, however, does not prevent difference, nor does it prevent change.

3.3.2.3 Both Static and Evolving

With both globalisation and various foreign occupancies, Vietnam's culture has become increasingly "westernised" and has subsequently assimilated many cultures to create its own, unique culture. With Chinese, French, and American culture, Catholicism and Buddhism, Confucianism and so on all contributing, Vietnam has, over many centuries, willing or not, integrated an array of cultures to create what exists today (Vuong et al., 2018). Further, Vietnam has experienced significant economic development in recent years, particularly since the enactment of Vietnam's "Doi Moi" (renovation) policy in 1986 (Were, 2018). Since then, Vietnam has grown from one of the poorest nations in the world to a middle-income country with "economic growth of 6-7% [that] rivals China" (Vanham, 2018). Whether culture drives economic development or vice versa is debated, with Marxian perspectives suggesting the former and Weberian positions concluding the reverse (Inglehart, 1997), however what is most likely is a combination of the two, or as Brannen et al. (2017: 50) phrase it; "a complex reciprocal relationship between various aspects of politics, economics and culture". Culture reflects the needs of its society at the time, and thus, whilst many aspects are unquestionably passed from one generation to the next, some go challenged and are forced to change (Njogu, 2017; Vuong, Ho et al., 2018).

It is important to consider the intrinsic web of these relationships in the face of environmental changes in Vietnam today. Climate change is interwoven with cultural, economic, and political elements and thus addressing the issue is nuanced and messy (Crow & Boykoff, 2014). As changes to Vietnam's environment continue, this will no doubt challenge and navigate the cultural, political, and economic landscape further (Adger, 1999; Bayrak et al., 2022; Do, 2021); much the same reciprocal way as outlined by Brannan et al. (2017).

Despite the fluid nature of culture however, the "combination of interdependent" elements also makes culture hard to change, even for the most impressionable and powerful within society (Brannen et al., 2017: 50). No one mechanism can be changed with ease because each component of culture reinforces, and is reinforced by, the others, enabling core values and beliefs to be upheld (Groh, 2020). An example pertinent to Vietnam might be that its culture has a high-power distance (Hofstede Insights, 2022), meaning hierarchical structures are usually adhered to with little questioning from anyone within the chain, regardless of their position (Truong et al., 2017). This core belief is upheld via social and structural systems; such as schools that value teacher authority, a one party state political system, workplace

management practices and familial roles that place elders at the top of the hierarchy (Avason, 2021; Murray, 2021; Sun, 1991; Zhao et al., 2011). Throughout one's life, if growing up in Vietnam, this cultural value is embedded as normative practice, and goes relatively unquestioned in doing so because the social structures from which one has grown up in, all work together to reaffirm it (Hai, 2019; Legare, 2019; Nguyen, 2016; Vuong et al., 2018).

3.3.2.4 Complexity

However, people do not grow up in a cultural vacuum and instead are exposed to various and overlapping cultural contexts, meaning they embody numerous cultural identities (Hornsey, 2021; Vuong et al., 2018; Vuong et al., 2018). For example, the children in this study belong to Vietnamese culture, Asian culture, their schools' culture, a gendered culture, a generational culture, perhaps a religious culture and so on; and it will not be the same for each child. Those growing up in a rural location will experience a different culture to those who reside in the city (Shibuya, 2018), and those in the North of Vietnam will most definitely be embedded in a culturally distinct environment from those in this study in the South (Li et al., 2018).

These examples are not exhaustive, however by laying them out to the reader, the complexity that comes with identifying patterns, particularly in national culture, becomes clear. Which culture has the most power in individual decision making? Are cultures ever comparable when there are so many variations that cannot be controlled for? How can we find "expected behaviours" of a culture when an individual belongs to so many? Does national culture, given the vast array of subcultures that exist within, really exist? The latter question is why McSweeney (2002) argues against using national culture as a unit of analysis – simply because they do not exist. Indeed, making cultural research particularly challenging, Oliveira (2020) explains:

Cultures are made up of individuals and thus many differences can be found in the midst of an attempted standardization, and the desire to put everyone in the same "basket" (Au-Yong-Oliveira, 2020: 4).

It is true that the complexities surrounding and embedded within culture, particularly when brought together with both innate biological and predetermined factors as well as an individual's personal experiences, make cultural research difficult (Brannen et al., 2017), however, it does not render it useless as, "the more accurately we know a person's mental programming and the situation, the more sure our predictions can be" (Hofstede, 2003: 2).

However, Minkov and Hofstede (2013) argue that, though large variations may exist within a national cultures' behaviour:

If we were only interested in individuals, and not in systems of people, whole branches of human knowledge – such as economics, management and organisation, sociology, demography, history and political science – would be wiped out. (Minkov and Hofstede, 2013: 25).

Instead, by identifying patterns and exploring how these overlay individual and environmental elements, as humans we can begin to understand, address and “learn from complexity” (Lane et al., 2009: 29). By no means do I aim to identify wide-scale cultural patterns in this research, it is this stance that provides much of the rationale for considering the role of culture within this study, and why I will draw upon many identified trends in Vietnamese culture. By fully incorporating an understanding of the workings and intricacies of culture, and of the values, beliefs, worldviews, and practices of both Vietnamese and children’s cultures in particular (whilst searching for, incorporating and being overtly conscious of many other cultural contexts from which this study encapsulates), the research process itself is enhanced and the findings of the research more fully understood⁶.

3.3.3 The Barrel Model of Culture

To both help account for and demonstrate these complexities, there exist many conceptual and theoretical models; all aiming to advance the understanding of culture and society. This is because it is recognised that cultures are not simply built upon beliefs, values, and behaviours, and instead rely of a set of interconnected structures to underpin and maintain them. Thus, as Wesch (2018: 39-40) argues:

Most people tend to think of culture as “the beliefs and practices of a group of people,” but this definition hides the ways in which the vast complex of beliefs and practices in a group ultimately form into formidable structures that shape our lives, just as wood and nails can be joined into complex patterns to form the structure of a house or building. We do not define a house as “wood and nails” because it would tell us nothing about the form of those wood and nails. In the same way we cannot simply describe culture as “beliefs and practices” because the long-term patterns of beliefs and practices become as real and formidable as the walls of a house. They form a structure that shape our lives just as wood and nails can form a structure that shape a room.

⁶ This is particularly important here, as it is not within the aims of this research to highlight perceived “wrongs” within the culture that require remedying if the society is to build resilience against Climate Change. Instead, the cultural grounding of this research is to illuminate the socio-cultural context from which the children’s voices have derived, thus allowing any subsequent steps or action to be appropriately differentiated to suit the specific cultural beliefs, values, systems and so on.

Explaining this interconnected and multidimensional nature of culture, is the *Barrel Model of Culture*, first proposed by Harald Prins (Haviland et al., 2017) (Figure 4).

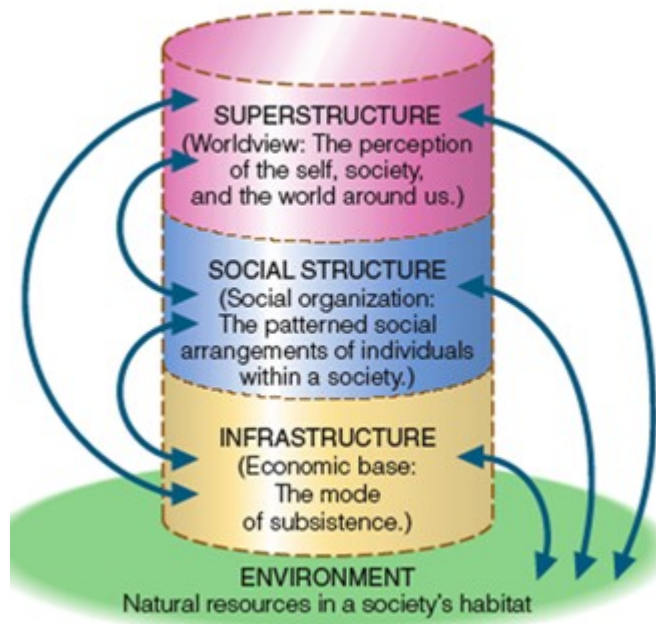


Figure 4: Prins Barrel Model of Culture (Haviland et al., 2017: 34)

Prins' approach to conceptualising culture highlights the interconnected elements of superstructure, social structure, infrastructure, and the environment. Where one of these elements tries to change, either the other elements will change with it, or they will resist the change and ensure the culture remains static. They both influence and reinforce one another – continually adapting to internal and external factors to form a cultural system (Robbins & Dowty, 2021). The model expands the notion of culture beyond the observable, and indeed beyond the less observable values and beliefs, instead offering a structural analysis that demonstrates how culture permeates our lives (Wesch, 2018). This is highly relevant in the context of this research because it draws particular attention to the environment.

The culture that exists within the Mekong Delta is highly dependent upon its available resources (Guong & Hoa, 2012; Käkönen, 2008; Nguyen et al., 2020a; Renaud & Kuenzer, 2011). Its infrastructure (economy) is dependent on agri and aqua culture because these are the resources most available and accessible to exploit (Guong & Hoa, 2012; Nguyen et al., 2020; Olson & Morton, 2018; Raymond, 2008). Floods have long been perceived as beneficial because they are directly associated with monetary gains. However, as reiterated throughout this thesis, the Mekong Delta is undergoing huge changes, mainly in terms of Climate Change,

overexploitation, and the consequent availability of resources. As this structure changes, as too will the social and super structure.

In many ways, this runs similar to Bronfenbrenner's Ecological Systems Theory, in that it sees each element as a set of systems all reinforcing and impacting upon one another (See section 3.2). The main difference is that Bronfenbrenner focusses on the individual child and sees culture as an external force enmeshed within the exosystem, whereas Prins sees culture as something inextricable from any element of a society and thus, as *part* of an individual. By combining the theories, both the individual child, and the wider systems that are all inextricable from culture, can be brought to light, and theoretically *plug the gap* previously noted by Vélez-Agosto et al. (2017).

3.3.4 Risk and Culture

Climate change and the impact this will have on water systems are considered as large risks within the scientific community, particularly in reference to the Mekong Delta (Carew-Reid & Taylor, 2018; Dung Duc Tran et al., 2020; Ling et al., 2015; Wilson, 2017). However, objective risk, even when carefully calculated by scientists, does not exist (Masuda & Garvin, 2006). The central core of culture, its values and beliefs, govern and shape the perceptions that help decide what constitutes as a potential danger or threat, the risk associated to such, and "form the basis for our reasoning about the solutions" (Arnoldi, 2009:105). Simply put, people's perceptions are not solely tied to the threat of a hazard event, but are instead embedded and filtered through one's perception of the world (Taylor, 2011). Risk cannot be extracted from the cultural filters from which it has passed through and for this reason, just as people have vastly alternative thoughts about many other things within society, people have varying opinions as to what is considered a risk, attaching fluctuating levels of projected impact, seriousness, and likelihood (Masuda & Garvin, 2006; Slovic et al., 2004).

Risk is often communicated in an objective sense, defined in mathematical terms, with equations such as "Risk = Hazard x Vulnerability" or "Risk = Probability of an event x Cost" (Webster & Jian, 2011: 4774) providing some of the most comprehensively used measures of assessment (Boholm, 2003). However, these calculations, how they are applied and interpreted, and indeed the choices that are made in deciding which calculation method to use, reflect the preconceived perceptions, values and beliefs of the person or persons using them (Cox, 2022; Garland, 2003). That is not to say they do not have a place in understanding and assessing risk, however they cannot be freed of subjectivism.

These cultural filters are not fixed, however. They negotiate with and are affected by various external influences; be it economical, technological, political; and are made visible within societies via mass media, education, artistic expression, research, discourse, legal procedures and so on (Arnoldi, 2009; Bialostok & Albert, 2012; Cox, 2022; Nacol, 2016). Given that these are all manifestations of culture in that they reflect a society's beliefs and values, risk perceptions not only effect, but are affected, by such examples. Mass media and the Education System for example, are often regarded as two of the most influential components when seeking change within a society, both of which are often closely tied to governmental agendas (Bakir, 2010; Bialostok & Albert, 2012; Frh, 2017; Miles & Morse, 2007; Nacol, 2016). Both influencing and influenced by the culture in which these two institutions are situated, those wanting to change a societies risk perception to a specific phenomenon will likely target these two societal pillars and thus, invoke a societal change in risk perception (Bialostok & Albert, 2012; Newman et al., 2018; Verga et al., 2020).

Succinctly explaining how interpretations of risk are both shared but different across scales within societies, Arnoldi (2009: 106) wrote:

Dealing with culture and risk means engaging with a, hopefully not too confusing, mix of difference, sameness and change. People do not necessarily share the same cultural 'filters' and therefore disagreements arise. But neither does each person have a unique filter. Values and ideas are shared – among groups, in institutions and even in societies. For that reason there might be differences among different countries in how risks are handled at the same time that cultural differences exist within each given country. Equally, any given culture may change over time, resulting in changing interpretations of risk.

There are several points worthy of note in the above. In focussing on culture here, psychological, and neurological functions and their contributions to how humans assess and manage risk are not to be forgotten (Gifford, 2011). There are a great deal of readings from across both psychology and neurology (and many more beyond), that aim to explain how humans analyse risk, however given that this is a culturally situated study, it was thought necessary to give this particular understanding much more weight within the thesis. Though wary of "black box" explanations and admitting that "culture does work in very diffuse and indirect ways", Arnoldi (2009: 105-106) argues that "culture must be taken seriously" as "psychological mechanisms of risk perception alone cannot explain why some risks become the focal point of relatively great concern and others do not". In making his case, he drew attention to the vastly different responses in both political and public concern to the outbreak of Bovine Spongiform Encephalopathy (BSE, also known as "mad cow disease") in both England

and Portugal, despite what was mathematically, a similar level of risk in each respective country. In 2021, one is almost instinctively inclined to draw this same parallel to both the COVID-19 pandemic and Climate Change (Burke et al., 2021; Chen et al., 2021; Degroot et al., 2021; Newman et al., 2018). There is clearly a rationale to exploring the interlinkages between culture, risk, and climate change in more depth than, particularly from an integrated approach that speaks to typically underrepresented groups such as those outside the West and on the frontline of climate change, and children. Indeed, Le Dang et al. (2014) calls for more research into the role of culture specifically in the formulation of risk perceptions in the Mekong Delta.

3.4 Research on/with Children

The following section begins in the 1960s and 70s with a predominant focus in the West, where several paradigm shifts and many socio-political changes took place that collectively gave rise to the recognition of children as being worthy of study in their own right (Morrison, 2012). By positioning this within a Western frame of analysis, there is innate bias particularly magnified with this study being situated in Vietnam (Grieshaber, 2001; Jones, 2021; Knight, 2019; Rivas, 2005; Tikly & Bond, 2013). “The pursuit of knowledge is deeply embedded in the multiple layers of imperial and colonial practices” (Smith, 2021: 2), of which many are difficult to circumvent in providing an overview of academic literature. In presenting the historical discourse, I am somewhat bounded by these constraints, however I acknowledge their bias, major ethical deficits, and imperial tones⁷. By analysing the progression of children in research within various disciplines from this point onwards, I hope to make the double hermeneutic nuances that exist when researching on/with children apparent (Giddens, 1993), and allow for the current field of children in research to be better understood; thus laying the foundations to explore the more contemporary approaches to such research that have been employed in this project specifically.

In her paper, *Can There be an Anthropology of Children*, Hardman (1973) argued that children, like women, had long been a muted group in research, highlighting the biased fixation that educationalists, psychologists, anthropologists, historians, sociologists, and societies in general had with the male as the only subject worthy of inquiry. The second-wave feminist movement however, in both academia and wider society, acts as one of the key paradigm shifts that made the current arena of child research what it is today (Oakley, 2018; Rosen & Twamley, 2018). At

⁷ I focus on research more specific to Vietnam in section 3.5.

a time where civil rights more broadly were receiving increased attention⁸, in 1987, Feminist Sociologist Barrie Thorne, made a compelling argument that children, sharing much of the same oppressions and fate as women, should be liberated from adult centred knowledge just as women should be liberated from man (Thorne, 1987). Alongside, and no doubt thanks to this wave of thinking, Historians, including the aforementioned Aries, began to recognise the limitations that accompanied existing analyses of, and by, the bourgeois, men and “topsoil” of societies (Morrison, 2012b) Oppressed groups long silenced in academic pursuits and wider society, including children, were gaining attention within all disciplines almost synchronously (Corsaro, 2018; Oakley, 2018; Rosen & Twamley, 2018)

This is not to say however, that researchers and academics had not been interested in children before this. Indeed, as Prout and James (2014) attest, it is not a lack of children in research that had occurred prior to the 60s, more a silencing. Developmental psychology in particular had an interest in children for many years preceding the above movements, however the lens in which the child was viewed was typically used as a prerequisite to understand adults and conducted through the form of observation (Christensen & James, 2017). The “Test Tube Child” approach to understanding was default, whereby children were the subjects of laboratory experiments conducted under controlled conditions (Woodhead & Faulkner, 2008).

The object of knowledge for mainstream child psychologists of the twentieth century has been 'the child'. This objectification of children has been the inevitable consequence of the emulation of the natural sciences and the associated quest for universal laws. ... Since for most of this century, mainstream child psychology conceptualized the child in much the same way as a chemist conceptualizes an interesting compound, it made absolute sense for the psychologist to take the child into a laboratory for closer inspection and testing” (Green, 1999:257-8)

The child was viewed as an apprentice of adulthood and developmental psychology set out to understand how individuals transitioned from one stage of development to the next, before reaching rationality and full functionality in adult society (Christensen & James, 2017). Indeed, much of contemporary society is still situated within this thinking; with Piaget’s Stages of Development (Piaget, 1972) still a dominant feature of many school systems, including

⁸ Whilst civil rights were receiving increasing mainstream attention, this was largely in response to a rising Conservative push for ‘family values’ and outright condemnation of minority groups civil rights within many Western societies (e.g., Section 28 in 1988). Those fighting back were somewhat a counterculture. This is, of course, much more nuanced and beyond the scope of this thesis.

Vietnam, and indeed their wider culture. Enlightening as this period was to the development of children then, there was little consideration for children's personal agency, or the micro-societies children develop exclusive to that of adults, culture was not accounted for, and major ethical condemnations persisted (Christensen & James, 2017; Green, 1999; Woodhead & Faulkner, 2008). A pioneer in recognising this oversight, was Hardman.

Returning to her publication *Can there be an Anthropology of Children*, Hardman was one of a lone few that proposed a new approach to the study of children that instead regarded them "as people to be studied in their own right, and not just as receptacles of adult teaching" recognising and making a distinct effort to highlight that "children may have an autonomous world, independent to some extent of the world of adults" and "that children's thoughts and social behaviour are not to be completely incomprehensible to adults, so long as we do not try to interpret them in adult terms" (Hardman, 2016: 504). Whilst Hardman admitted she was not the first to have made such attempts in understanding the child's point of view, she respectfully criticised those who came before, for not employing methods that might accurately garner the beliefs, experiences, and lifeworld's of children. In particular, she drew attention to the works of Margaret Mead, who in 1929 examined the drawings of 3,200 Samoan children in an attempt to study their thought. However, Mead, it is assumed with all good intentions, in this case applied her Western specific experiences and knowledge to a very different society and culture to which she was accustomed to, as these children had never held a pencil and paper before, ultimately rendering her findings of little to no significance. Despite as adults all having been children, understanding the lifeworld's of children must therefore go beyond our own understandings and experiences of childhood, because children are not a single state of being and are instead made up of incalculable individualities and groups (Morrison, 2012). Nevertheless, by recognising children as knowledge bearers in their own right and very much worthy of investigation, Mead, as Hardman herself recognised, may well have been one of the many catalysts required to have shaped current research practices with children today. Around the same time as Hardman, developmental psychology began to address the flaws of observational and/or laboratory experiments, with Bronfenbrenner (1979) famously describing many laboratory experiments involving children as studies of 'the strange behaviour of children in strange situations with strange adults for the briefest possible periods of time' (p.19). Increasingly, the methodological and ethical flaws with such research approaches were addressed, and slowly, over time, a shift away from research subject instead moving toward research participants, and even researchers themselves, has occurred (Morrison, 2012).

Once again, this has followed a general shift in the West's perception of children and childhood as a group of people with specific rights, particularly evidenced by the development and (almost universal) ratification of the UNCRC, along with the launch of various national and international ethical regulation boards that came to fruition during the latter stages of the 20th century (Graham et al., 2013; Mason & Watson, 2014). Though methodological and ethical challenges will always exist in research with humans, and in particular children, in viewing children as active agents with specific rights embedded within unique socio-cultural contexts, research has changed dramatically since the early 20th century (Mason & Watson, 2014). In light of this, research tools and approaches have changed, consent and ethics that position the needs of the researched above those of the researchers' aims have become mandatory (at least in most research spaces), and the participation of children in research as researchers has become an increasingly popular (though admittedly still not dominant) approach (Horgan, 2017; Punch, 2002; Thomson, 2007).

These major shifts in thought have occurred in tandem with a growing body of literature surrounding environmental degradation and specifically both flooding and Climate Change. However, research that aims to understand children's worldviews of such phenomena, particularly in non-western settings, is somewhat lacking (Klingelhöfer et al., 2020; Lee et al., 2020; Richler, 2020; Sugiyama et al., 2020). Comparatively little research endeavours to understand children's perceptions and knowledge base of climate change in a culturally situated manner outside of Western contexts, listening to the child's voice and drawing upon child friendly and culturally relevant methodological tools, particularly in front line locations such as the Mekong Delta, Vietnam (Le Dang et al., 2014; Lee et al., 2020). This will be explored further in Section 4.

3.5 Research in Vietnam

In the past few decades, huge academic interest in Vietnam has arisen worldwide and across the disciplines, mainly thanks to its unique socio-political and environmental conditions and the gradual lifting of restrictions for foreign researchers (Scott et al., 2006; Marr, 1993; Forbes, 1996). However, foreign social science research is still a relatively new phenomenon, particularly in the South where the government appears to exude greater feelings of insecurity towards foreigners (Shibuya, 2015). The relative lack of research in the South as compared to the North is also likely from the North providing a better point of focus for researchers interested in the impact of economic and sociocultural experiments at the height of Vietnamese socialism (Luong, 2006). Research from native Vietnamese is also scarce, despite

the rapid growth of Higher Education institutions (Pham & Hayden, 2019). Barriers to research, particularly in the social sciences and humanities, stems from inadequate funding, a focus on teaching as opposed to research, lack of confidence in writing in English language, and the remaining case that over three-quarters of all faculty members do not yet have a doctoral qualification (Nguyen, 2012; Pham & Hayden, 2019; Pham, 2013). Much research from within Vietnam is written in Vietnamese language and rarely translated to English, making it “notoriously difficult to locate” (Graham et al., 2014: 42) and therefore fails to be integrated into wider global scholarship. Graham et al. also highlight the barriers caused by the fact that there exists “no easily accessible indexing systems and many studies remaining unpublished, including those undertaken by postgraduate students studying abroad” (Graham et al., 2014: 42).

In 2017, only 12.2% of all Vietnamese published research was a part of the social sciences and humanities (Scimago, 2018). As Ehlert (2012: iv) states, “[I]n the Vietnamese epistemic community where the knowledge of technocratic experts takes precedence, investigations into the knowledge of everyday lives have largely been ignored”. Thus, whilst a much larger body of environmental science has been conducted in Vietnam, comparatively little attention has been paid to the people that are most impacted by such (Luong, 2006). In particular, there is a general lack of qualitative studies, particularly conducted by native Vietnamese researchers (Ehlert, 2012; Hy V. Luong, 2006; Scott et al., 2006). This has resulted in a large gap of knowledge now recognised as essential in the face of climatic and environmental challenges. A clear lack of knowledge exists; however, Scott et al. (2006) warns those wishing to employ more participatory or creative methods to expect to face multiple barriers. Anthropological studies in particular, are met with great caution and can be heavily circumscribed, with both direct and indirect surveillance as a result of “Vietnamese wartime legacy” (Luong, 2006:273) with Hoang (2010: 1) further adding to challenges surrounding potential participants “cultural/political reluctance to speak to outside researchers” that can prevent authentic data from being collected.

The “highly varied sociocultural landscape of Vietnam” which “constitutes a rich terrain for the comparative study of the factors underlying diverse local responses to state policies and global forces” (Luong, 2006: 378) however, provides the rationale for exactly these kinds of situated studies that prove challenging. Far from a homogenous culture, these differences should not be underestimated and should instead be the cause for more contextually relevant qualitative research (Ehlert, 2012). Given the vast array of spatially derived issues facing Vietnam, and

greatly variant socio-cultural conditions from which the Vietnamese population are embedded, this is particularly so when considering Climate Change.

This is magnified even more so for children in Vietnam. As both the citizens most adversely affected by climatic changes, and those that will face the greatest issues in the future (UNICEF, 2021), locally based studies that consider the unique social, cultural, spatial, geographical, political and economic qualities of a region are needed. However, despite the aforementioned governmental initiatives in Section 2.3.2, the UNCRC and some changes in societal values and beliefs, in various contexts spanning society, policy and research, the child's voice remains overwhelmingly minimal, and often tokenised in Vietnam.

“Within Vietnam, then, there is not a strong culture of research with, for, or even on children and young people. The number of publications reporting on research or consultation processes involving children and young people in Vietnam, or at least those published in English, is thus still very limited but gradually increasing in number” (Graham et al., 2014: 42)

This certainly provides great rationale to exploring children's perceptions specifically in Vietnam in relation to Climate Change, as the case will be made further in Chapter 4.

Chapter 4 Bringing it Together: Children, the Mekong Delta, Culture, Climate Change and Flooding

Chapters 2 and 3 have thus far considered many essential aspects critical to contextualising this thesis. It has addressed the social, environmental, economic, cultural, climatic, historical, and political context of Vietnam, as well as exploring children, childhood, culture, risk, and climatic change as global concepts. Here, these will be brought together to explore current research that pervades some, or all, of these dimensions, hollowing out where the gaps in knowledge lie - ultimately providing the rationale for this research project.

The role that the social sciences play a key part in climate and DRR research is becoming increasingly recognised (Adger et al., 2012; Cretney, 2016; Karen O'Brien et al., 2009; Lin, 2015; Overland & Sovacool, 2020; Trajber et al., 2019). Appreciating the human dimensions of such phenomena are essential for understanding behavioural change, decision making, social justice and risk governance, because “[t]he notion of an autonomous, logically rational, self-aware human being behaving according to law-like regularities and static preferences has dissolved as we realise that behaviour is largely unconscious, boundedly rational, and driven by emotions and contexts” (Bercht, 2021: 2). Despite this growing recognition however, research does not provide the same weight to the social sciences as it does the natural sciences (Baum & Bartkowski, 2020; Callaghan, Max W. et al., 2020; Overland & Sovacool, 2020; Victor, 2015).

Further, of those social science studies that do exist, the majority are quantitative, with the rationale that only statistically relevant research can be considered accurate, meaningful, or useful to knowledge construction – an opinion largely derived from the natural sciences (Cleland, 2017; Patton, 2014). For the purpose of the following section then, both qualitative and quantitative social science studies will be drawn upon. Whilst the former is more plentiful and can provide the statistical relevance that enable trends to be seen, the latter will allow for more nuanced, subjective, and rich stories – both necessary for the positioning of this research.

Before continuing, also needing to be addressed, is the fact that most of the research that does consider societal perceptions towards Climate Change, are situated in the West (Beer, 2014; Sietsma et al., 2021), and focus on mitigation, not adaptation, behaviours such as reducing carbon emissions (Pasgaard & Strange, 2013). Whilst these insights are important, comparatively little research has sought to understand the perceptions of those societies that

are already experiencing the impacts of Climate Change, and whose mitigation and adaptation strategies are of imminent importance to their livelihoods and sustainability (Beer, 2014; Callaghan, Max et al., 2021; Frank et al., 2015; Klingelhöfer et al., 2020; Sugiyama et al., 2020) Whilst inquiring into personal perspectives and behaviours relating to emissions are important for finding ways to reduce overall fossil fuel consumption, it does little to reduce the vulnerabilities of those already experiencing the worst impacts of Climate Change (Klingelhöfer et al., 2020; Pasgaard & Strange, 2013). Even fewer studies have considered this from the perceptions of children (Lee et al., 2020)

Despite the disproportionately high impact that Climate Change is having, and will continue to have on this social group, their voices are seldom explored in research (Lee & Barnett, 2020; Lee et al., 2020; Neenan et al., 2021). Much as they are rarely incorporated into policy (Tanner, 2010), when they are, they are often considered as passive subjects, which does not lead to enhanced provision or direct discussion *with* them (UNICEF, 2015; UNICEF, 2018; UNICEF, 2021). Though there is a growing body of literature, particularly as youth activism has increased in relation to Climate Change (Clemens et al., 2020; Cutter-Mackenzie & Rousell, 2018; Tanner, 2010), the body of literature is still comparatively small compared to that on adults. This gap in the research is exacerbated even further when looking at research conducted in the global South (Callaghan et al., 2021; Pasgaard & Strange, 2013). Of those studies that do exist however, many come from the charity and NGO Sector (UNICEF, 2009; UNICEF, 2015; UNICEF, 2018; UNICEF, 2021; World Health Organisation, 2018).

With a great deal of these socio-geographically vulnerable locations residing in the East (Callaghan et al., 2021; Pasgaard & Strange, 2013), culture thus becomes an even more pertinent consideration. As a collectivist culture with perceptions of nature, family, children, fate and so on underwritten by Confucianism, Taoist and Buddhist thought, the findings drawn from Western studies that are instead underpinned by individualistic thought and ideologies heavily influenced by Christianity, cannot unproblematically be considered as parallel to the context of Vietnam (Chen et al., 2020; Clemens et al., 2020), nor should such western considerations continue to dominate global discourse as truth (Smith, 2021). In short, the perceptions, actions, and behaviours of those in Vietnam are thus incomparable to those in Western cultures, where the largest body of Climate Change research currently lies. For this reason, the literature drawn upon in the following section will, where possible, be specific to the Vietnamese/Mekong Delta context, however, where this is limited (as indeed it is), wider scholarship will be referenced. A conscious effort to refrain from over westernising this section in particular, has been made (Smith, 2021).

Specifically, two bodies of research are required to be drawn upon here; those that look at knowledge and perceptions of floods, and those that look at knowledge and perceptions of Climate Change. That is because one of the greatest risks posed by Climate Change to the Mekong Delta is flooding (Minderhoud et al., 2019), however flooding in a general sense for the area is something the Delta's inhabitants have lived with and adapted to for centuries (Ehlert, 2012). Flooding, on a day-to-day basis, poses little risk - conversely providing great benefit. As explored in section 2.2, extreme weather events are also a natural part of the climate cycle in Vietnam, however with Climate Change, these events are predicted to increase in frequency, intensity, and magnitude (Mekong River Commission, 2022a; Webster & Jian, 2011). Slow onset hazards, such as sea level rise and climatic changes that alter water levels and temperatures slowly and more subtly, are also impacting the predictability of the annual floods that historically provide benefit to the region (Ehlert, 2012; Hensengerth, 2018; Käkönen, 2008). Considerations of perceptions in this context therefore must be two-fold, as an individual's perceptions of Climate Change will likely interfere with their general perceptions of flooding and weather events, and vice-versa. Because of this concerted relationship, much like the remainder of this thesis, here the two will be considered and discussed in conjunction with each other.

Another significant overlap is that between knowledge and perception. As Taddicken et al. (2018: 3) note:

When studying the state of research on measuring knowledge about Climate Change, it becomes clear that knowledge is often hard to distinguish from, or at least is strongly intertwined with, perceptions, beliefs and cultural cognitions.

Both somewhat considered as knowledge, “[s]cientific knowledge, defined as one’s assessed understanding of an issue, is very different from one’s subjective, perceived knowledge” (Stoutenborough & Vedlitz, 2014: 23) that are situated within broader socio-cultural and political contexts. For a long time, objective, or scientific, knowledge was largely theorised as the vehicle towards climate action (Stoutenborough & Vedlitz, 2014; Stoutenborough & Vedlitz, 2016). Under the *Knowledge Deficit Model*, it was assumed that the general public were ignorant to scientific and climatic knowledge and that providing more information and knowledge would create more positive attitudes and behaviours towards topics such as the environment, climate, and sustainability (Suldovsky, 2017). However, it is now widely understood that knowledge alone of a given problem, and less so the communication of knowledge and information, does not strongly correlate with attitudes and behaviours around the same given topic (Taddicken et al., 2018). Emotions, religions and general worldviews,

political viewpoints, individual risk analyses and so on, are now considered as alternative, subjective *knowledges*, or *perceptions* that interfere, along with individual capital, priorities, and actual and assumed agency, to determine one's behaviour (Bayrak et al., 2022; Farrell et al., 2019; Gifford, 2011; Halstead et al., 2021; Nisbet & Feldman, 2011; Stoutenborough & Vedlitz, 2014; Stoutenborough & Vedlitz, 2016; Suldovsky, 2017; Taddicken et al., 2018).

Yet, still the majority of studies collect data in terms of objective knowledge, as measured against present-day scientific knowledge bearers such as the IPCC (Engesser & Brüggemann, 2016). Most often, these studies relate to the causes of Climate Change and, whether or not they are human based (Stoutenborough & Vedlitz, 2014; Stoutenborough & Vedlitz, 2016; Suldovsky, 2017). This alone however, does little to advance the understanding of the full breadth of climate knowledge and perception, and indeed the interactions between the two that ultimately influence behaviour. Nevertheless, “[t]o evaluate risk properly, one must have an understanding of the issue. For example, an individual's values or institutional factors are unlikely to influence views about the risk of burning oneself by touching a hot stove, but one's knowledge and experience should” (Stoutenborough & Vedlitz, 2016: 207)..

For this reason, we start first with Kabir et al. (2016), and their study that explored both knowledge and perceptions of Climate Change in 7 deltaic districts in Bangladesh. Surveying 6,720 households, Kabir et al. (2016) concluded that whilst 54.2% of respondents had some knowledge of Climate Change, 83.2% had experienced excessive temperature as the result of a change in climate, and 94% perceived a change in climate related extreme weather events. Most (91.9%) had observed a change in rainfall patterns in the last 10 years, and 97.8 % believed their health care expenditure had increased after extreme weather events. Despite 45.8% not having knowledge of Climate Change as a scientific concept, the overwhelming majority of respondents had experienced and noticed changes that are scientifically considered a consequence of Climate Change. Their perceptual understanding was that change was happening, however their objective, scientific knowledge fell short in providing an accurate term or explanation for these changes. Upon further investigating relational and influencing factors, Kabir et al. (2016) found education level and proximity to a school as major indicators for increased Climate Change knowledge – particularly in relation to its impacts on health. This led them to recommend further investigations into the role of education and school in front line locations.

Though similarities between Vietnam and Bangladesh exist (both Asian deltas who rely on rice farming for economic and food stability, considered lower-middle income countries by the UN,

and influenced by some of the same cultural heritages e.g., Buddhism), many non-transferable factors also pervade (i.e., alternative cultural influences and worldviews [e.g., Confucianism and Islam respectively], unique political, educational, and economic systems, media, access to information etc.). Though useful for a global picture, these findings are not directly translatable to the Vietnamese context.

Toan et al. (2014) however, conducted a similar study in Vietnam's capital, Hanoi. Including qualitative and quantitative approaches, they consulted both slum, and non-slum dwelling households, concluding that "[t]he majority of the respondents in the study had heard about Climate Change and its impact on human health (79.3 and 70.1% in non-slum and slum areas, respectively)" (Toan, 2014: 1). Indeed, in this urban capital, many respondents were able to account changes in temperature and rainfall to Climate Change. In presenting these findings however, Toan et al. acknowledge the limitations of the study, concluding that the results may not be transferrable to other locations in Vietnam.

Indeed, in conducting a countrywide study into provincial officials' perceptions of Climate Change in Vietnam, Van et al. (2015) found that respondent's location in Vietnam was a determining factor in relation to what they considered as climatic impacts, clearly demonstrating how climate awareness is spatially situated. In many ways this is not surprising, as the six regions included within the study are inherently unique and thus all experience Climate Change differently, despite all being in Vietnam (with responses largely correlating to the those impacts which are greatest in their region). Of concern to Van et al., however, is that overall:

though Vietnamese government officials are aware of Climate Change and its potential impacts ... [they] have relatively poor understanding of some aspects, given the key role of government officials in implementing Vietnamese adaptation policies and mitigation measures. (Van et al, 2015: 487)

Where decision makers show low awareness, this does not bode well for the general public who are directly impacted by those decisions made. Further, the majority of respondents ranked infrastructure as more important than community education and research in adaptation to Climate Change, and 16 percent did not believe Climate Change would impact the agricultural sector. This differs from similar research projects in Africa, where the main adaptation strategies favoured were changing crop varieties (Gbetibouo, 2009).

Copsey et al. (2013) provided possibly the most comprehensive study in the region that considered Vietnamese perceptions of Climate Change, as well as their access to, and sources

of, information (with specific attention paid towards the media¹). A largely quantitative study (with some qualitative aspects), Copsey et al. consulted 33,500 Vietnamese participants from throughout the country, finding a large proportion of Vietnamese had noticed changes to their climate, including increased/decreased/erratic rainfall, and rising annual temperatures. However, only 58% confidently said that they had heard of the term “Climate Change”. The remainder had either not heard the term, or if they had, they did not know what it meant. This alters from the aforementioned findings of Toan et al. (2014), likely because their work was based solely in the Capital City, and did not include regions that typically report a lack of quality climate information (Sen et al., 2021).

This does however, reinforce the narrative found by Kabir et al. (2016) of perceptual and scientific understanding. Though lacking the vocabulary and scientific understanding to explain the changes they had noticed; the overwhelming majority had indeed noted changes in climate – changes that correlated to those scientifically identified. Nevertheless, for those who were informed about Climate Change impacts and the potential measures that could be taken to reduce their risk, an overwhelming 82% of respondents did not change their livelihoods or lifestyles to cope with Climate Change impacts – again illustrating that there is more at play than just a lack of information when it comes to climate adaptive/mitigative behaviours, and likely many more confounding inequalities (i.e. poverty) that create barriers to taking action.

In a study in Michigan, USA, Akerlof et al. (2013) found that those people who believed they had personally experienced global warming had heightened local risk perceptions towards Climate Change. Their observations and experiences matched those on climate databases suggesting they were largely accurate, and recognised their experiences as unique to typical or expected weather or seasonal fluxes. Bringing this together with Copsey et al.’s (2016) study then, it appears that experience alone is not sufficient in predicting risk perceptions, and increasing risk mitigation/adaptation behaviours. The ability to label and allocate these changes to global warming appears significant, and may explain why Copsey et al. also found *forces of nature* to be the most commonly cited cause of Climate Change, with only 26% and 16% of respondents attributing Climate Change to human activity and greenhouse gasses, or the loss of trees respectively. Therefore, “how risks of Climate Change are perceived becomes

¹ The study was conducted and funded under the BBC, and so findings in relation to sources of information (for which the overwhelming majority was televised media), may contain some bias.

important to adaptation strategies because the way individuals interpret their own risks affects what adaptive behaviour they are likely to take” (Le Dang et al., 2014: 332).

Unlike Toan’s research in the capital then, Copsey et al. found risk perceptions generally low amongst the Vietnamese community, with their knowledge(s) positioning the cause of Climate Change, if they have heard of it, as outside of human impact. Rosenthal et al. (2022) argues that has significant impacts for adaptive behaviour, as if there is a belief that humans are not responsible for creating the problem, there is diminished responsibility in solving it. Further, in the context of Vietnam where Buddhist thought that contains beliefs such as Karma and fate, if these changes are considered *forces of nature* as opposed to *manmade*, they are typically considered as uncontrollable, leading to a reduction in perceived agency, and thus action and adaptive capacity (Rosenthal et al., 2022; Semenza et al., 2008). It appears that more studies that look specifically into lived experiences of Climate Change in lower and lower-middle income countries, and the interface this has with their risk perceptions and adaptive behaviours, is necessary.

Moving specifically into research conducted in the Mekong Delta, Le Dang et al.’s (2014) study moved on from perceptions in terms of scientific understanding, and specifically considered farmers perceptions of risk and climate variability – the first study of its kind in the region, they claim. Perceptions of risk are important to research under the concept of Climate Change because they largely navigate people’s adaptive behaviour and thus determine their resilience and vulnerability (Slovic et al., 1982). Le Dang found that risk was not evenly dispersed across dimensions of their lives (physical health, income, assets, production, social relationships, anxiety about personal loss and happiness). Farmers assigned the greatest risk to income and personal health, with those who had already experienced negative climatic impacts more likely to exhibit greater risk perceptions. Interestingly, they also found that sources of information inferred the level of risk assigned to Climate Change, with:

Farmers who receive Climate Change information from the public media have a lower overall perceived risk and lower perceived risks to physical health, finance and production. When such information is obtained from friends, relatives, neighbors, farmers have a higher overall perceived risk and higher perceived risks to social relationship and psychological dimensions. Farmers who receive Climate Change information from local authorities have a lower overall perceived risk and lower perceived risks to production and psychology. Having Climate Change information from other sources (e.g., the Internet, monks, and priests) only increases perceived risk of Climate Change to the psychological dimension. (Le Dang et al, 2014: 342).

In terms of Climate Change communication to farmers in the Mekong Delta then, where they get their information appears to be significant, and with religious leaders as significant sources of information, more targeted research into the role of cultural and religious beliefs in Climate Change perceptions is needed in the region – a gap yet to be filled. Le Dang also noted that many farmers cited their children or grandchildren as sources of information. Lawson et al. (2019) suggest that, intergenerational learning that originates from the child and is passed on to the adult, can surpass the socio-ideological barriers that their parents face in relation to Climate Change concern, and so, whilst children are often positioned as the ones who need to be taught, when equipped with the correct information and skills, they can make excellent educators themselves. Though it might be assumed that this will not be possible in a society that traditionally follows age related hierarchies, Le Dang et al.'s research findings challenge this assumption and indeed, provide a strong rationale for increased attention into the role of schooling and education, and the perception of children, in relation to Climate Change within this given context.

While several other studies that specifically consider local/farmer perceptions of Climate Change have since surfaced (Connor et al., 2020; Hak et al., 2016; Mckinley et al., 2016; Mishra & Pede, 2017; Nguyen, L. A. et al., 2015; Nguyen, V. K. et al., 2012) there appears to be no study that fully incorporates the role of culture and society in the formation of perceptions surrounding Climate Change, or that considers the knowledge and perceptions of children, in the Mekong Delta.

Nevertheless, Judith Ehlert's (2012) in-depth study in the Mekong Delta contributes significantly to understanding the lifeworld's of its inhabitants and their socio-cultural interactions with water. Though not specifically investigated under the context of Climate Change, her ethnographic study offers much in the way of understanding these fragile water relations that are both significant and under threat in the face of Climate Change, and for which are intrinsic to accurately understanding the society/Climate Change interface in the region. Drawing upon historical, political, social, economic, and cultural literature, she teams this with personal observations, interviews and focus groups to document the many perceptions that people have of the annual floods in the region, and the tensions surrounding multiple stakeholders. With governmental officials largely framing the floods under disaster protection and preparedness, local rice farmers compared the floods to a turtle "one of the kind that is very slow in its movements" (Ehlert, 2012: 45). Some consider the dike systems (a technocratic approach to living with the increasing risk of large-scale floods as brought on by Climate Change) as a hindrance to productivity as they identify the effect the dykes on reduced

alluvium provision (effectively free fertiliser) and fish. With the latter much less consulted within decision making processes, Ehlert highlighted these tensions and inconsistencies.

She also identified trends in knowledge production and the science/local knowledge interface. Much like Phu et al. (2019) who conducted household interviews (amongst other qualitative approaches) in the Mekong Delta to determine the role of indigenous knowledge in Climate Change adaptation, Ehlert noted that traditional methods of weather prediction were becoming obsolete as manmade structures and climatic changes interfere with the region's natural pulses, and as science and technology more generally has become accepted in the region. Phu et al. (2019) extended this to propose that, for those who do still rely on indigenous knowledge for their resilience, because of anthropogenic changes including Climate Change and intensive industrialisation to the area, many of these local knowledges are becoming misleading and dangerous, as they no longer communicate or translate the same messages they once did. Additionally, these indigenous knowledges are not recorded in written materials, with younger generations not being aware of these practices, and thus there is a risk of these practices being lost.

Many scholars (Ford et al., 2020; Ribot, 2013; Warren, 1991), and indeed as recognised in the latest IPCC report (2021), argue that indigenous knowledges are key to tackling the climate crisis. If lost, this may pose a threat to the adaptation capacity and resilience of individuals in the region. Further, these local knowledges undoubtedly impact the values and perceptions of those that live in the Mekong, including the children living here. Understanding if, and how, these knowledges are being passed to the next generation is important to understand for future adaptation and mitigation challenges (Sen et al., 2021). These knowledges have been adapted slowly over generations to address changing conditions; however it appears that with such rapid changes brought by social change and economic as well as technocratic development, not to mention Climate Change, these are at risk of being lost altogether.

Returning to Ehlert's (2012) work, though not exclusively or in sufficient depth, Ehlert does draw upon the voices of high school students' perceptions of the floods. For the majority, they viewed the floods in a positive light, associating them with recreation and play. However, beyond this, Ehlert's work does not offer further detail on their perceptions or knowledges, or base her research within context of Climate Change. Further, she does not include the voices of younger children. Whilst her work has been critical to the initial foregrounding for this thesis, Ehlert does not address a range of these important elements.

The reasons for seeking children's voices in Climate Change research, and more specifically, Climate Change research in the Mekong Delta, are plenty. First, as with Climate Change research in general, the majority has been conducted in the West, where the socio-economic interface with Climate Change is extremely different and, in many cases, not as pressing. In the Mekong, and as is often the case globally, the majority of climate related deaths are children (Bich et al., 2011; Briend et al., 2015; Farrant et al., 2012; Hellden et al., 2021; Mason Littlejohn et al., 2019; Neumayer & Plümper, 2007; Phung et al., 2014; Sheffield & Landrigan, 2011; UNICEF, 2009; UNICEF, 2015; UNICEF, 2021; World Health Organisation, 2018). How they are experiencing these changes is thus critical to understanding the most appropriate way to reduce them. They are also one of the most marginalised groups to Climate Change in other ways including health, education, happiness, and wellbeing. The worst impacts to the Delta are predicted to occur within the lifetime of children and, given that most adult behaviours are based upon past behaviours or habits, and that young people are still in the process of forming habits, societal change is largely congruent on understanding and responding to these formulating perceptions and behaviours (Ngo et al., 2020: 2). Additionally, in the Mekong Delta, an area with some of the lowest secondary school enrolment rates in the country (Hien, 2021), understanding what perceptions and knowledge primary age children are leaving school with is essential. An understanding of where these knowledge(s) and perceptions are coming from, and indeed how much originates from school, is key to directive education and policy initiatives. With research also suggesting children increasingly becoming knowledge sharers amongst their households in the Delta, ensuring they are accessing trustworthy information is important for the adaptive capacities of not just themselves, but their families (Le Dang et al., 2014). Only once knowing what they are already exposed to, can one carefully curate a targeted and meaningful action plan moving forward.

Unsurprisingly, research involving children in the Mekong Delta is comparatively scant. Some studies have considered health impacts of annual flooding and Climate Change to children in the region (Phung et al., 2014; Phung et al., 2015). Others have largely noted the socio-economic impacts of largescale, historical floods in the region, where ultimately the impacts to children arose (i.e., restricted school access, flood/climate induced migration, death) (Dun, 2011; Tinh, 2003; Tran & Few, 2006). In all these studies however, children were not directly consulted and instead data was derived from either adults, or secondary data sources such as hospital admissions.

Differing from these however, is a youth led report conducted with the support of the UNDP. *The Youth for Climate action in Vietnam Report* (United Nations Development Programme,

2021) identified and addressed key barriers to participation in youth climate action in Vietnam. This identified many structural barriers including a lack of technical and soft skills development in traditional schooling, support from other key stakeholders, lack of technology and financial constraints. Whilst this research is necessary, the findings are not representative to the majority of youth in Vietnam. Targeting a small subsection of youth climate activists, the wider population that indeed are not engaged in climate action, are absent from the data. Whilst those consulted play a major role in communicating Climate Change more broadly, they already have a vested interest in the environment that is unlikely present in the remaining youth of Vietnam. Further, the survey had an unequal distribution between Northern, Central and Southern provinces, with the overwhelming majority residing in the North of Vietnam. The authors also acknowledged that those from resource limited settings were largely absent from the data, reducing the applicability of these findings to wider youth. Nevertheless, highlighting these barriers has provided government, NGOs, and indeed youth groups with target areas as they tackle Climate Change. With many of the identified barriers existing within the Vietnamese Education System, this provides further rationale for an inquiry into the Climate Change Education here in the Mekong Delta.

Coming close to this, is Hoang's (2010) ethnographic study that found, whilst high levels of government appear to support education for sustainable development, this is not reflected in college students' responses. Students generally demonstrated a lacking awareness of sustainable development, and educators experienced impediments via a lack of resources, limited awareness themselves and a top-down teaching methodology – which largely mirror the findings of the UNDP (2021) report above. Further, this did not take a specific exploration into Climate Change and was focussed again on College students.

To date then, there is an absence of research that aims to understand primary aged children's perceptions of Climate Change in a way that adopts child-friendly methodologies, and in which situates their voices in the socio-cultural context from which they reside. With the Mekong Delta deemed as one of the most vulnerable locations in the world to Climate Change, and a location so socially, the following project then, hopes to contribute to this body of knowledge by considering children's perceptions specifically in this location, and interrogating the sources of their information, making links to their cultural origins.

Chapter 5 Methodology

This Chapter presents the methodology used in this study to explore and understand children's perceptions of flooding and climate change in the Mekong Delta, Vietnam. This broad purpose was achieved primarily through participation-based methods working with local children directly, whilst positioning their voices within their broader social and cultural context. The increasing challenges that climate change is putting the Mekong Delta provides urgency to the task of minimising the impacts for those communities living here. With children amongst those most adversely affected, and as those who will face the greatest challenges in the future, understanding their lifeworld's, knowledges, and perceptions in relation to these phenomena is an essential first step to minimising these impacts. With the majority of studies examining children's perceptions being conducted in rich, western countries, this situated study is even more necessary.

This following chapter will identify the research paradigm along with the most suitable approach, methodology and methods for data collection and analysis, highlighting the rationale behind the decisions, and demonstrating how these choices needed to be adapted and altered as the research evolved. I will begin by giving the reader insight into my ontological and epistemological viewpoint that frames the project. I will then detail the theoretical underpinnings and methodologies that provided the foundations for the research process, as well as providing insight into my positionality and the reasons for pursuing this research. With critical analysis of the research design, and of the methods I adopted to answer the research questions, I will discuss the ethical and methodological issues I faced along the way, as well as any limitations of the study throughout, integrating them into the following sections and bringing them to the forefront.

5.1 Research Paradigm

all too often, accounts of research oversimplify ontology and epistemology, crudely distinguishing between positivism and constructivism, and other binary categories of qualitative v quantitative, thus washing over nuance and complexity (Baur, 2014). However, this project has utilised research from across paradigms to both inform and shape it. With both positivist/realist and constructivist/subjectivist views playing their part, the following section will detail both the ontological and epistemological standpoints that have informed this thesis, whilst outlining my personal alignment in doing so and detailing how this has impacted my research design. With a slight leaning towards the latter, I sit somewhere between positivism and constructivism; or rather, embody a critical realist ontology and a social constructivist

epistemology. Leaning towards critical realism I recognise that reality exists independently of human thought or belief, and both (critically) appreciate and take note of research that seeks *universal truth* (Brown, 2021). Climate change is happening whether people believe it or not. Flooding occurs outside of human thought. However, my core belief is that this *reality* is interpreted and understood only through an individual's construction of the world, which is socially and culturally mediated (Pring, 2013). How we as individuals and societies *experience* and *understand* climate change and flooding is not universal and is instead constructed by each individual and their surrounding contexts. The impact this has on my research is twofold.

First, how I view my role as a researcher, and thus the approach I take to conducting research, is bound by the fact that I recognise “[d]ata can only be reconstructed conceptually based on a researcher's no less subjective values”, thus meaning objective validity can only be considered at the “level of means, not ends” (Kim, 2020: 145). One can employ measures to move toward objective validity, however it can never be wholly achieved (Pring, 2013). Ultimately, the decisions made in reference to what to research, the theoretical underpinnings to apply, the data collection methods used, and the analysis of such, repeatedly pass through my subjective lens and thus, are continuously being (re)interpreted (Baur, 2019).

Second, in ascribing *meaning* to climate change and flooding via the multiple perceptions of people, I recognise that there exists no absolute objective investigation or analysis of such because, just as I embody my own perspective based upon “an infinite multiplicity of successively and coexistently emerging and disappearing events” (Weber et al., 1949: 72), as too do the participants within this project. A social constructionist epistemology, just as it was for Taylor (2011: 45) “is suited to this endeavour as it allows for multiple meanings, that are inextricable from culture, to be drawn out from research”. The children in this study assign different meanings and embody unique perceptions because they themselves are different to one another, yet they are still bound by and within the same socio-cultural context. The approach I employ in this research must reflect and allow for these multiple realities by allowing each child a voice whilst considering the socio-cultural dynamics from which many of them share. In doing so, though some tentative inferences may be made, it would be foolish to claim the findings of this research as generalisable to a wider population without due consideration for their differences, or that my findings would have been the same had I worked with a different group of children, in a different district, on a different day, or employed a different method of data collection/analysis (Morse et al., 2002). Instead, in “providing sufficient description of the particular context studied so that others may adequately judge the applicability or fit of the inquiry findings to their own context” (Greene,

2006: 69). Accordingly, the reader is thus responsible for making their own interpretations of the research and determining if applicable in other contexts (Taylor, 2011). These insights are necessary as they add depth and meaning to research questions that alternative, more positivist approaches fail to garner.

This standpoint does not mean I discount the contributions of those research endeavours that might be considered more positivist in their approach, and indeed I do recognise that events such as flooding, and climate change continue to occur outside of human consciousness. In shaping this thesis, I have turned towards empirical evidence and “the laws of nature”, particularly within Earth Sciences, to consider for example, various climate change scenarios and the effect this will have on the Mekong Delta (E.g., Bussi et al., 2021; Hackney et al., 2020; Kondolf et al., 2018; Minderhoud et al., 2019; Whitehead et al., 2019). Similarly, the monitoring of water levels and its salinity in the Delta has provided empirical evidence of change in the Delta, and comparisons of this with other locations have allowed scientists to concede this location as one of the most vulnerable places in the world, a feat much improved by a realist approach. Equally, some of the research drawn from the social sciences is pinned within the same frame, as they too search for laws; however, in focussing on humans, they measure behaviours and structures; extrapolating these findings and making generalisations for wider society (Gruman et al., 2016; Mason Littlejohn et al., 2019; Rosenthal et al., 2022; UNICEF, 2015). Though the very concept of “the child” varies across socio-cultural boundaries, children also embody common attributes deemed, to some extent, universal (Morrison, 2012). They are statistically more vulnerable to climate change for example and are biologically less developed than their adult counterparts (UNICEF, 2015).

Though I agree with Kleinhans et al. (2010) in that the conclusions drawn here are fewer universal truths and more multiple working hypotheses and inference[s] to the best explanation, the perspective overseeing and guiding these studies is realism. Without this kind of research, this location’s vulnerability, and the warrant to investigate children’s voice at all, would likely be unknown to the wider research community, and thus, may not have become a topic or site of enquiry for me at all.

Thus, in seeking to bring together children, climate change and flooding in a socio-culturally embedded way, I have critically engaged with literature across the spectrum, however the questions asked as a part of this study aim to add *meaning* within a particular cultural setting (Bercht, 2021). Though climate change and flooding exist in the “real world”, they are only

made sense of via social construction and therefore a social constructivist approach was necessary (Alvesson & Sköldberg, 2018).

5.2 Reflexive Methodology

Despite best efforts to suspend judgement and disbelief, who one is, what one believes and does, implicitly and ineluctably shapes the process and products of research (James, 1993: 8).

A reflexive methodology has been critical to this research and as a natural extension of my ontological and epistemological perspectives, it has acted as the necessary underpinning in regards to *how* the research has been carried out (Finlay, 1998). Applied in various ways, “reflexivity” varies from “a simple awareness of bias in research” to the “methodological basis of an investigation” (Taylor, 2011: 48), with the former arguably an essential part of any research process, and the latter commanding a more detailed and active engagement that requires extensive, conscious and critical thought (Alvesson & Sköldberg, 2018). In the context of this research and the numerous ethical quandaries that transect through all aspects, with particular attention paid to cultural influences and power relations (see Sections 5.6 and 5.7), it is the latter I have sought to employ. In an attempt to achieve transparency, the following section will provide both a theoretical overview as well as an explanation of how this was framed within my practice.

Etherington suggested that:

Reflexivity requires researchers to operate on multiple levels: being aware in the moment if what is influencing our internal and external responses, while also being aware of what influences our relationship to our topic and our participants. (Etherington, 2004:46)

In explaining the interface between ethnography and reflexivity Simon and Dippo (1986: 200) suggest that at its core, reflexivity is about “coming to grips with the recognition that most ethnographic data is “produced” and not “found”” adding how socio-historical factors and “institutional forms” affect the researcher, researched and thus the knowledge generation process. Breaking this down into three core elements, Schwandt (2001: 224) defines reflexivity as:

- (a) the process of critical self-reflection on one’s biases, theoretical predispositions, preferences.
- (b) an acknowledgement that ‘the enquirer is part of the setting, context, and social phenomenon he or she seeks to understand; and

(c) a means for critically inspecting the entire research process.

Reflexive research considers all these interplays, and it is “the *interpretation of interpretation* and the critical self-exploration of one’s own interpretations of empirical material, including its construction” (Alvesson and Sköldberg, 2018: 11) that brings the researcher into focus within their endeavours. Reflexivity then, goes beyond reflection in that it does not just look back to gain insight and instead it is a:

“process of self-awareness and scrutiny that is bidirectional; it demands an ‘other’ through which we develop a more self-conscious awareness about who we are as researchers and the decisions we make in the research process and its potential relationship/impact on the other” (Engward & Davis, 2015: 1532).

Every stage of research; from the identification of a research question, choice of data collection and analysis, to how a researcher is received in the field, the write up and publishing; is governed and shaped by the identity and experience of the researcher and researched (Lynch et al., 2011). Further external influences, such as funding and time constraints, and the researcher’s disciplinary background, undoubtedly shape these elements. Pretending these biases do not exist is ambiguous, at best. However, by reflecting on and making transparent the interconnection of these elements and the bias that they entail, a rigor of some kind is thus instilled and a level of trust is offered to the reader (Lynch et al., 2011; Baur, 2019; Etherington, 2004; Au-Yong-Oliveira, 2020; Bryant & Charmaz, 2007).

In presenting their practical model for employing a reflexive methodology, Alvesson and Sköldberg (2018: 12) stress the importance of “interpretation rather than representation” and, similar to Schwandt (2001), propose four areas that require attention in applying a reflexive methodology:

- 1) *Systematics and techniques in research procedures*
- 2) *Clarification of the primacy of interpretation*
- 3) *Awareness of the political-ideological character of research*
- 4) *Reflection in relation to the problem of representation and authority*

Consciously turning attention to these four areas at all stages of the research – from question identification, through recruitment, data collection, analysis, and all aspects in between, ensures a robust approach from which the researcher is forced to actively think and respond to a range of factors that may have ordinarily gone unnoticed or unconsidered. In doing this, reflexivity also affords the researcher space to respond based on these reflections and to a

changing and evolving research environment (Alvesson & Sköldbberg, 2018; Attia & Edge, 2017; Etherington, 2004; Finlay, 1998; Mavin & Corlett, 2018). It does not box one into a stringent set of rules, and instead sees such processes as a hindrance to authentic data collection. It was only after consideration of various alternative disciplines, theories, and methodologies (Ethnography, Post-Colonial Theory, Grounded Theory, Hermeneutics, Critical Theory, Participatory Research, Poststructuralism and Postmodernism, to name a few), and how they may (or may not) apply as a methodology to this study, that it became clear how a *reflexive methodology* was required. No single one alone seemed to be the perfect “fit”, however in employing this broader, more encapsulating stance, aspects from all, could and have, been utilised (Engward and Davis, 2015).

Perhaps, to some extent, I agree with Deleuze (2002: 110), in that “thought does not need a method” or with Jackson (2017: 671) that “the dogmatic image of Method casts long shadows over qualitative inquiry”. Further critiquing the application of major canons of thought are post-colonial academics, who highlight the Western-centric perspective of knowledge that dominates much of the historical and contemporary research field (Smith, 2021). Though resonating with this thought and particularly intrigued by St Pierre’s Post Qualitative Inquiry approach (St. Pierre, 2017; 2016; 2019; Taguchi & St. Pierre, 2017), I do not attempt to be so bold as to abandon a methodology altogether, however. As a novice researcher, I preferred to enter this venture with the “safeguard” (Manning, 2016: 32) of a pre-existing approach. However, in making reflexivity that safeguard, I believe I have achieved a middle ground from which I felt neither restrained nor lost.

That is because reflexivity explicitly commands that I not only considered the worldviews and constructions of myself and that of the research participants, but also that of the paradigm(s) from which have informed my research. Reflexive methodology is in fact, based on this entire premise, with Alvesson and Sköldbberg advising researchers to “become familiar with alternative theories, which should not be too similar” whilst also attempting “mental blackness (*tabula rasa*) vis-à-vis preconceptions” (2009, 274). Seemingly contrary suggestions, they rationalise this by suggesting “there is no radical conflict between the two strategies” because no one widely read can be constrained to just one strain of thought (Alvesson & Sköldbberg, 2009: 274). I have thus, read widely, and drawn from various disciplines, before, during and after the research process.

However, this does not counter the fact that “methodological procedures and codes of conduct arise overwhelmingly from the economically rich and powerful nations and

institutions that dominate research and publication” (Attia & Edge, 2017: 34-35), a consideration only amplified when conducting research in Vietnam. Mindful of this tension, I have immersed myself in a great deal of literature relating to international studies in general, and specifically Asia and Vietnam. However, albeit within an international setting, unfortunately these readings more often than not still apply, or at best adapt, methodologies and methods of Western origin (Morgenbesser & Weiss, 2018; Huotari, 2014; Jamieson, 1993; Nguyen, 2015; Tho, 2016; Scott et al., 2006; Napier et al., 2004; Wesch, 2018; Zhao et al., 2011) and, much like I cannot eliminate the subjectivities of myself and the research participants, I cannot wholly account for the prejudices of a westernised theoretical underpinning either. Nevertheless, by being flexible and reflexive in my approach, and by both reading widely and to the best of my ability acknowledging my own bias and preconceptions, I have become a reflexive researcher sensitive to these issues and instead of using them as reasons to discount my research, I use them instead to celebrate the uniqueness that it beholds.

Reflexivity, however, is most often criticised for self-indulgence on behalf of the researcher or as Finlay writes “endless narcissistic personal emoting” (2002: 226). Care needs to be taken to not over emphasise my own experiences over that of the research findings, whilst still offering as much transparency and acknowledgement of my own, and others, contributions, and influences on the findings (Engward and Davis, 2015; Holloway and Biley, 2011). Though much of my positionality becomes clear throughout the whole thesis, there are some elements that do not. In acknowledging my own biases then, and in making clear to the reader how some of my background may have influenced the research, I offer here some explicit context in relation to this, so it is contained and somewhat presented separately from the research findings and discussion.

5.3 Researcher Positionality

I categorise myself as a multidisciplinary, at times interdisciplinary, researcher and can see the benefits, contributions and indeed shortfalls, of various disciplines as well as both the positivist and constructivist viewpoints, and all those in-between. As a researcher with a first Degree in Education, and subsequent positions as a practitioner working with children and young people, I have maintained this interest in my research, whilst creating overlaps with other disciplines including (Human) Geography, Anthropology and Sociology, in effect bridging the gap between my personal and academic interests of Education, Culture and Society and their interface with the anthropogenic changes that the world faces today.

As mentioned in the introduction to this thesis, children's place in the world, particularly in light of current anthropogenic changes, and more so since having my own daughter, has become a key and ever-growing concern of mine. As adults continue to impede on the future of children, I have turned my work further towards the injustices and inequalities this causes, not just from an age perspective, but across several other dimensions. This is in part, why, I wanted to focus on a significantly impacted location such as the Mekong Delta, to understand the voices of some of those people on the frontline of the climate crisis.

In some ways helping me prepare for this interdisciplinary venture, my time within Education has required me to draw upon many other schools of thought, including psychology, anthropology, health, sociology, geography, politics, linguistics, economics and so on (Bartlett & Burton, 2016). Whilst many scholars and academics suggest that a lack of discipline can lead to a lack of specialism (Donovan et al., 2011), there is also rationale for increased multi and interdisciplinary scholars to bridge the gaps between various fields of study, particularly in the Anthropocene where solutions to global issues require both holistic thinking and practice (Callaghan et al., 2020; Lyall, 2019; Overland & Sovacool, 2020).

I believe that my fluid identity as a researcher has broadened my worldview and allowed me to consider the issue(s) based within this research from multiple perspectives. My own unique position, teamed with supervision from two geologists with a deep understanding of the environmental factors affecting the research site, and a sociologist with an extensive background working with inequality issues and children, has enabled me to comprehend new questions, draw upon alternative approaches and reach novel conclusions that one hopes will go on to form authentic solutions. However, this position has not come without shortfalls, with a particular challenge being no clear direction when deciding a research paradigm, with decisions perhaps more nuanced than for that of a researcher more firmly situated in a single discipline.

5.4 Bronfenbrenner's Ecological Systems Theory

Much of the literature that preceded this chapter addressed culture as a major influencer of both individual and collective perceptions and behaviours. For that reason, the theoretical underpinnings included within this thesis are founded on this. It was clear early on, that speaking with children in isolation of their wider environment would not be sufficient. This aligns with my background in Childhood Development and, sits well within my ontological and epistemological assumptions. My research thus takes a socio-cultural constructivist approach and its design has been heavily influenced by the works of Vygotsky's (1978) Socio-

Constructivist Theory and Bronfenbrenner's (1979) Ecological Systems Theory, though, it was only after the second round of data collection that I considered to apply the latter as a theoretical underpinning to aid the analysis and discussion of data.

Bronfenbrenner's Ecological Systems Theory (1979) (explored in more depth in section 3.2), has informed this study by providing a lens in which to consider the multiple actors and systems that have impacted children's development in relation to climate change in the Mekong Delta. This extends my reflexive methodology, by ensuring I systematically address each layer external to the child. By applying this theory to my research, I have objectively and strategically identified and analysed the impacts that each layer has upon the child and investigated the voices of those people who directly interact or influence a child's microsystem. I have subsequently, where possible, drawn upon educational documents, culture, and policy, to situate this within their exosystem and macrosystem, addressing how things have, or may, change over time (the chronosystem). Each of these layer's impact each other however, and I realise it is not possible to dissect influences to fit into each of these layers. They are entangled with multiple connections to one another. As an example, teachers from a child's microsystem are themselves influenced by the wider school environment, and the exosystem that includes the national political and economic setting, curriculum, cultural belief and so on, from which the school is placed. By applying this theory to my research design however, I am more conscious of these interwoven and complex relationships, and my data collection and analysis can account for them, though I also acknowledge its shortfalls as highlighted by Vélez-Agosto et al. (2017) and consider culture as something which permeates through all the systems, as opposed to being reserved for the peripheries of the macrosystem.

5.5 Ethics

Ethical considerations are traditionally positioned towards the end of thesis methodology chapters. However, given the multiple ethical issues that arise from both working with children and in an international context, and the impact this has had in shaping this research methodology, it seemed appropriate to bring this to the forefront. Addressing concerns such as power, translation, and informed consent, the following sections will consider the main ethical issues within this project as and when they emerged, making corresponding links to each part of the research. These will cover what Guillemin and Gillam (2004) refer to as both "procedural ethics", those that had to be implemented in order to satisfy a human research ethics committee, and "ethics in practice", namely those ethical issues that I as an individual researcher had to personally negotiate as they arose in the field. I will explain how ethical

challenges were minimised or overcome, and specifically how this guided the research process. Before proceeding however, it should be noted that ethical consent was obtained from the University of Hull's Research Ethics Committee before conducting any research. A copy of the submitted ethics and the subsequent approval can be found in Appendix A.

5.6 Research with Children and being a Cultural Outsider

How a research study involving children will be designed and carried out is dependent on many variables including "time, access, resources, as well as the researcher's goals, training and their perception of children" (Kane, 2008: 129). James et al. (1998) suggest four lenses through which a researcher may perceive children, with each view informing their selection of research methods and techniques. These four views of children are the "developing child", the "tribal child", the "adult child" and the "social child". The developing child and tribal child viewpoints both position children as incomplete and incompetent, whereas the adult child and social child are viewed as having capacity. The social child, the perspective that I approached this research from, is an interpretation that recognises children as different, but not inferior to, adults. Under this vignette children have unique social capacities that need to be catered for, whilst sharing equal importance and competence to that of an adult. Children then, are the experts of *their* own lives and we as adults must listen to them, adapting our methods and techniques appropriately, if we are to understand *their* childhoods, experiences, and perceptions.

Regardless of the viewpoint that the researcher positions themselves with however, research involving children is problematic and presents an array of methodological and ethical challenges. Indeed, my viewpoint, the social child, directly emphasises one of the most pressing challenges that exists when researching with/on children; as adult researchers, we are not children. We are automatically an outsider, and with adult-child dynamics almost always affording adults with control (Horgan, 2017; Mannay, 2013; Silver et al., 2013), power imbalances come to the forefront of research decisions. These decisions have consequences spanning both the authenticity of data and ethical implications. However:

There is an added and distinctive twist in the study of children: All adults were once children themselves. Whereas those of different genders or races rarely cross social categories, in this case the subject/other division masks a running process: children, the subordinates and the other, are daily moving toward adulthood, the dominant position. And the dominants were once subordinates. This structure may hold special promise for understanding: Adults may know from their own experience what it is like to be a child. On the other hand, the child within-suffused with the distortions as well as insights of memory and threatening when it contradicts idealized adulthood-may also pose obstacles to seeing

children clearly. Furthermore, the special ties of affection, power, and authority that mark relationships between adults and children may have profound effects on the construction of knowledge. (Thorne, Barrie, 1987: 102)

Thus, in conducting research with children, adults bring their own subjective experience/knowledge of childhood (Thorne, B., 2010). Our personal script provides preconceptions that can manifest in our research and interactions with children in a way much more nuanced than working with another group of people (Christensen, Pia & James, 2017). These preconceptions and methodological flaws are unavoidable; however, they can be mitigated by having a sound and conscious recognition to the influence of such.

In the context of this research, my position as a foreigner, and thus already an outsider, may have assisted in this process. I was conducting research with children in an unfamiliar culture that was very different to my own. I was a complete novice to their livelihoods; I did not grow up in the same environments, with the same cultural and societal beliefs, practices or even weather systems as them. I knew of these differences and was well aware that I could not apply my own experiences of childhood directly to this group of children, nor, from my post-colonial readings, would I want to. My relative lack of familiarity, provided a sense of objectivity (DeLyser, 2001) and I went in as a curious outsider, positioning them as the knowledge bearers for which many of my experiences, I knew, were not transferrable. As an outsider, my naivety also led me to ask basic questions that revealed localised truths different to my own, and thus were significant. To the children in particular, this positioned me as a complete novice to their lives, with repercussions for power dynamics (returned to in section 5.7). Of course, what one gains in objectivity as an outsider, also presents many methodological and ethical challenges. Structural norms are unknown, relationships are not yet formed, power imbalances are often magnified, and socio-cultural context is unfamiliar (DeLyser, 2001; Unluer, 2012).

From this then, I knew that my impartiality would create many barriers. Thus, to ensure suitable methods were selected, that ethical and methodological flaws were addressed, that I conducted myself respectfully, sensitively, and appropriately, and that the overall research process from start to finish was contextualised, I read widely, asked questions, and lived amongst their cultures. I relied heavily on trustworthy local informants and interpreters to support the research (a point returned to in section 5.8.4), and in an attempt to become well informed, I thus increased my physical, and thus affective, proximity to the study site and participants. This consequently disqualified impartiality, or as Sivertsen explains:

“The trouble is that what the stranger gains in terms of impartiality by her affective distance, she also loses in terms of understanding by the physical remoteness that grants her this indifference”. (Sivertsen, 2019: 56)

There is thus an impossible balance between being both well informed and impartial to be sought, and why many now consider the insider/outsider position as fluid (Joseph et al., 2021; Nguyen, T. Q. T., 2015; Sivertsen, 2019; Unluer, 2012).

In terms of selecting appropriate methods and tools, whilst recognising children as separate and unique from adults is necessary to ensure the most suitable are selected, Thomson warns of this leading to *child friendly* approaches as a catch all, where the intersections of childhood with other identities such as class, race, gender, culture and so on, go unconsidered (Thomson, 2007). These, along with personality traits and individual preferences, lend themselves to specific methods of data collection over others, with Horgan (2017) further adding that conceptualising children as independent rights holders removes their social, economic, and cultural context. Indeed, there were many methodological approaches I initially deemed appropriate when working with children, that transpired too not be culturally or socially appropriate. For example, there were an array of methodological, social, cultural, and logistical reasons why I could not fully embody a participatory approach – something I had initially set my hopes on doing. Bureaucratic and cultural conditions would not allow for such an emergent approach (explored further in Section 5.8), and some of the creative methods of data collection indeed, were met with confusion by participants. As an outsider across various socio-cultural realms, I was forced to reflect on my preconceptions of childhood, and indeed what I considered *good* research practice, in a way that may not have occurred had the research taken place in a UK based setting.

Of further interest, from the children’s perspective, I was a novice within *their* setting. I did not hide this naivety and employed various approaches to make this obvious. This helped lessen some of the adult/child power dynamics, and indeed it was the *outsider foreigner* position that both Taylor (2011) and Corsaro and Molinari (2018) found essential in their research with children in an international setting:

...in this case Bill’s ‘foreignness’ was central to his participating status. His limited competencies in the Italian language and his lack of workings in the school led the children to see him as an ‘incompetent adult’ who they could take under their wings to show the ropes (Corsaro & Molinari, 2018: 180)

In Vietnam, my obvious lack of cultural competence and inability to speak the language, assisted me in creating a more equal space. Children attempted to teach me their language

and saw me struggle to understand basic sentences. They had to direct me to the toilets in their schools and laughed when I did not know how to open a *chôm* (rambutan fruit). They taught me local songs and dances and showed me around the school at lunch time, hurrying me along and explaining various activities and displays as we went. They noticed my naivety, and much in the same respects as Corsaro and Molinari (2018), took me “under their wings to show the ropes”.

In identifying these far-ranging differences, and in acknowledging my outsider status across several dimensions, I recognised the participants as human beings, not human becoming’s (Qvortrup, 2010). I thus appreciated that typical methods used with adults, and those familiar within my western context, were not necessarily appropriate, and that a one size fits all in relation to research with children, could not be applied here. It was under this context, and my position as a cultural outsider, that I decided a reflexive methodology that employed a range of creative approaches, was essential.

5.7 Reducing Power

Working in this context then, at the forefront of many research decisions, was power dynamics. Considerations were made across several dimensions, including the power between adult and child (Horgan, 2017; Silfver et al., 2013), researcher and the researched (Rivas, 2005; Sarah Riley et al., 2003), racial power and privilege (Archer, 2002; Smith, 2021; Vakil et al., 2016), social class and wealth (Manohar et al., 2019). In all of these scenarios, I realised, the perceived social power lay in my hands. Emphasising this, these factors intersected with and reinforced one another, and the context of the research itself was one of strong hierarchical structures and unequal power distribution (Hofstede Insights, 2022; Minkov & Hofstede, 2013). This becomes an ethical issue, particularly regarding informed consent, and an issue of reliability in terms of obtaining an authentic account from children (Mavin & Corlett, 2018; Merriam et al., 2001). In the planning stages, all throughout fieldwork, and indeed upon returning to the UK and analysing the results, I had to contend with questions such as:

- How does my position as a white, western adult influence children’s (in)ability to refuse participation, and how might this influence the research process and findings?
- How have gatekeepers to children influenced children’s right to agree or refuse participation, and how might gatekeepers influence research findings?
- How can I ensure that the children participating in the study truly understand the purpose, and ensure their authentic participation, especially when there is a language barrier between myself and the participants?

- How might the socio-cultural conditions of Vietnam lessen/exaggerate these tensions?
- These questions, I realised, do not have fixed or definitive answers, however in trying to find answers, I was able to address several barriers and concerns arose:
- As both a white westerner and an adult with relative wealth, children, and indeed adults, may participate because they perceive me to have more power than them, and thus feel unable to decline,
- Gatekeepers (government, university contacts, schools, and parents) will likely influence who is, and is not, invited to participate. Children may also feel unable to challenge the powers of these adults. Gatekeepers may also influence children's responses, if they have a vested interest in the outcomes of the research. This will reduce – and in some circumstances eliminate – the voice of the child,
- Appropriate adaptations to obtaining informed consent need to be made at all levels. Signatures, and written consent will not be suitable in many instances. All written and verbal communication will require translation via a trustworthy and appropriate translator. Overall, the approach needs to be reflexive and supplemented with a conscious and ongoing effort to reduce power dynamics, Where the research takes place will also be important,
- Age related hierarchies, white idealism, the concept of *face* and many other socio-cultural norms/conditions will moderate participation, consent, and the research findings. I must be both conscious of this and employ strategies to reduce their impact.

Tackling these interfaces was no easy feat, however by turning to the literature – particularly post-colonial methodologies (Smith, 2021), and drawing upon my various lived experiences with children in both informal and professional settings, I set measures to mitigate these challenges as best as possible – many of which will be explored in the following sections.

Despite my best efforts however, there are many layers of power that were feasibly impossible to diminish. Indeed, it was only on the final phase of research that students stopped referring to me as *teacher*, and called me by my nickname, *Flo*. This was despite my continuous best efforts to remind them I was not their teacher, signifying that despite this, they still saw me in a position of authority. The fact that many of these dimensions could not be eradicated will certainly have influenced the research process, informed consent, and findings. Children may have tried to give answers when indeed they did not know because schools are typically associated with answering questions and performing tests (Morgan et al., 2002). They may have also felt compelled to answer given my perceived power or been so eager to contribute

that they answered questions even without understanding (Birch, 2006; Punch, 2002). Indeed, the power distribution and social set up amongst children, may have prioritised some children's voices over others (Morgan et al., 2002) - for which reason, a mix of group and individual discussions took place.

5.8 Research Design

“... a fine balance between rigidity and flexibility is required in fieldwork. It is important that the researcher has a clear idea of the purpose of his/her research aims and objectives. It is also advisable to have a clear idea of what methods will be employed in order to achieve these things. On the other hand, one must be prepared to refine and, in some cases, let go of these plans once in the field - often at very short notice (Murray and Overton, 2003: 32-35).

My research design is ultimately built on the premise of treating children as experts of their own lives and speaking to them directly as a way of understanding their perceptions and beliefs, whilst situating this within their wider socio-cultural context. It requires qualitative data to answer the questions I embody and requires constant reflexivity and reflection on my behalf in order to cater for the many and varied ethical and logistical issues, particularly those that accompany both research in another culture and with children. As the following section unfolds, the many challenges and tensions that arose particularly in relation to working in a culture different to my own and with children will be discussed, as will the many ethical considerations that transect through all elements of the research process that ultimately shaped the study. It will outline how the research was planned and executed and will interweave both personal first-hand accounts and the academic literature in doing so. I feel it necessary to do this because the decisions made within this research have been far from linear and instead have been iterative, emergent, confusing, at times frustrating, and because “[d]oing research is a messy affair, as dependent on negotiation, adjustment, personal choices and serendipity as on careful and meticulous preparation” (James, 1993: 169). Social research in general is both ethically and logistically nuanced and presents many challenges; these are greatly intensified when conducting international research, and especially that with children (Corsaro & Molinari, 2018). Cultural and ethical considerations in particular are at the foreground of all decision making within this project and thus, the following section will address them as they emerged, as opposed to the more common practice of presenting them in a separate section at the end of this chapter or as an afterthought. To ensure transparency, I will offer my personal experiences and highlight the complexities of this research, rather than giving a linear step-by-step overview. Through this, the reader can see *how* and *why* decisions were made, the importance reflexivity played in this process, and what barriers and indeed

opportunities navigated this. To contextualise the following section, an overview of the finalised project structure (amended repeatedly times throughout the study), can be found in Figure 5.

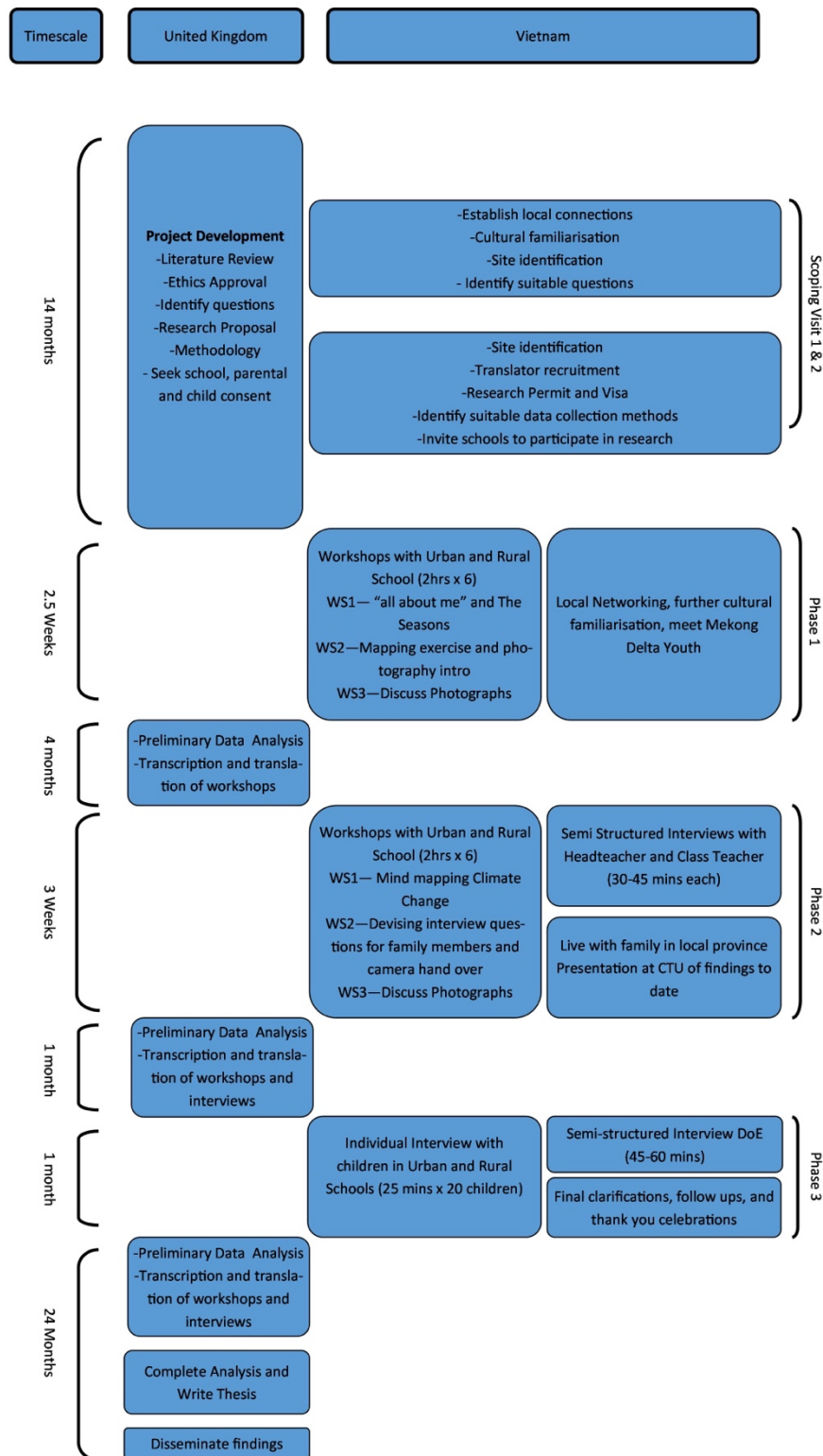


Figure 5: Project Flowchart

5.8.1 Preliminary Scoping Visits and Fieldwork Preparation

Unlike in many Research Design chapters, this section will start first in the initial stages of fieldwork preparation. This included a great deal of reviewing the literature and two Preliminary Scoping Visits (PSVs). These PSVs to the Mekong Delta were made before any data collection took place, and had several benefits:

- a) cultural familiarisation;
- b) establishing local connections and building rapport and relationships with stakeholders and local informants;
- c) identifying study sites;
- d) obtaining the necessary documentation to conduct research (visas and permits);
- e) recruiting an interpreter;
- f) negotiating access to children via institutional gatekeepers;
- g) determining culturally suitable techniques and approaches to data collection that were practically/logistically/ethically feasible.

5.8.2 Cultural Familiarisation and Local Connections

I entered the research field as a *Cultural outsider* – referred to as *bà tây* in Vietnamese (Boggiano et al., 2015). Presenting numerous challenges, with ethical, cultural and social issues at the forefront, and many other complications stemming from logistics, communication, transportation, politics, and a lack of resources (Mukeredzi, 2012; Napier, N. et al., 2004; Nguyen, 2015), conducting research in an international setting presents challenges perhaps not experienced by those who research domestically (McMillan & Conlon, 2004; Boggiano et al., 2015; Pham & Jones, 2005; Morgenbesser & Weiss, 2018; Napier et al., 2004; Nguyen, 2015). Though many of these issues will be explored in the sections that follow, in the initial stages of data collection, possibly the greatest obstacle to overcome was that, prior to the PSVs, I did not have established connections with anyone *on the ground* in Vietnam. Lacking experience of Vietnam's environment and culture, my only guide was reading material and the advice of colleagues. As useful as these contributions were, they could not provide me with enough contextual knowledge to proceed with my research effectively. As a result, the two PSVs were conducted for the essential familiarisation with the culture and to establish links with locals, before conducting data collection.

Fortunately, there existed longstanding connections between my supervisors and several academics at the University of Can Tho, meaning that identifying local informants was less of a challenge. Accompanying me for several days on my first visit, my first supervisor was able to make initial introductions, however this did not mean that building rapport and relationships could be neglected (Communicaid, 2021). Indeed, quite the opposite. As explored in the chapter prior, in Vietnamese culture the actions of one greatly reflect on those around them and thus, any slip up from myself could seriously have jeopardised the longstanding relationships that my supervisors and other colleagues at the University of Hull had spent a long time establishing (Borton & Ryder, 2000; Murray, G., 2021).

A great deal of preparatory reading and conversations with experienced colleagues of the *dos and don'ts* of Vietnamese culture and business was essential in ensuring I was culturally appropriate in how I conducted myself and able to build the necessary foregrounding's with my in-country partners (Boggiano et al., 2015). As an extremely hospitable culture (Murray, 2021), these contacts were extremely attentive as they helped me orientate myself within the new setting and context. They invited me to many formal and informal functions with them, showed me round various sites in the local area including both tourist attractions and those I would not have seen otherwise, and dined with me most evenings throughout all my trips¹. Though in Vietnamese culture it is usual for the first few interactions in a business context to centre on *getting to know one another* (Boggiano et al., 2015; Borton & Ryder, 2000; Murray, 2021; Napier et al., 2004), these were, at the beginning conducted in a very formal manner. However, as I spent more time with my in-country university partners, these formal interactions grew into more informal ones² that allowed me to see first-hand the context for

¹ I was extremely conscious of the effort these colleagues were putting in to ensuring I was happy and comfortable during my stay and often felt guilty for the amount of time they were investing in me. As such a hospitable culture, it is expected that the "host" takes care of and tends to every need of the "guest" and it took great care on my behalf to not insult by refusing their hospitality and assistance, but also to not take advantage of their kindness. I tried to be mindful of this and wherever possible, tried to not add to the potential burden that having me there might have inflicted.

² I recall reflecting on one evening in particular towards the end of my second PRV, where one of my Vietnamese colleagues picked me up on their motorbike from my accommodation. We were off for dinner and though it was not unusual for them to pick me up (as finding many food establishments was particularly tricky without local knowledge), this was unusual as they usually did so in a taxi. When we arrived, several other familiar faces were there with their families, everyone was dressed informally and the place we were dining seemed much more relaxed than the other places we previously visited. This, for me, felt like a pivotal moment in developing these relationships as, particularly the shift from taxi to motorbike, felt like a move away from formalities into a position where they felt less need to impress. I felt accepted and whilst I recognised I would always be an outsider, I felt the dynamic had shifted from formal to informal and that professional relationships were becoming friendships in both directions.

the research, the day-to-day norms, common social practices, and interactions amongst family members; as well as allowing me to ask questions that I might not have felt confident in asking had our exchanges remained purely professional. As we got to know each other better, the topic of conversation frequently turned towards the cultural similarities and differences between one another; most often resulting in much laughter. Being exposed to the culture before conducting research, and particularly building relationships that went beyond those purely professional, gave me a deeper insight and eased me into this foreign work environment. We built up trust with one another and as I grew in confidence, we identified the ways in which we could work in a mutually beneficial way.

5.8.3 Official Permissions, Permits and Visas

As noted by Kurti (1999), socialist state bureaucracy creates a great deal of red tape, and seals of approval must pass through the chain of command starting first at the top, making ethnographic research in Vietnam particularly challenging³. Permits and paperwork are an essential prerequisite for foreign researchers and, as a result of the “Vietnamese wartime legacy”, studies in Vietnam are restricted by both direct and indirect surveillance and fieldwork limitations (Luong, 2006: 372)⁴. Being associated with a host institution works in favour of research permit and visa applications, both as a signal of trust and in a host institutions knowledge of the systems, structures and bureaucracy that are necessary to navigate to obtain them (Borton & Ryder, 2000; Napier et al., 2004). In short, host institutions are integral to foreigners wanting to conduct research in Vietnam and without one, permission is unlikely to be granted (Boggiano et al., 2015).

Can Tho University acted as my host institution and assisted me in obtaining a business visa and a research permit from the government and local municipality. The process for this was lengthy and in the first instance took several months, with phase one and two both delayed because of this. Early on in the process, I was required to provide a detailed outline of the research as well as stringent plans that mapped out my activities for each day during the length of my stay, sometimes requiring an hour-by-hour itinerary. There was an obvious tension between my desire for a reflexive and participatory approach and the Vietnamese’s desire for detailed, clear, and systematic plans (Boggiano et al., 2015; Graham, Anne P. et al.,

³ Though this study here is not entirely ethnographic, it shares many similar features, and indeed is heavily influenced by the field. In doing so, many of the same challenges have been faced to those discussed by Kurti (1999).

⁴ A more detailed analysis of research in Vietnam can be found in 3.5.

2014; Hy V. Luong, 2006; Napier et al., 2004; Pham & Hayden, 2019a; Pham & Hayden, 2019b; Truong, T. L. & Fisher, 1997)⁵. A stringent plan, I feared, would not allow for emergent opportunities or responses to cultural and ethical issues to be easily implemented and instead lay in direct contradiction to the nature of study I was proposing.

While I had developed a flexible plan in the run up to my first phase of data collection, I was concerned that sharing this plan with officials would compel me to persist with it, even when I no longer believed it to be the best approach, a point I knew would be inevitable as the process unfolded. Nevertheless, with very little alternative option, I shared this plan with my in-country university, from which point it went back and forth as more clarification from their end was sought, until we finally reached a point of mutual satisfaction. While my first phase of data collection required a heavily circumscribed itinerary for each day of my visit and a minute by minute breakdown of the workshops, we agreed that to enable me time to reflect and analyse the phases prior, I could submit each phase plan individually, and thus was able to use prior workshops as a basis for planning future ones; namely based on any ethical issues encountered, the children's responses to particular activities, and emerging themes⁶.

Whilst apprehensive of sharing plans and of having to make workshops more structured in light of institutional requirements, detailed planning allowed me to gain the relevant permissions and, in many ways, helped in my adaptation to Vietnamese administration and cultural norms (Graham et al., 2014). Allowing my host institution to make suggestions for adjustments also enabled oversights to be addressed, for example I had planned some workshops over an exam period, as well as putting forward dates that fell on a national holiday. As it transpired, the biggest obligation that came with submitting plans was to keep to the dates and times set forth for workshops which, when working in school environments and when people are sacrificing their valuable time, I agreed and complied with completely. Adaptations during the workshops were allowed, and where additional opportunities made themselves apparent, as long as I notified those managing my stay and it did not impede on

⁶ More details of these phases and how these plans influenced the research process can be found under Section 5.9.

any existing commitments, I was more often than not, permitted to do this⁷. As the research process continued and as I gained the trust of my host institution and government officials, less detail was requested with each visit, thus allowing my practice to be much more responsive to the children and the emergent research. An official from the Vietnamese Government attended the first few workshops. This is standard procedure for foreigners conducting research in Vietnam, particularly in social research (Graham, Anne et al., 2013; Heath et al., 2007; Hy V. Luong, 2006; Scott et al., 2006). As they became more familiar with both myself and my research intentions, they attended much less. At no point did they question or challenge when workshops seemingly went *off plan* in response to a changing environment, opportunity, or issue and in the longer phases of 2 and 3, I was given a lot more freedom outside of the workshops to pursue interviews and contextual data. The methodological and ethical implications of having adult observers, particularly those with such authority, are discussed in Sections 5.8.6 and 5.9.

5.8.4 Recruitment and Role of the Interpreter

Limited studies exist that cover best practices for cross language and cross-cultural qualitative studies, with even less considering this across international boundaries (Birks et al., 2007; Shimpuku & Norr, 2012; Squires, 2008). In cross-national research however, there is much more contextual information to be considered than just the words of participants and, whilst various techniques exist to establish the reliability of collected data, the role and purpose of interpreters in such studies, remains “blurry and sparsely described in many qualitative studies (Harris et al., 2013: 2). Yet, the role of the interpreter is fundamental to the overall understanding of research findings and thus the rigor of the study (Choi et al., 2012). Here then, I detail this so as to be transparent to the reader.

Having an interpreter as part of this project was essential, though it was not without its challenges. With an extremely limited knowledge of Vietnamese language, communicating with children and adults alike would simply not have been possible without one, however an interpreter also added an additional layer of complexity to the already complex interpretive

⁷ The opportunity to stay with a family for a few nights in An Giang Province came up during my second visit, for example. This was discussed with my university partners, and they agreed that I could go. However, when an opportunity arose to visit an ethnic group in the Mekong Delta towards the Cambodian border, I was not provided local permission. Though I feel I would have gained insight and useful data should I have gone, I respected my in-country partners, their boundaries, and systems. I was not prepared to sacrifice these relationships and disrespect their goodwill as both colleagues and friends and thus, complied.

process of having a participant and researcher from alternate cultures (Jentsch, 1998; Baird, 2011; Jones & Boyle, 2011; Larkin et al., 2007; Squires, 2008; Shimpuku & Norr, 2012). As Shimpuku & Norr note,

When the participant and researcher communicate indirectly through an interpreter, this further distances the researcher from the original meaning as intended by the participant and greatly increases the complexity of the interpretive process... [and thus]...the cross-cultural language exchange is not a simple technical process; the interpreter's role involves a complex social and cognitive process that influences the findings of the study" (Shimpuku & Norr, 2012: 1693).

There are also issues surrounding bias, deliberate mistranslation and safeguarding - particularly when working with children (Birkman and Kvale, 2018). Whilst this cannot be wholly accounted for, the way in which I work with, and indeed who I recruit, as an interpreter, will largely impact the trustworthiness of the research findings and the ethicalities that surround the research process (Baird, 2011; Jentsch, 1998).

Over the course of this project, I had two interpreters, the first of which my in-country university colleagues aided me in recruiting. The candidates needed to meet the criteria of being proficient in English and Vietnamese, knowledgeable about Vietnamese culture (Squires, 2008; Harris et al, 2013), able to work with children, available for the length of the project, willing to travel, interested in the research topic and, ideally have some experience working in a research capacity⁸ (Bergen, 2018; Choi et al., 2012; Irvine et al., 2007). My local partners sent me the CVs of possible candidates and I met two shortlisted applicants via Zoom®, where we discussed the project, how this mapped to their experiences, qualifications, and interpretation skills, and conversed about general topics, such as families and hobbies in order to become acquainted with one another and to further assess their level of English. The latter in particular assisted the recruitment process in that it enabled me to assess how our working relationship might develop, as well as how they might be received by children. I was aware that I would be working closely with this person throughout the project, and thus I felt it necessary to have someone whom both I felt comfortable around and who felt comfortable around me (Irvine et

⁸ Though Can Tho is considered the hub of the Mekong Delta, the most experienced interpreters live in Ho Chi Minh or Hanoi. Further, the type of research I intended to conduct is relatively novel in Vietnam, thus translation in this context even more important. Finding an interpreter with all the relevant skills would prove difficult, however training would be provided were necessary. A high command of English and experience interpreting and experience with children were given priority.

al., 2007; Mill & Ogilvie, 2003). I also deemed it both ethically and methodologically necessary to work with a friendly, approachable, and warm personality in order to create as trusting and as safe an environment as possible for the children with whom we worked (Bergen, 2018). To ensure that documents were translated correctly, I also arranged for another translator to “check” short excerpts of anonymised translated transcripts against audio recordings to confirm the translations were accurate, for which it was confirmed they were (Regmi et al., 2010).

Deciding on the appropriate rate of pay for translation was ethically nuanced. There lacks a *standard rate* for such services because supply and demand vary across locations and languages, and there are vast differences in experience and quality (Hendrickson et al., 2013). This was further convoluted given the context of the research being in Vietnam, where salaries are markedly less than in the UK (World Data, 2020). It felt unethical to pay a rate that seemed significantly low in the UK, however the ethical implications of paying a rate too high also served as a barrier (Molony & Hammett, 2007). The rate of pay was decided via communications with the in-country university staff, detailed internet searches for independent rates, and with discussions directly with the interpreter.

Shimpuku and Knorr (2012) recommend that, much as one outlines their own positionality in qualitative research, so too should that of the interpreters. They suggest that researchers adequately describe information about interpreters, including their background, competence, role, and possible influences on the findings. This enables the reader to make their own judgements as to the impact of the interpreter, and thus the quality of the research. In agreement with such a stance, the first translator, Duc (pseudonym used) had a master’s degree in English Language Teaching and a Bachelor’s Degree in Education. Working as a freelance English Teacher and Translator/Interpreter in Can Tho City for 2 years and having moved there for study in 2010, Duc had good local knowledge as well as experience working with children.

His first role as an interpreter was online, translating information and consent documents for school principals, parents, and children ahead of data collection. I first met Duc face-to-face on my second scoping visit. During this visit we spent several days together, in which he taught me many things about Vietnam. I familiarised him with the research aims, explained the various approaches I intended to use in the research, and briefed him of any questions that may be asked to the research participants, enabling the opportunity to clarify understanding and thus avoid mistranslation (Regmi et al., 2010). We discussed the many ethical issues that

might arise, particularly those relating to power and leading questions, and the need to translate as close as reasonably possible to verbatim while accepting that in a fast-paced environment and particularly in the interests of building rapport, this would not always be possible.

However, my perspective of the role of an interpreter changed during phase one. I had initially requested translation to be verbatim; conveying “every element of meaning of the source-language message, without adding, omitting, editing, simplifying, or embellishing” (Mikkelsen, 1998: 1). However, after some reflections and further reading, I realised this was inappropriate for this context and study. My original reasoning for verbatim was in an attempt to omit the bias that might come with having a translator, however what I soon realised was that I was not looking for a *translator*, and instead what the research required was an *interpreter*; an expert of the foreign language, that meant in addition to the linguistic transfer, they could provide “explanations when the cultural knowledge of one party is not sufficient to understand the other party” (Kalina, 2015: 74). As a cultural outsider, without this necessary contextual appendage, I ran the risk of collecting inaccurate representations of the child’s voice. Duc and I had discussions around this early on and adapted our practice in response.

Duc fulfilled this role and offered context to many discussions within the workshops, as well as helping me navigate many cultural norms. He helped me understand the education system of Vietnam in particular and negotiated access to documents such as the Curriculum on Environmental Protection. He acted as a local guide on many occasions, both in practicalities such as finding a place to print photographs and finding a doctor when I was unwell. He also helped with the transcription of recordings once I had returned to the UK. Duc was a critical component to the research process and provided a great deal of both support and cultural context. However, while present for all of *Phase 1*, Duc was unable to continue in the subsequent phases because of a new job position. With an understanding of what I required, he did however, recommend another interpreter.

This interpreter, Tran Huynh Tuong Vi⁹ (herein referred to as Vi), had a Bachelor’s Degree in English Interpretation and Translation and worked as an English teacher for kindergarten children, with experience from this age through to grade 5. She grew up in An Giang Province

⁹ Permission to use actual name was sought. I felt that as such an active part of the research process and in acting more as a research assistant, it was important to have the role she played acknowledged.

in the Mekong Delta and had lived in Can Tho since 2013. She had very good local knowledge and was able to offer many insights from her childhood in a neighbouring province. A similar age to me, we built up a rapport and became very good friends alongside our professional relationship.

Similar to working with Duc, we again spent time together before conducting any research, to ensure that she was aware of my research aims and approaches and the ethical issues that might be encountered. It was clear early on that Vi understood the rationale for my methods and she often spoke of her own examples in teaching where she would use creative and engaging techniques. She discussed the many ethical considerations surrounding translation and interpretation without prompt and enjoyed learning about the processes of data collection and subsequent analysis.

Vi was particularly skilled at ensuring understanding for both parties. There were several instances both within the workshops and outside where Vi would explain how she had reworded certain questions because either linguistically or culturally, they did not translate, or where she would advise me of the culturally appropriate response to certain scenarios. Having both the insider knowledge and confidence to act as my “cultural ambassador” (Berman & Tyyskä, 2011; Harris et al., 2013), Vi’s input went beyond translation and instead offered an essential critical gaze to the project, alerting me to any inconsistencies between my desired research approaches and Vietnamese culture. On one occasion I had created a document to explain how to take photographs in what I viewed as a child friendly approach, using what I deemed to be child friendly language. However, Vi did not hesitate in suggesting she word it differently during translation, as the approach I had taken was not suitable in the Vietnamese context. I had written as if I was speaking aloud and, she advised that for Vietnamese children this would be highly unfamiliar and not make sense. In suggesting this, Vi challenged my western stereotype of “child” and helped me adjust my practices in light of this on many occasions (Lombe et al., 2013). As a cultural insider, she also organised interviews with other community members and parents, as well as arranging for me to stay with some of her family members in An Giang for a short time. This experience in particular alerted me to a whole new side of Vietnam that completely changed my interpretation of the data and turned out to be critical to my understanding.

We reflected on the workshops together addressing ethical issues, elements of engagement and other facilitators/barriers after the sessions and, upon my return to the UK, we regularly communicated so she could offer her opinion and contextualisation as I analysed data. She

also translated and transcribed workshops and interviews. Much like Duc, Vi became embedded and critical to the research project so much so, that I would consider her an active member of the research team, providing much more insight, contextualisation and opportunities for reflection, as well as providing feedback on my final analysis, than what might be usually expected from an interpreter (Berman & Tyyskä, 2011; Boggiano et al., 2015; Temple & Edwards, 2002). It is without a doubt that the roles these interpreters played in the study were essential and the research is much stronger because of them, however by outlining the above, I hope to have made clear my critical stance in assessing their role, realising the extra layer of bias that is imposed by their involvement.

5.8.5 Site and Sample Selection

“There is a general consensus that research should not be conducted in countries or cultures other than the researchers' own simply because it is easier to collect data in that setting (Glew, 2008) The problem area needs to be one that is of interest and relevance to the local community and partners.” (Lombe et al., 2013: 32)

The Mekong Delta was chosen as a site to conduct this research because, not only is it one of the most vulnerable places in the world to climate change, but it is also relatively under researched in relation to societal perceptions, particularly those of children, of climate change and subsequent changes in water¹⁰. Though understanding perceptions of flooding and climate change may be important elsewhere, given the immediacy and scale of threat that climate change poses to this area, and the critical role children will play in future adaptation and mitigation, in providing a rationale in line with Lombe et al. (2013), conducting research here is of the utmost importance and both relevant to and in the interest of local communities. It was a combination of a literature review, scientific evidence, existing connections between the University of Hull and Can Tho University, and the scoping visits, that both highlighted and reaffirmed the Mekong Delta as a necessary study site (a detailed overview of the Mekong Delta can be found in Chapter 2). The Mekong Delta, however, is a vast expanse of land covering over 40,800 km² and thus, it was necessary to home in on and limit the study to specific locations.

Located along the South Bank of the Hậu River, a distributary of the Mekong River, Can Tho Province is the most populous province within the Delta, home to approximately 1,236,000

¹⁰ A more thorough rationale for choosing the Mekong Delta as a study site can be found in Chapters 2 and 4.

people and covering a total area of 1439 km² (General Statistics Office of Vietnam, 2020). As one of five centrally controlled provinces in Vietnam, it is divided into five urban districts and four rural districts and is often referred to as the “*Tây Đô*”, or “*Western Capital*” (Dhara et al., 2020). Despite being the fourth largest city in Vietnam, and rapid urban development in recent years, approximately 78 percent of the land remains dedicated to agricultural production and thus, the region still heavily relies on its arable land and water bodies for economic and food security (General Statistics Office of Vietnam, 2020; Moglia et al., 2012).

Can Tho Province faces fluvial, pluvial, and tidal flooding and, in the context of climate change these multiple challenges are exasperated (Triet et al., 2017). An increase in both sea level and river runoff, urban runoff caused by impermeable urban development, and increased rainfall as a result of microclimatic shifts, all adversely affect the cities infrastructure and the lives of its citizens, both in the rural and urban context (Moglia et al., 2012; Huong & Pathirana, 2013; Danh, 2019; Garschagen & Kraas, 2011; Takagi et al., 2016; Ling et al., 2015). How these issues manifest and the varying degrees of threat they pose however, is different across these socio-spatial environments, particularly between rural and urban. It was thus decided that the project would be conducted in both a rural and urban district; Ninh Kieu and Thoi Lai District respectively. This was less for comparison, but inclusivity of alternative livelihoods – to diversify the range of perceptions, experiences, and knowledge(s) of children in relatively close, yet extremely different, locations.

The selection and recruitment of participants varied throughout the research process. During the initial stages, given my view that children as experts of their own lives, it was thus deemed necessary to recruit children themselves in order to answer the overarching research questions (Punch, 2002). Children specifically aged between 9 and 11 (grades 4 and 5 in Vietnam), were chosen as a target sample for several reasons. First, as explored in Section 2.2.6, primary school enrolment and retention is much more universal than secondary education (Espinoza et al., 2018; MOET, 2015). Primary school can thus act as an easily accessible platform to provide countrywide targeted childhood climate change and flooding interventions (Mukuna & Manyasi, 2015). If such initiatives are left to the upper stages of schooling, a large proportion of children may leave primary education with a lack of awareness or understanding that is critical for their future resilience. The perceptions of children in this age range then, is significant. Third, as explained in Section 1.3 and 3.3.2.1, numerous experts in both culture and child development concur that beyond the age of 12 years old, a child’s

worldview is unlikely to undergo any significant changes¹¹ (Hofstede, 2001; Ishii et al., 2009). Thus, the years that precede this are of critical importance, with ages 9-11 being *on the cusp* and thus particularly interesting. Finally, as Chi and Roscoe (2002) highlight, children do not enter learning scenarios as blank slates. Instead, educating complex issues such as climate change is not a simple process of *plugging gaps* and instead is complicated by prior conceptions of both the domain in question and others that are (or are not) linked. Understanding, and targeting, incorrect prior knowledges is more effective if detected early before they become increasingly embedded into wider knowledge networks (See Section 3.2). Accordingly, the beliefs and perceptions that the children in this study manifest are of critical importance in determining how current and future environmental and climatic challenges are tackled and what, if any, initiatives need to be in place before children enter secondary school. Thus, 20 children aged 9-11, in a rural and urban location within the Can Tho District in the Mekong Delta were selected to participate in this study.

To compliment this data however, it was also considered imperative to include significant adult voices, because these adults are critical in shaping the socio-cultural environment from which children are embedded and thus provide a central underpinning to their perceptions (Bronfenbrenner, 1979; Maccoby, 1992; Punch, 2002; Vygotsky, 1978). Teachers, principals, and parents were those specifically targeted, however as the following section will show, many participants were “recruited” via less typical means and as natural extensions of spending time in the local community, whereby locals provided information or comments relevant to the study before consent to use in the dataset was sought (Yuill, 2018). Participant selection and recruitment did not follow a singular tract and multiple means were applied. The following section will explore these multiple processes and offer the ethical dilemmas that accompanied such in doing so, drawing particular attention to informed consent and selection bias. An overview of the final sample can be seen in Figure 6: Outline of participants.

I decided to include both an urban and a rural school in the project to ascertain a greater spectrum of voices (Emmel, 2013; Patton, 2002), whilst also allowing for similarities and differences to become evident across socio-spatial lines (though, it is acknowledged that this does not necessarily mean the findings are wider of their respective populations (Etikan, 2016; Suri, 2011)). Both schools were selected for their very differing characteristics and

¹¹ Of course, worldviews can and do change beyond this point – see Section 3.3.2.1 for a more nuanced analysis.

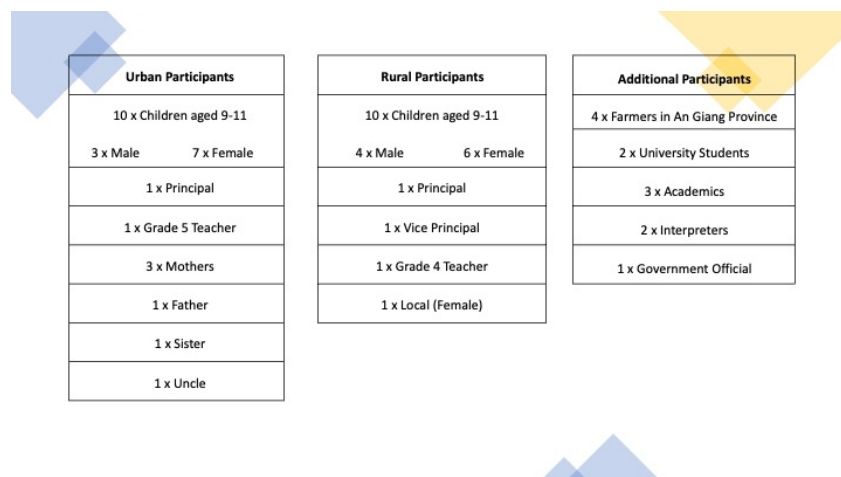


Figure 6: Outline of participants

demographics as outlined in Table 1: Overview of School Characteristics, and were at least a two-hour drive from one another¹². At this level then, sampling was somewhat purposive (Suri, 2011). In the interests of confidentiality, the schools will herein be referred to as “Urban Primary School” and “Rural Primary School” respectively. These were selected with the assistance of my in-country host institution. The process of this will be explored further in Sections 5.8.5.1 and 5.9.

Table 1: Overview of School Characteristics

Urban Primary School	Rural Primary School
Situated in Ninh Kieu District, Can Tho City, where approximately 304,175 people reside and the majority of the city’s municipal offices are, the Urban Primary School is the largest in the city. It provides education for students aged 6-11 and has a total enrolment of 1,973 students (correct as of May 2019). Though a range of demographics are catered for, parent’s occupations usually span office clerks, small and medium sized business owners, and professionals; typically earning above average salaries. Children in this school had a high level of English, so much so an interpreter felt unnecessary on many occasions.	The Rural Primary School is located in Thoi Lai District, Can Tho Province, where approximately 147,446 reside. It is approximately 40km outside of the main city of Can Tho City, caters for students aged 6-11 years and has a total enrolment of 368 students (correct as of May 2019). Parents typically work as farmers or as small business owners and earn below average salaries. Children in this school did not have a high a command of English, a pertaining divide present between urban and rural schools throughout most of Vietnam.

¹² Though approximately 35km distance, poor roads and infrastructure make the journey long, particularly in heavy rain and poor weather conditions. Substandard infrastructure widens the socio-economic divide between the two schools.

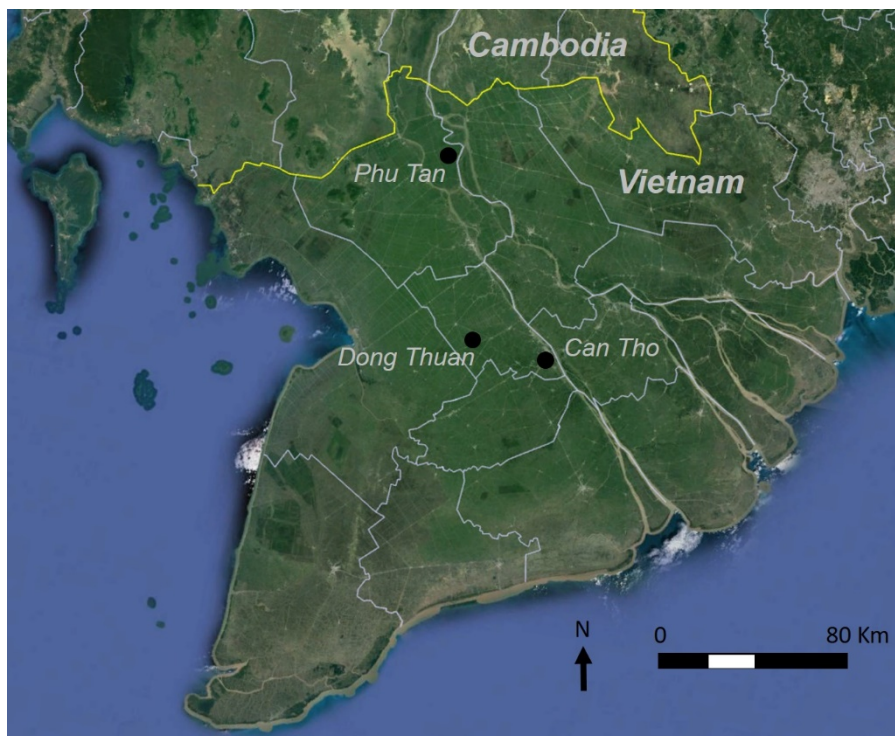


Figure 7: Map of Delta and Study Sites

As a qualitative study, 10 children from each school were invited to participate. This was for several reasons. First, the purpose of the study was to gain a deep and rich understanding of children's perceptions, knowledges, and experiences (Banks & Zeitlyn, 2015; Corbin & Strauss, 2015; Longhurst, 2016; Patton, 2002; Schwandt, 2001). It was not to make large generalisations for a wider population and thus, to gain such depth, it was necessary to work with a smaller subset of children (Patton, 2014). Second, given that the main mode of data collection was envisaged to be workshops, any greater a number would have significantly diluted the voices of the children (Longhurst, 2016; Morgan et al., 2002), and made managing these spaces particularly challenging. Thus, 10 participants in each respective school were chosen, which would have allowed for some drop out without significantly impacting the research, and ensure everyone had a space to speak (Adler et al., 2019; Herington et al., 2005). Though after the first round of data collection, reflections with my interpreter lead to the revision of this as it was felt that, particularly with the additional layer of translation, smaller groups would allow for more in-depth conversations with the children. Thus, though the same 10 children participated they did so in groups of 5. The sample of children in both schools was weighted towards females, 70 and 60 percent in the urban and rural school respectively. This may have some influence on the results and should be borne in mind during the reader's interpretation of the results.

Four parents were interviewed, all of whom had children participating in the Urban Primary School workshops. Though all parents from both schools were invited to interviews, no responses from the Rural School were received. Conversations with children suggested that parents in the rural context were too busy to participate. Harris et al. (2013) found that, with qualitative research being relatively rare in Vietnam, potential research participants decide not to participate because they

“were afraid that the study would waste their time; they were wary of contact with foreigners, or were hesitant to talk”. (Harris et al, 2013: 1411)

This may have been the case here; where rural parents in particular were hesitant to talk. This may have been because they lived in a place with typically fewer connections to cultural outsiders/foreigners (Nguyen, Q., 2016). Nevertheless, much of the additional contextual data that was collected outside interviews and workshops, was obtained within a rural context.

5.8.5.1 Gatekeepers

Recruitment of participants in qualitative research almost always has some element of selection bias, however where participant recruitment is negotiated with multiple gatekeepers, issues surrounding informed consent and selection bias are compounded as, not only does each gatekeeper mediate access based on their beliefs and assumptions, but power structures may influence a potential participants choice, or lack thereof (Saunders, 2012; Punch, 1986; Knight & Arksey, 2012; Patton, 2014). It is necessary to address how this may have occurred in the context of this research. Figure 8 offers a breakdown of this process.

Four gatekeepers had to be consulted before I could obtain the child’s consent to participate in the research; the local university, the principal of the school, the class teachers, and the parents; in that order. Starting from the first gatekeeper, Can Tho University identified and negotiated access to the schools that participated in the study. Though without their support it is unlikely I would have been able to conduct the research at all, handing over site selection to them superimposed another component of bias ahead of my own in the recruitment process (Boggiano et al., 2015). Although I did provide “desired criteria” to the gatekeepers and negotiated away from the schools initially offered due to their ‘private’ (fee paying) status¹³, it

¹³ On the second scoping visit, my colleagues at Can Tho University arranged visits to several schools with whom they had longstanding and established relationships. However, these schools were private institutions, and I did not feel they were an accurate representation of the wider community. After explaining that my research would be better situated in state run schools that were more representative

is unknown to me if there was an underlying conscious or unconscious agenda in the selection of schools (Heath et al., 2007; Plankey-Videla, 2012) and I frequently contemplated whether the schools had been put forward as *good examples* as opposed to being illustrative of those typical of Can Tho (Waibel & Ehlert, 2012)¹⁴.

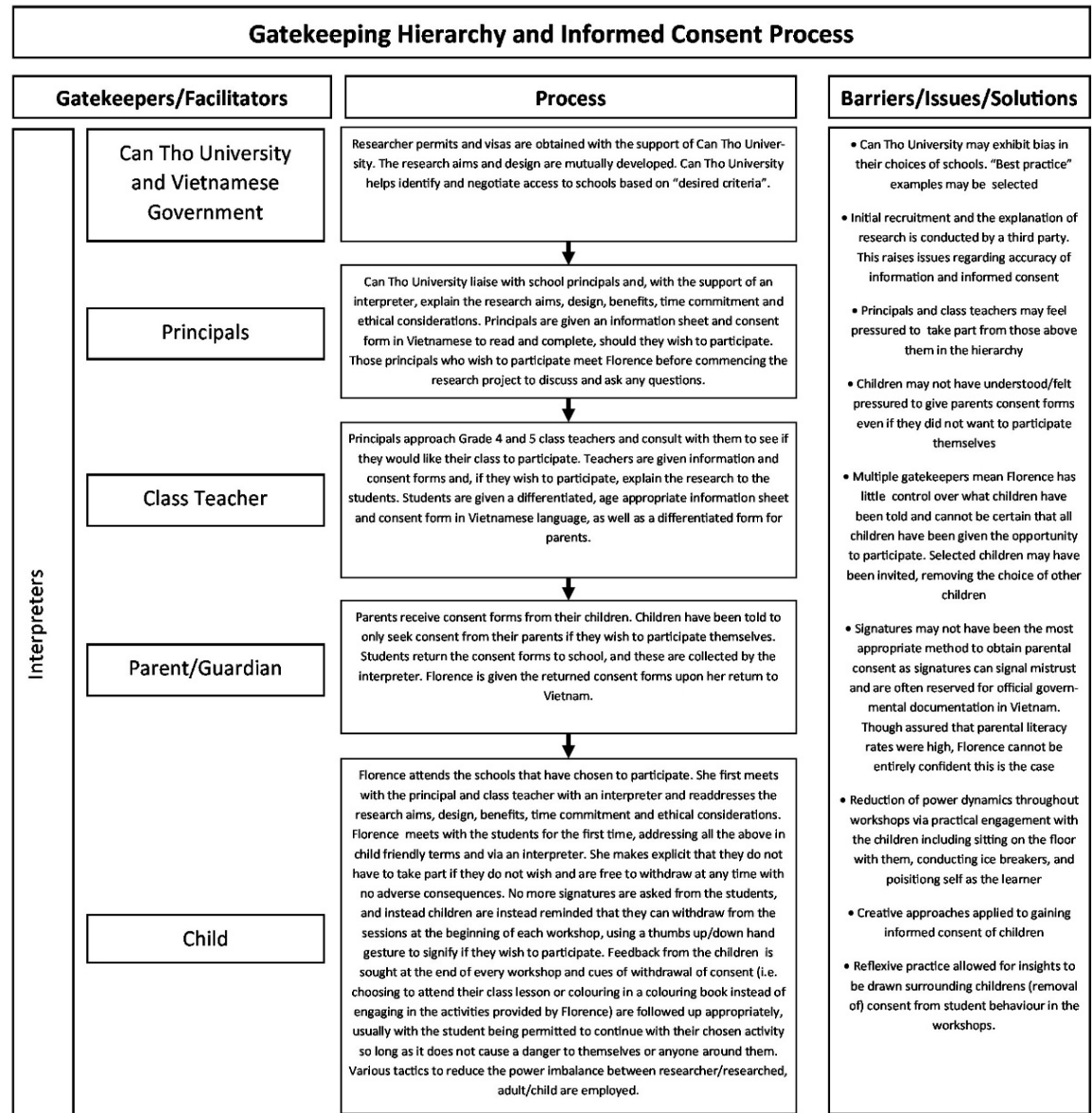


Figure 8: Gatekeeping Hierarchy and Informed Consent Process

of the wider population, they invited another two schools to participate which much better suited the aims of the study. Through negotiations with the gatekeepers, I gained access to two schools with which I felt offered much more in terms of transferability.

¹⁴ See Section 2.3 for an overview of Vietnamese culture and Face. Face, and only wanting to show the "best" particularly to Westerners, may have influenced their choices.

This early on in the research process and as I came to grips with Vietnamese bureaucracy, I felt limited in how much I could challenge these potential biases, however that did not stop me deliberating over any subsequent ethical issues and discrepancies in authenticity in great detail, during both data collection and analysis. In an attempt to understand how transferable these schools were to others in the context of Can Tho and Vietnam, I attempted to access reports similar to those issued by Ofsted in the UK, local/national league tables, or public information regards the schools' demographics. However, despite many attempts, these were not made available to me and such information, to the best of my knowledge, did not exist online.

This is not an unusual barrier faced by researchers in cross-national contexts, particularly in Vietnam (Marr, 1993; Connell, 2006; Soucy, 2000; Scott et al., 2006; Waibel & Ehlert, 2012). Instead, I had to base my assessments of school transferability upon the information that was available to me. Conversations with the children, teachers, principals, locals, and the interpreters, along with wider reading and observations, enabled me to situate these schools within their broader context. In doing such I was able to compare them against markers of location, professions of parents, children's extracurricular activities outside of schooling, the material belongings that children owned, children's levels of English literacy and so on (Wardle et al., 2002), and thus concluded the urban school to be above average in terms of socio-economic status and educational achievements, and the rural school to be a much more accurate reflection of the wider schooling environment in Rural Can Tho. The Interpreters in particular, were essential in helping me draw these conclusions and, though there was likely some conscious bias in the selection of schools and students from my gatekeepers, I do not believe it to have been to the detriment of the study.

Once recruitment of the schools had taken place, I then had to contemplate whether the selection of children had bias attached (Morrow, 2013; Plankey-Videla, 2012). In the UK, my ethics application was granted on the basis that I sought approval from principals, teachers, and parents before seeking consent to participate from children. The first two in the hierarchy, principals, and classroom teachers, were also necessary within Vietnam's top-down hierarchical structures and were an essential prerequisite to gaining access to children via schools. However, Heath et al. (2007) challenges these gatekeeping negotiations arguing that such processes remove a child's choice to opt in or out of the research on their own behalf.

Whilst the gatekeeping process at both institutional and parental level is often performed under the pretence that children need protection, when gatekeepers deny access, children's

agency in the decision to participate is thus removed or, on the contrary, where access is granted by someone in power, consent to participate is often assumed (Smette, 2019). Both outcomes are often at the detriment of children's rights. Though I agree with Heath et al.'s (2007) critical analysis of the consent process when researching with children, under the institutional constraints of my own university and the Vietnamese research landscape, this was the only way to listen to children's voices, and thus ongoing and iterative informed consent became increasingly important (Discussion continued in Section 5.8.6).

Conducting research in an institution that upholds traditional hierarchies and distributions of power, such as a school, brings with it both ethical and methodological challenges (Busher & Fox, 2019; Smette, 2019), likely more so in a country where teaching is an extremely valued profession and whereby age-related hierarchical structures are strongly adhered to (Graham et al., 2014). Though children often exhibit some ownership of the school environment, in Vietnam in particular, schools are a place where teachers are given a great deal of respect, often not questioned and where they have overriding authority. Children are consequently expected to be submissive and not challenge this authority (Truong, Thang Dinh et al., 2017). My concerns in regard to this were threefold: given that the school became responsible for recruitment, did they include or exclude particular voices specifically (Maglio & Pherali, 2020; Plankey-Videla, 2012), did the children who participated feel able to decline participation given the institutional and power constraints (Smette, 2019), and would a school environment reinforce my position as adult (Davidson, 2017; Maglio & Pherali, 2020).

I was advised that access to children via any other means would have been extremely problematic, namely due to children and parents' prior commitments outside of school hours and in terms of gaining a researcher permit¹⁵¹⁶. Unless willing to access participants via a school, I would have had to adjust the research in such a way that the core aims of listening to children themselves would have been removed. I also acknowledged the benefits of conducting research in schools, particularly as it meant the research was conducted in a familiar space in which the students had ownership, or at least, more ownership than me (Davidson, 2017). As part of a mapping exercise conducted in the workshops for example,

¹⁵ Research in Vietnam is heavily monitored and conducting it in an institutionalised setting offers a space to build trust. By conducting the research in a school, I was able to gain the trust of gatekeepers as it allowed my activities to be more closely monitored. See more in Section 3.5.

¹⁶ The issues relating to using schools as a platform for both recruitment and data collection will be returned to later in this section.

children in both schools located the school as a point of safety, with comments about caring adults to protect them being made. To enforce their ownership and power in this space, I did not hide my naivety in the school environment, and in asking simple questions that quite clearly gave them ownership such as asking them for directions to the toilet, what time the school day finished, the structure of the school day, and so on, I in/directly made children aware of my lacking knowledge for this space, beginning the journey of positioning them as the expert.

Thus, in concluding that conducting research in a school and accessing children via multiple gatekeepers was a necessary step to carry out the intended research, and unable to change the hierarchical structures that governed access, in seeking the child's consent I focussed instead on adapting my practices and employing multiple techniques to better ensure children's initial and continued consent to participation *throughout* the workshops. This was for many more reasons than just that of gatekeepers however, and many elements particularly relating to power and my position as a white western adult heightened the need for extra measures in ensuring informed consent (Graham et al., 2013; Heath et al., 2007; Krogstad et al., 2010).

5.8.6 Informed Consent

In the UK, informed consent is usually obtained via information sheets and signed documentation from the participant (Broesch et al., 2020; Krogstad et al., 2010; Wynn & Israel, 2018). However "written informed consent in certain locations may be problematic for many reasons, including language barriers, high rates of illiteracy, and cultural beliefs about the emphasis of signatures" (Lombe et al., 2013: 35). This is certainly true for Vietnam, where signatures can highlight a level of mistrust/caution over legalities, literacy rates vary and there was a clear language barrier between myself and the participants (Jafarey, 2002; Van Nuil et al., 2020). To conform with the ethical expectations of my home country however, I did seek consent via this method on my initial round of data collection. Consent forms were adapted for various recipients (see Appendix A), with children's forms much simpler and, what I as an English adult considered child friendly. These were translated into Vietnamese, and subsequently adapted to what the interpreter considered child friendly for Vietnamese children, and I was assured by headteachers that parents and children were literate. However, it was here I noticed friction, with some teachers particularly in the rural school not wanting to sign the documentation despite verbally saying they wanted to take part, and children clearly confused as to what a signature was, and why there was so much paperwork (Nguyen, 2015).

Indeed, even my in-country university contacts were clearly perplexed at the process (Boyden, 2012; Virginia Morrow, 2012).

In light of this, my ethics were amended, to allow for verbal consent on any subsequent visits (Boyden, 2012; Virginia Morrow, 2012; Wynn & Israel, 2018). Consent became fluid, as I *checked in* with children before the start of any session and reminded them that consent was optional (Cocanour, 2017; Krogstad et al., 2010). I spent the first few sessions building relationships and playing games, allowing them to teach me traditional Vietnamese games and songs, and likewise showing them English ones to build rapport and assist in minimising the numerous power dynamics (Kirk, 2007). When the research commenced, I applied a reflexive approach to children's consent, and where children showed disinterest in the given task, they were not forced to participate, and instead this was considered a removal of consent. For example, a group of girls chose to do some unrelated colouring towards the end of one workshop. I allowed them to do this and this as them temporarily withdrawing their consent. Likewise, one boy asked if he could join the class next door, as it was his favourite subject. Again, taking this as temporary withdrawal of consent, I allowed him to do this. Conversations often tailed away from the research aims, to topics of particular interest for the children, or children simply refused to answer. Whilst I may have missed out on data in doing this, and whilst at times it felt frustrating to be diverting from my research agenda, I believe it would have been unethical to have taken on the role of teacher in this scenario, utilising my perceived power to control. By allowing these digressions, and by employing additional techniques such as sitting on the floor with the children to be at their level (Chambers, 1997), I reduced power dynamics and created a safe and supportive environment where children felt able to withdraw consent and speak as openly as they wished, which has ultimately enriched the data (Silfver et al., 2013). Indeed, the fact that children did feel able to go off task and refuse to answer, I believe, demonstrates that to some extent, my aims were achieved. Children clearly felt comfortable enough to do this, and whilst some may have seen these drops in engagement as a negative, I took them as positive signs in relationship building and comfort amongst one another.

Informed Consent of adult participants was achieved via an interpreter, who explained the research to the participants, and presented them with the information and consent forms in written Vietnamese (Appendix A). It was explained that usual UK procedures require adults to sign the paperwork if they agree, understand, and would like to participate in the study – with the majority being happy with this. One headteacher showed some dissatisfaction, and was not comfortable signing the document, but made it clear that they did want to participate. I

thus asked if I could voice record consent, to which he agreed. Literacy rates of parents were also considered, and the option of verbal consent was obtained via recordings.

Because some of the research data occurred outside of structured research activities, I have contended with consent in a way quite different from many forms of research (Wynn & Israel, 2018; Yuill, 2018). For some of the data, consent was sought in retrospect, instead asking if a conversation or quote outside of typical research activities could be included (Pollock, 2012). These again, were verbally obtained, with all the necessary information provided to the individual. Of course, many observations have contributed to understanding the data. With no identifiable information being gathered, and with these observations often applicable to larger society in general, similar to Stethern 2000: 294), in this case “[h]uman subjects . . . are not necessarily the subject of the research: That subject is the manifold products of people’s interactions” (Strathern 2000a: 294). Thus, in these instances, it was not felt as necessary or feasible to obtain consent from those whom I observed or encountered in day-to-day life outside of formal, prearranged research activities, unless a direct quote or conversation of particular importance was to be included (Smette, 2019).

5.9 Workshop Design

It was over the course of the PSVs, and during the surrounding planning and preparation stages, that I decided upon three phases of data collection. This was for several reasons; to capture children’s voices in both the wet and dry season, to enable preliminary data analysis of previous phases to help inform subsequent rounds of data collection, and because repeated visits in Vietnamese culture signal friendship akin to a returning member of the family (Boggiano et al., 2015; Communicaid, 2021) - an aspect I considered important particularly in regard to establishing trust with both the children and adults with whom I intended to collaborate with. Further, these visits, along with my pre-reading, allowed me to realise that even within formal working arrangements, when working together for the first time the first few meetings in Vietnam are typically spent “getting to know” one another before conducting the “business” at hand (Communicaid, 2021). Further, Vietnamese “culture demands that Vietnamese meet face-to-face and build relationships before they are comfortable doing business with strangers” (Napier, N. K., 2003: 9). Indeed, only till I was in Vietnam, meeting face to face with various partners and informants, did I make any significant planning progress. I thus believe that allowing adequate time and repeated visits for this relationship building both in the schools and wider supportive networks, was essential.

The first phase of data collection took place in November 2018, the second in March 2019 and third in May 2019. Each phase was designed to build upon the one previous, taking account of emergent themes as well as the successes and pitfalls of the previous workshops (for an overview of the structure, refer to Figure 5). The study was designed to be reflexive, with the ability to respond to the children and the emergent themes both in and on action (Schon, 1991). I wanted to create an environment that would allow the children I was working with freedom of speech, providing as many outlets and modes to accommodate this as reasonably possible. I also aimed to get to know the children and their lives in a way that I felt would not be possible through traditional forms of research and I thought it important that I built a trusting relationship to minimise the researcher effect, whilst reducing the power dimensions that would likely exist given my status as an adult researcher from a developed country (Archer, 2002; Maglio & Pherali, 2020; Mannay, 2013; Merriam et al., 2001; Silfver et al., 2013; Vakil et al., 2016). All the while I was conscious of the cultural differences across various spectrums (age, race, values, etc.), conducting necessary readings and prepared to adapt and change the methods as appropriate. I decided that fun and engaging workshops that utilised creative and arts-based methods would suit participants age, culture, and capabilities most appropriately, and somewhat reduce, though not eradicate, the existing power imbalances. From this rationale, I planned a series of workshops that facilitated the breaking down of any adult/child and cultural barriers that might exist, as well as activities that specifically sought out to answer my research questions. The evolution of this process across all three phases will now follow, giving a brief overview of decisions made, and some of the challenges faced along the way, that ultimately led to the findings discussed in subsequent chapters. The workshop plans that accompanied these three phases can be found in Appendix B.

5.9.1 Phase 1

There were several aims to the first phase of data collection. First, it was to familiarise myself with the schools, children, and overall culture (and for the schools and children to become familiar with me). Relationship and trust building was critical in this phase. It also set out to answer the following research questions:

- 1) What are children's perceptions, understandings and beliefs surrounding flooding?
- 2) What are children's narratives of living with water and the rainy season? Do these differ in relation to their social, cultural, and spatial context (specifically between rural and urban contexts)?

3) How do children's socio-cultural environment manage and mediate these knowledges and perceptions?

The reader will note that these differ slightly from the research questions outlined earlier in the thesis. That is because it was only during this phase of data collection, that the true interconnected relationship between water relations, flooding and climate change came to light, and the importance of making a specific focus and inquiry into climate change became apparent. The second question was also deemed necessary in order to contextualise any later data collected.

Three workshops in each respective school occurred in this round of data collection. In an attempt to build relationships that would foster both an ethically relaxed environment, reduce power dynamics and produce more authentic data, approximately 40 percent of the time in these workshops was committed to building relationships, with the remainder focussed on answering the research questions (Pitts & Miller-Day, 2007). This included ice-breaker activities and games. To answer the research questions, I utilised a semi-structured focus group format, to explore where they felt un/safe, and how this changed between seasons. Mapping their route to school and photography were used to focus discussions, further however these activities were both met with some challenges.

During the mapping exercise, children were asked to draw their route to school, marking places of significance and those places they felt safe and/or unsafe. I had not anticipated that they might struggle with this, however it seemed student were concerned with getting the maps geographically accurate, with some children in the urban school stating that, because they drove so far to school, they did not know the route. I spent a great deal of time assuring them that I was not looking at the accuracy of their map and was more interested in what they did and did not see on the way to school, and places of importance to them. This meant that more input from me was required, which I was initially concerned about. However, upon reflection, I do not believe my input influenced what was or was not included and thus, the maps still offered unique insights into their lives and perceptions. Indeed, the fact that those in the urban school struggled because of the distance travelled was enlightening itself. Nevertheless, it was naïve to assume that mapping in this way would be possible without structure, and this was perhaps my first concrete reflection on how my perception of childhood could not be transferred to this context (Sarah Riley et al., 2003; Thorne, 2010; Thorne, 1987).

Because workshop plans were adjusted to match the availability of the schools, and government official who accompanied me on some of the visits, the children only had one day to take photographs in this round. This undoubtedly impacted their ability to take photographs of real meaning. Though some interesting photos were taken that structured informative discussions in the next workshop, I became aware of the need to allow adequate time for such an exercise, and thus planned to use photography again in phase 2.

I did not realise, till the workshops began, that I would be accompanied by a government official. Their presence created many ethical and reliability issues in the data collection process that I had not anticipated. My experience was not unique, with Luong (2006: 372) explaining that studies in Vietnam are restricted by both direct and indirect surveillance and fieldwork limitations as a result of the “Vietnamese wartime legacy”. This may have impacted children’s responses in the workshops; however it is hard to tell what degree as I myself was also an unfamiliar person with relative social powers (Silfver et al., 2013). I would suggest that my own practice differed slightly in response to their presence however, ensuring that it always looked like the children were busy and contributing positively, and perhaps adding another level of nerves to what already felt like a daunting task. As time went on however, it appeared that both myself, the children and the government official became comfortable with the scenario. The government official attended less frequently as the research went on, not attending at all in the final phase, likely through a building of trust (Maglio & Pherali, 2020; Napier, 2003; Pitts & Miller-Day, 2007).

5.9.2 Phase 2

In the first round of data collection, children provided rich data in terms of their perceptions of the seasons and flooding. From here however, I realised I needed to further explore their perception and knowledge of Climate Change, completely reshaping my research question. Though I recognised the interface between the two before my visits, I had not understood the impact climate change was having on water as a resource here to its full extent. Nor had I truly understood just how underpinned the region was by slow onset flooding – indeed my own perceptions of flooding had fooled me into considering floods as a purely negative event – not understanding that the absence of such might be considered a hinderance to productivity here. This only came to light during my ethnographic observations and workshops with children in *Phase 1*. I also realised that relying solely on children to inform me of where their knowledges and perceptions came from was not enough, and that the research needed to be more firmly embedded within its socio-cultural context. It became apparent that I needed to speak to other key members of their community and analyse key documents that influenced

the children's environment because a child's voice is situated within a complex and enmeshed environment – not existing within a vacuum (Bronfenbrenner, 1979; Hornsey, 2021).

Ultimately, understanding their voice was contingent on understanding the overt and subliminal messages that came from those around them across all levels – from the micro to the macro system. I thus planned to interview teachers, headteachers, parents and government officials, whilst also analysing key documents such as the primary school curriculum. Thus, *Phase 2* was planned around answering:

- 1) In the Mekong Delta, what are the knowledges and perceptions of children in relation to climate change?
- 2) How do children's socio-cultural environment manage and mediate these knowledges and perceptions?

To answer these questions, *Phase 2* followed a similar structure to *Phase 1*, consisting of two workshops within each respective school. In *Phase 1* however, I found the size of the workshops too large. The size meant I missed a great deal of data and I therefore decided to run two identically planned workshops with the 10 children split into two groups of five in each respective school.

The first workshop in this second phase turned the focus to climate change, as this emerged as an area that required more investigation in the first phase of data collection. Children mind mapped their knowledge of climate change. I had planned for the mind map to go home with the children so parents to add any knowledge they have that their child did not include and thus garner their understandings, however children showed reluctance to do this in both schools, and thus I did not push this idea any further. Children also devised their own questions about climate change to ask their parents. This was decided as a way to:

- a) highlight what the children did not know but wanted to know,
- b) involve the children in the data collection element of the study, increasing their engagement from participants to co-researchers and,
- c) to gather another data set elicited from the parent's answers.

Whilst the children came up with questions, when they took them home, no parent filled them in, with reasons ranging from children forgetting, or parents saying that they did not want to.

Workshop 2 also gave children another opportunity to use the cameras, This time, children in each respective school had the cameras for 2 weeks, to allow more thoughtful photography as,

upon reflection, the length of time students had in the first phase of data collection to take photographs was not sufficient to allow them a range of options in their photography (Ronzi et al., 2016; Zeglin et al., 2019). These were then discussed in *Phase 3*. The reason to have another photography exercise was also to address the new research questions. Therefore, in this phase, children were asked to take photos whilst thinking about changes in their local area. This appeared to be much more successful, with a range of provoking photographs being discussed in *Phase 3*.

During this visit I also conducted semi structured interviews with teachers, to discover if and how they implement climate change and flooding into their curriculum. Particularly interested if this is a priority and whether or not the education is localised or discussed more generally, this complimented interviews with headteachers and a local government official, as well as the analysis of educational documents from the state, addressing various levels of the children's ecosystems. Obtaining these documents was particularly challenging, and it was not possible to gain access to all those desired. This is a common challenge other researchers in Vietnam, with many documents, information and data being considered *sensitive* and thus confidential (Van Ta & Zyngier, 2018; Waibel & Ehlert, 2012)

5.9.3 Phase 3

In the final phase, children brought their cameras back to discuss the photos. I was initially concerned that the length of time between taking the photos and then discussing with me (~ 2-3 weeks) would be too long (Ronzi et al., 2016). However, as soon as the photographs were reintroduced to the children, they appeared to have a wealth of thoughts to share. This almost certainly proved to be the most successful elicitor of discussion. They had had the cameras for two weeks, and thus they had a good amount of time to consider what they would photograph and take it. These discussions were done one-on-one in most instances; however all children were present in the room, either playing board games, drawing, decorating balloons, taking photographs of one another and so on.

This enabled me to speak individually to each child in a way that was not possible in the group designed activities that had occurred before, and were conducted to somewhat curtail some of the drawbacks associated with group based research; namely group dynamics that result in one favourable opinion, the fact that some voices can be lost to more active ones, and the challenges associated with coding analysis and the identification of speakers (Tracy, 2020). By diversifying the modes and approaches for the children to voice their perceptions, understandings, and beliefs, I believe a deeper understanding was achieved (Ansell et al.,

2012; Taylor, 2011). I decided for this to occur in the final phase of data collection so that a relationship between myself and the child was already established, and thus tensions minimised. By using the photo as the conversation driver, I further created a relaxed atmosphere often lacking in interview scenarios with children (Ansell et al., 2012; Christensen & James, 2017; Morgan et al., 2002; Taylor, 2011). The conversations were open ended, with only the picture photograph taken by the child and my overall research questions directing discussions.

This final phase of data collection also included an interview with a governmental official from the Department of Education for Can Tho, and parents from the urban school. In both instances, the interviews were semi structured (Appendix B). By this point, I felt much more comfortable devising questions for Vietnamese respondents, however these were also shared with an interpreter before being asked to ensure they were culturally sensitive and appropriate. Though some of these interviewees had English as an additional language, an interpreter was present for all of them to ensure cultural interpretations were made were necessary.

During *Phase 3*, my then 6-year-old daughter accompanied me on fieldwork. This was possible thanks to inclusive minded supervisors, and subsequent strict risk assessments and health and safety protocols. Having children “enter the field”, though not usual, is not entirely unheard of particularly in ethnographic work (Bourgois, 2002; Farrelly et al., 2014; Levey, 2009; Poveda, 2009; Scheper-Hughes, 1993), however it is rarely written about in detail, particularly in fields outside of anthropology. Though this thesis does not here have the space to address the process and implications of this in detail, worthy of specific mention is the impact this had on reducing power dynamics and building relationships with both adult and child participants alike. Much as Farrelly et al. (2014: 2) explains, “[t]he presence of children in the field can help establish the identity of the fieldworker. By just ‘being there’, children enable the fieldworker to occupy a role which community members can relate to”. In doing so, the common and relatable standpoint of ‘parent’, can assist in the building of trusting and meaningful relationships, whilst concurrently reducing power (Levey, 2009).

Much like Poveda (2009) describes in his time within a Gitano (Spanish Roma) community, my daughter turned me from researcher (or teacher, as many of the children previously called me), to Olivia’s mum – a relatable, maternal, and therefore safe person. By wanting to interact with my daughter, they immediately became more responsive to interacting with me. Indeed, in building relationships with teachers, parents and indeed locals external to the formal

research setting, having my daughter present allowed a commonality to be instantly seen, reducing the threat that may be borne from being a researcher in Vietnam (Hy V. Luong, 2006). It gave us an entry into conversation, with many people instead initiating spontaneous conversation with me, rather than me with them. Thus, this final stage of data collection, one I thought might be the least productive by having parenting duties to contend with simultaneously, actually provided some of the richest data, both inside and outside the workshops.

5.10 Data Collection Methods

In current social science debates, the “quantitative paradigm” is often depicted as being “positivist”, while the “qualitative paradigm” is depicted as being “constructivist” or “interpretative” (e.g., Bryman, 1988) which has consequences on how we conceive social science research processes (Baur, 2019: 4).

In taking a qualitative and reflexive approach and taking influence from various canons such as grounded theory and participatory research, my methods of data collection have reflected this. My prior reading and experiences led me to inquire into the use of creative and arts-based methods. These will first be explored, before detailing additional methods of data generation from children’s surrounding worlds, namely semi structured interviews with parents, teachers, and government officials.

5.10.1 Creative and Arts Based Methods

Creative methodologies provide outlets that depend less on the written word and help avoid the intimidation that may be postulated by direct questioning (Leavy, 2020). They are often in formats familiar to children, such as drawing or play, and many times take place in groups which can:

“tak[e] the individual spotlight off one speaker, who may get nervous or anxious about being interviewed, and allowing ideas and thoughts to be triggered by what others in the group say” (Burns, 2010: 77)

When successfully implemented, this can ensure the research process is enjoyable for the child, help build relationships between adult and child, and provide an interesting focus for the child that can elicit much more natural and authentic conversations; in turn facilitating new meanings that may not have been visible through traditional methods of data (Lundy et al., 2011; Marshall et al., 2015; Thomson, P., 2008; Yamada-Rice & Stirling, 2015). Grouped activities also complimented the collectivist culture of Vietnam (Murray, 2021). It is thought that a turn towards more creative methodologies has followed with the evolution of children

and human rights (Horgan, 2017; Lundy, 2007; Lundy & McEvoy, 2012; Punch, 2002). With a growing and vested interest in listening to children's accounts in decisions that affect them, and with children increasingly being viewed as agents of their own worlds (Lundy, 2007; Lundy & McEvoy, 2012), creative methodologies including drawing and photography, have received increasing attention.

Nevertheless, such methods also receive criticism and must be used with caution (Blaisdell et al., 2019). Just as adults inhibit personal preferences to particular research methods, as do children (Christensen, P. M. & James, 2017). Drawing for example, would likely not be the most appropriate medium to explore perceptions with a child who lacks confidence in this area, and the cultural significance/relevance of drawing also needs to be considered (Taylor, 2011). Further, as Rose (2016) cautions, issues surrounding representation and 'audiencing', can arise. This is because individuals, including the participant and the researcher, interpret their created art differently. Ensuring that what the participant meant and what the researcher understands are not always aligned (Mannay, 2016). Audience convolutes meaning even further, as when this occurs, the participant creates their art based on the audience they intend to show it to, and the perceived wants and expectations of that person (Rose, 2016). This influences what is included or excluded from their representations, and thus is not always an accurate representation of them (Kara, 2015). Whilst these are issues for consideration in all qualitative research (though often tagged under different names i.e., responder bias and observer effect), they are particular challenges in methodologies of a visual nature (Kara, 2015; Leavy, 2020).

In the context of this research, this likely had implications given my position as a white, western, cultural outsider and adult within a school setting surrounded by their peers (Horgan, 2017; Morgan et al., 2002; Silfver et al., 2013). Within a building that typically adheres to right and wrong answers, children may have drawn or photographed images they thought were *correct* through an adult lens, as opposed to ones more authentic and representative of their beliefs and perceptions (Horgan, 2017; Morgan et al., 2002; Silfver et al., 2013). The following sections will explore some of these benefits and drawbacks as specific to each research technique.

5.10.1.1 Drawing

Drawing as a research method overlaps many areas of modern social research (Horne et al., 2017). As a tool outside of formal research, drawing has been used as a method of communication and expression for millennia (Henshilwood et al., 2018), and emerging as a

scholarly approach within psychology in the 1930s, drawing has grown in popularity as a research tool to explore both adults and children's reflections, perceptions, and views on various phenomena (Mitchell et al., 2011). Drawings provide an alternative to the written or spoken word and, as Mair and Kierans (2007) suggest, drawings often lead to the exploration of both conscious and unconscious issues and experiences, making such things "visible" to both the researcher and the researched. Particularly commended as an ethically sound approach for research with children (Literat, 2013), and as a largely cross-culturally appropriate method, drawing affords the space to explore ideas and perceptions in a way that relies less on the written word and can provide the starting point and prompts for more open and honest discussions (Lyon, 2019). Reflecting on her own experiences, educational psychologist Linda Theron (2011: 4) describes drawing as a *wonderful tool*, applicable to many scenarios:

With shy children drawings often broke the ice. With boisterous youngsters, drawings regularly stilled them and encouraged them to reflect ... When my clients were troubled by something that seemed very overwhelming, it helped to concretise the issue as a drawing. (Theron, 2011: 4)

How drawings are used in research varies based on context, discipline, and individual researcher. Some researchers, trained in drawing analysis and expressive therapies, will apply psychological meanings to drawings, whilst other researchers will use drawings as a tool to facilitate or extend oral conversations. With minimal training in the former, and with the understanding that such skills, even when refined are best combined with other robust methods of data collection and triangulation (Backett-Milburn & McKie, 1999), I chose to apply drawing as a tool via the latter approach, whilst paying great attention to the role of the social situation (including myself) in constructing meaning to the images and surrounding dialogue. Much in the same vein as Horne et al. (2017: 1), I was "not concerned with an end product such as a representational image, that would lend itself to measurement and quantification, but the process of facilitation". Drawings, in my case, would be an initial point of reference for children to get their ideas and perceptions out, from which a conversation could be scaffolded (Pimlott-Wilson, 2012). This seemed particularly necessary given the language barrier between the participants and I (Bagnoli, 2012). Images in this thesis have thus been included as a data point that accompany, contextualise, and illustrate the conversations that ran parallel to them.

Of course, "drawing" in itself is a broad term that can be both *everything and nothing* (Garner, 2008). In choosing drawing as a methodological tool, it initially felt relevant to home in on exactly what this meant for both myself and my participants. However, after some further

reflection, it is exactly this wide range of applications, and that in many instances sticking to the broadest definition of *intentional mark making on a receptive surface* (Lyon, 2019), which felt most suitable. This, I felt, would enable children to draw in whatever culturally relevant way they wished, though, of course, this was somewhat contingent on the resources I provided. I also had to ensure the drawing was purposeful in that it communicated messages that answered the research questions at hand.

Drawing thus transcended multiple boundaries within the project, from drawing maps and spider diagrams, to representing the wet and dry season using whatever style of drawing they wished. These enabled both objective and subjective narratives to be elicited, as they highlighted both knowledge and feelings (Chakraborty, 2017). Drawings were both conducted individually, collectively contributed to, with the discussions surrounding them providing rich data (Pimlott-Wilson, 2012). Using drawing as an exploratory tool rather than one of representation then, I provided a range of large pieces and smaller A4 sheets of paper in various colours, post-its, and an iPad; as well as crayons, pencils, highlighters and felt tips. Scissors, tape, glue, and stickers were provided, and children had free reign over how they would utilise these. I brought some resources from the UK but was conscious to also buy locally sourced resources to ensure they were familiar to the children, offering them a choice of both.

My reading informed me that drawing, though a culturally relevant activity in Vietnam, was a novel and underutilised approach to *research* in Vietnam (Hy V. Luong, 2006). For children however, who generally have limited exposure to research, drawing suited their cultural worlds (Crivello et al., 2009). Indeed, in the relationship building stages of the project, many children cited drawing as a hobby of theirs, with some entering local and regional competitions. This reassured me that this was an appropriate tool to use, however I was still conscious of its contestations as a methodological tool.

First and foremost, particularly when participants do not feel confident in the art of drawing, they may be reluctant to participate or share their work (Taylor, 2011). Conscious of this, and not wanting to put anyone under any undue pressure or in a position where they felt uncomfortable, I provided “a clear and accessible explanation of how the participants might best understand and approach their drawing activity ... at the outset” (Lyon, 2019: 4). I assured children that the quality of their drawings was not of importance, and that these were purely to guide our discussions. They were informed and regularly reminded that their drawings were only to be shared should they wish, and deliberately naïve drawings from myself were

provided early on in the relationship building activities. Indeed, drawing was used as a tool as a communication method through these earlier stages to both build relationships and to get children used to sharing their drawings in a safe and comfortable environment. Nevertheless, in the group drawing activities where 5 children worked together to create a group representation of the wet and dry season, some children criticised each other's work. With the help of the translator these were dealt with using a restorative approach, with the adult reassuring all the children that there was no right or wrong way to draw. This may have deterred some children from contributing, and indeed there are ethical considerations to be made in regard to allowing children to be in a situation where they felt like this. There were also clear instances where children needed more guidance than I had originally anticipated. When initially asked to draw the wet and dry season for example, some children needed further prompting, such as "what does it look like for you", though, in my reflections, this was never to a degree that influenced the findings in a way whereby the child's voice was not authentic.

5.10.1.2 Mindmaps

Mindmaps naturally follow on from drawing. A mind map is a way of presenting, recording, and recounting knowledge and perceptions, and is a familiar tool in many eastern and western teaching settings (Erdem, 2017; Zhao et al., 2014). In research, they have been used to "map" participants understandings and perceptions of big concepts, conducted both on an individual and collective basis (Burgess-Allen & Owen-Smith, 2010).

In this research project, mindmaps were used to specifically ascertain children's understanding and existing knowledge about the messy, or wicked, concept of climate change (Cross & Congreve, 2021). A mindmap, as opposed to lists, interview, or questionnaires, can allow both the researcher and the participant to track and expand on specific parts of big phenomena (Wheeldon & Ahlberg, 2019) With open ended conversations taking place around the mind mapping exercise, details and explanations can be elicited and the web of knowledge, and the interactions amongst them, can be discovered, highlighting how children schematically organise their knowledges. It also allows participants to use creative approaches to knowledge presentation. Able to write in their native language or English, draw pictures, or both, participants had an additional element of agency over their representations, ideal for working with many participants, particularly children.

5.10.1.3 Photography

Photography first became an accessible research tool in the early 20th century, where it was applied mainly within anthropology and ethnography during which time the researcher was photographer, and the purpose was photo-documentation – to record aspects of communities and cultures via a still image (Banks & Zeitlyn, 2015), Particularly in psychology, photographs have also been used as an alternative or addition to open-ended interviews, instead using ‘photo-elicitation’ to garner unique insights considered not possible solely with words (Collier, 1957). However as creative methodologies have increased, and as research participants have generally been given more autonomy in the research process (Christensen & James, 2017), the use of photography in research has grown to include participant produced photography (Raby et al., 2018). Under the pretence that such a method allows the researcher to see the world as the participant does, photography, particularly with children and in the day and age of social media and heavy photo consumption, acts as a creative and representational tool for understanding the perceptions, lives, and views of others. Crucially, it also assists in the counteracting of unequal power relationship between the researcher and the researched, instead affording the researched to drive discussions in subsequent interviews (Raby et al., 2018; Shaw, 2013). For this reason, participant generated photo elicitation has become an increasingly used tool with marginalised and disadvantaged groups (Danker et al., 2017; Power et al., 2014)

Much as is the case with drawing, photographs can provide the nucleus for detailed and expansive conversations, with a focus of which has been directed and decided by the participant (Raby et al., 2018). Photography challenges both the participant and researcher to consider questions and answers from a different perspective, giving thought into the best way of representing it via a still image. Much as with drawing, it was this approach that I decided to employ, whereby photographs as taken by the students would act as a basis for further discussions.

Photography however, when used as a research tool brings an array of ethical dilemmas (Collier, 1957; Giboreau et al., 2019; Guillemin & Drew, 2010; Meo, 2010; Miles & Howes, 2015; Murray, L. & Nash, 2017; Raby et al., 2018). This includes the photography of people, and the assurance that anyone included in the frame has given informed consent. By handing the camera over to a participant, the responsibility to assure this is obtained, is somewhat removed from the researcher (Murray & Nash, 2017). Whilst handing this power to the participant is exactly one of the reasons to use photography in research (Power et al., 2014), from an ethical perspective, this loss of control for the researcher requires much deliberation, trust, and additional procedures. In this research project, children were made aware of the

importance to do this and given “can I take your picture?” consent forms (Appendix A). They were advised that anyone they photographed would need to agree to such, and if they did, they needed to fill in the form. Though, as mentioned in section 5.8.6, signed forms are not always an appropriate method for gaining informed consent particularly in Vietnam, nor do they negate the necessity to explain fully the research, context and potential use of photos (Murray & Nash, 2017; Wiles et al., 2008). Unfortunately, in this circumstance however, this, appeared to be the only feasible way of ensuring consent without my presence. Children appeared to follow the guidance and, where people were photographed, children provided corresponding signed forms. However, as Pink (2021) notes, signed consent does not give researchers the right to use images in unrestricted ways, and thus, any photographs where identifiable information or faces are included, have been edited to remove traceability in this thesis.

Another issue to consider is that there is also no guarantee that participants will stick to the guidelines of the given task, with Meo (2010) detailing her experiences where students reshaped conversations based on their photos to a topic of no relevance. In this study, children were given cameras on two separate occasions, and were asked to photograph the wet season, and changes in their environment respectively. Whilst most children stuck to this remit, some went off task taking photographs of their bedrooms, toys, grandparents, younger siblings and so on. Whilst these also opened up insightful discussions, on some occasions they reduced time spent speaking about issues pertinent to this thesis. In this instance, it was deemed positive that these things happened as they enabled relationships to be strengthened, and other aspects of their lifeworld’s (Murray & Nash, 2017). However, in a project more time precious than this, it could be a barrier to gathering ample data. Further, the images taken could equally have been images that raised safeguarding concerns, or of a nature inappropriate to share with the rest of the group (Wiles et al., 2008). Again, anticipating these things requires consideration, with appropriate safeguarding measures in place. Here, the school was a direct contact should any issues arise – which fortunately they did not.

Issues surrounding copyright and ownership of the images need to be acknowledged before using photography. This adds an extra layer of hurdles to the researcher, and, along with the aforementioned drawbacks, may be one of the reasons why photography is typically an underutilised tool particularly when researching with children. There is relatively little practical guidance on how to negotiate this issue. UK Copyright Service attests that, unless assigned otherwise, the photographer is the owner and possesses copyright over their photo. However, with the need to use pseudonyms as a means of confidentiality in this thesis, children cannot

be personally attributed to their work, nor are they easily able to claim ownership. Here then, though figuratively caught between a rock and a hard place, I have employed what I think is the most appropriate approach possible. In this project, permission to use the photographs in this thesis and any subsequent published documents, was sought from the children. I explained this to them, with all seeming to be particularly happy, even proud, to have their images shared. Photographs were also printed and given to the children to keep, should they wish, enabling them some level of ownership. Though individual children cannot be credited for confidentiality purposes, I will explicitly highlight where I am using my photographs, and those of children, with correlating pseudonyms – so as to not claim their work as my own. Though these decisions may be challenged, I believe this is the most appropriate approach that is feasibly possible under the circumstances.

Despite these numerous issues however, with a carefully planned approach, photography can open the window into a world not seen before, particularly when working with children. Viewing the world differently to adults, they can directly show us what stands out to them, and when used as a tool to elicit further discussion, revelations not previously obtainable can be seen.

5.10.2 Contextualising the Voice of the Child

Many approaches to engaging with the adults of this study were considered. Originally, I envisaged applying a similar methodology to working with them as I had with the children, however several factors led me to decide that a more traditional approach of data collection would be more appropriate. First, as Harris et al. (2013) note, “[i]n Vietnam, there have not been many qualitative research studies that required high involvement from the participants. [They] found that sometimes research participants were afraid that the study would waste their time; they were wary of contact with foreigners, or were hesitant to talk” (Harris et al., 2013). In recruitment I certainly experienced these barriers, with only urban parents agreeing to participate. Under the knowledge that creative methods are relatively underused and unusual in Vietnam, and that these may add an additional layer of suspicion and/or unease, I concluded that a more familiar approach such as interviews with adult participants would be the most culturally relevant and applicable.

5.10.2.1 Semi-structured Interviews with Parents, teachers, and government officials

I chose to employ open ended semi-structured interviews because I wanted to remain flexible and qualitative in my approach. I wanted conversations to be emergent and supplementary of the data evolving with children, both informing one another, and I realised a structured interview would not permit this. Similarly, though unstructured interviews would have given

both myself and the participants great flexibility, I made the decision to follow semi-structured interviews because they allow the interviewer to ask predetermined questions while still permitting for flexibility and the exploration of emerging themes (Brinkmann & Kvale, 2018). This suited my needs and seemed a sensible mid-point that offering the advantages of both structured and instructed interview styles, and ultimately so that the key themes emerging from the data with children, document analysis, and observation, were addressed.

Where the semi structured interviews would take place also required consideration (Flick, 2021). For the parents that decided to take part, they chose the location; and ranged from a cafe at breakfast, to an evening drink by the river, to their home. These interviews were relatively informal and took place in a neutral and comfortable location, a critical consideration when planning semi structured interviews (Denzin, 2009). These were more *conversations with purpose* (Brinkmann & Kvale, 2018) and whilst the interviews had some flexible structure, the aim was informal as possible.

Whilst this was also the objective with interviews with head teachers and teachers, these took place in their respective schools, and the interview with a government official, within their office. These are not neutral spaces, with Longhurst (2016) specifically warning against conducting interviews in people's workspaces, as people can understandably feel uncomfortable criticising or speaking openly about their workplace and their own work practises in such an environment. Valentine (2005) however, makes a point to highlight that often it is not feasible possible to conduct interviews outside of a participant's organisational space. Thus, in being told these locations were the most convenient for all involved, I made a compromise that had I not, I likely would not have gained access to these informative and essential voices. Of course, these interviews were performed with the assistance of an interpreter. The methodological and ethical considerations of using an interpreter in qualitative research can be found in section 5.8.4

5.10.2.2 Ethnographic Observations

All of the above has ran concurrent to my cultural immersion in Vietnam. During all my time there, I made general observations, took notes, spoke to locals, and contextualised observations and conversations with my informants. These differed from many other qualitative observation styles, as they did not take place within a predefined setting, at a predefined time or with preidentified people (Harrison, 2018). Instead, the 'participants' were often transient, speeding by on a boat to sell fruit at a local market, handing me a plastic bag as I purchased my daily food shop, or working hard in the rice fields as I wandered through the countryside. With my intention to "participate in and observe natural settings—contexts in

which group life would happen regardless of the ethnographer's presence" (Krammer & Adams, 2018: 458), I embedded myself into the spaces surrounding me, joining locals in their day-to-day activities even on my days 'off', making the distinction between work and leisure somewhat blurred.

These people, as observed in situ, all contributed towards my knowledge of life in the Mekong Delta, and their interfaces with environmental and climatic concerns/behaviours. Some of these people, I had conversations with, not always knowing beforehand that they would become a part of this thesis data¹⁷. I visited rice farms to understand the farming process, lived with a local family, flew kites with children, watched them play in the river, attended floating markets, celebrations, and local festivals and so on. All of this has contributed to the dataset both directly and indirectly. This immersion has given the context that no amount of reading books, watching documentaries, or talking to colleagues could have provided. Though, I do not claim this to be an ethnographic study in its entirety.

Ethnography usually requires a researcher to live amongst a community for a significant length of time (Jeffrey & Troman, 2004), though, exactly what constitutes as a significant length is somewhat contested (Hammersley, 2018). This was not possible within this study, acted as a barrier to me ever being fully embedded within the society. Throughout the study, I remained a cultural outsider, and my interactions with people, aside from perhaps my interpreter, still very much positioned me as a guest whilst in Vietnam. Though other barriers will have also facilitated this position of outsider, I believe time is the factor that prevented this from being a truly ethnographic study. Nevertheless, the approach I did take much better aligns with ethnography than any other type of observational tool I have come across and, though these observations are highly subjective from the perspective of the researcher (LeCompte & Schensul, 2015; O'Reilly, 2019), they add a layer to the data that would be missing otherwise, and thus, will be cited, and drawn upon where necessary, in the subsequent sections of findings and discussion.

¹⁷ In these cases, consent to include any quotes and/or data were sought after conversations. A more elaborate analysis of consent in relation to the research collected outside of planned research activities can be found in section 5.8.6.

5.11 Data Analysis

Analysis of data followed common qualitative techniques of coding that align with thematic analysis. Audio Recordings and transcriptions of the workshops and interviews were coded at three levels (explored below) to enable the interpretation, and were supported and informed by field notes, memos, photographs, drawings and other sources. In taking influence from both a reflexive methodology, ethnography, and grounded theory (Alvesson & Sköldberg, 2009; Bryant & Charmaz, 2007) analysis began in tandem with data collection and thus reflections during and soon after workshops helped shaped the more formal analyses that took place back in the UK via N-Vivo. Coding trends at all stages were shared, discussed and modified in response to detailed discussions with supervisors, in an attempt to add robustness to the study data and consequent findings. The various layers of this are outlined below.

5.11.1 Thematic analysis

5.11.1.1 Open coding

Open coding, most often associated with grounded theory (Bryant & Charmaz, 2007), seemed the most pertinent method to analyse data because, as the name suggests, it is *open* to the identification of new theoretical possibilities (Moghaddam, 2006). At this stage, each piece of written data was read through several times, with excerpts of text selected and coded as a way of labelling them to emerging themes. Visual data was also coded via the same method, embedded within the context of surrounding conversations. This was a messy and iterative process, with over 148 codes identified. Whilst open coding was extremely useful in identifying patterns within the data, alone it did not provide a coherent narrative, taking the analysis further into the necessary stages of interpretation (Neuman, 2016). I thus followed this with axial coding.

5.11.1.2 Axial Coding

Once again, associated most closely with grounded theory. "... axial coding is the process of relating pieces, or codes, of data to each other. In other words, using deductive and inductive reasoning, axial coding is a process of looking for relationship identification between open codes" (Simmons, 2018: 80). Here, I began to draw links between the codes I had identified, searching for connections that grouped certain codes amongst a broader, higher-level code, or that showed some kind of influencing or bi-directional relationship (Corbin & Strauss, 2015). This, again, was a messy process, with me exploring various approaches to organising the codes, changing, and adapting my method numerous times. Though this was at times frustrating, and indeed a time consuming and laborious process, it enabled me to truly

understand my data from various perspectives, with each iteration taking me to a deeper understanding (Moghaddam, 2006).

5.11.1.3 Selective coding

This was the final stage of coding, whereby the data was hung on a core theme, or category (Patton, 2014). It represents the overall message that the organised data is telling, which in this case, is explored throughout the findings and in explicit depth within the discussion chapter of this thesis. The data was then revisited with this overarching theme in mind, where more data appeared in support and refute of it, accordingly, coded once again (Glaser & Strauss, 1974). In doing so, a new, predominant theoretical position was created from the dataset, though in doing so, here I acknowledge that, should I have reorganised the data, there is a wealth of other stories, or theories, that my data provides.

5.11.1.4 N-vivo

N-vivo was used as a method of organising and analysing the data. All data, from transcripts, memos, photographs, fieldnotes, drawings, mindmaps and so on, were uploaded and coded via the above methods. Being a tactile person however, in some of the latter stages, post it notes, drawings and mindmaps enabled me to take the large number of codes and turn them into a tangible narrative. Conversations with colleagues and supervisors enabled me to talk through my thoughts, validating or challenging them where necessary. Thus, whilst N-vivo was an essential tool in the organisation of data and identification of themes, the approach with whiteboards, large sheets of paper, post-it notes and highlighters, encouraged

“a slower and more meaningful interaction with the data [and] great freedom in terms of constant comparison, trialling arrangements, viewing perspectives, reflection and ultimately developing interpretative insights”. (Maher et al., 2018: 11)

It was the combination of approaches that took the data to a point of meaning.

This chapter has been particularly extensive and has drawn attention to all stages of the research process using a reflexive and critical approach. This foregrounding will help the reader understand and make their own judgements as to the validity, transferability and contributions of the research findings as explored in the remainder of this thesis.

Chapter 6 Findings

The remainder of this thesis will present the findings of a study that sought to understand the experiences, knowledge, and perspectives of 20 children aged 9-11 in the Mekong Delta, in relation to climate change and flooding. From the viewpoint that these have been influenced by the socio-cultural environment from which these children are embedded, data drawn from semi-structured interviews with parents, teachers, government officials, and analysis of policy documents will contribute to the presentation and analysis of results.

The analysis of data and subsequent breakdown of themes was broadly contingent on the research questions, however a reflexive approach allowed for emergent themes to be discovered. This has created four broad areas of findings and discussion, along with subsequent themes within them, as laid out in Table 2: Thematic Breakdown of Findings and Discussion.

Table 2: Thematic Breakdown of Findings and Discussion

Water relations - Living with(out) water	Livelihood, Economy, Food Security and daily activities
	Safety Concerns, Access and Mobility
	Pollution
	Changes Over Time
Knowledge of Climate Change, Water Resources and Environment	Climatic, Atmospheric and Hydrometeorological Hazards
	Litter and Pollution
	Trees and Deforestation
	Geological Hazards
	Schematic Overlaps
Perceptions of Climate Change, Water Resources and the Environment	Risk
	Agency
Understanding Spatial and Temporal Distancing and Agency through the Application of Bronfenbrenner	Formal Education
	Lived Experiences and Family
	Media
	Cultural Opportunities and Barriers

The first theme to be considered relates to children's lived experiences in the Mekong Delta and is titled *Water Relations – Living With(out) Water*. This section will address the day to day lived experiences of children in both cohorts, drawing comparisons and contrasts between the two where necessary, to understand the daily contexts of each cohort. By drawing out the similarities and differences, this chapter ultimately provides the foregrounding for the further interpretations in the following chapters.

The next chapter will address Children's knowledge of Climate Change, and the intrinsically linked knowledge that they have in relation to water resources and the environment. It will address this by analysing children's accuracy of *scientific* knowledge, that is, knowledge as considered correct by scientific bodies such as the IPCC. By categorising the knowledge presented here as scientific, the interactions between this and their local knowledge/experiences in the previous chapter will be explored. Further evidence in regard to where these knowledge are embedded within their socio-cultural context, particularly in schooling, will enable explanations for the cause of any identified misconceptions.

Chapter 6 and 7 provide the necessary underpinnings for Chapter 8, *Perceptions of Climate Change, Water Resources and Environment*, which will address how these lived experiences, local and scientific knowledge, and sociocultural influences come together to inform specifically, children's perceptions around risk and thus agency in the face of climate change.

Throughout all these chapters, socio-cultural influences will be drawn upon because knowledge and perceptions are not borne in a vacuum (Bronfenbrenner, 1979; Hofstede, 1984; Vygotsky, 1978). The final chapter then, chapter 9, will take the evidence provided in these chapters and present these influencers through the lens of Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1979). This will specifically address the socio-cultural conditions and the sources of knowledge and perceptions that act as contributing factors to the understandings and perceptions that participants embrace – analysing the contributions that each system within a child's environment makes. In so doing, a deeper and more grounded understanding of the explored knowledge and perceptions will be uncovered.

Much of the data however, intersects with one another and thus cannot be extracted to fit adeptly in a single categorisation. Hence, cross-referencing through the proceeding chapters will be commonplace. Given such an interlaced presentation of results, it was deemed appropriate to offer deliberate interpretation amongst the findings section. As each chapter ensues, wider literature will be drawn upon, becoming more characteristic of a discussion as the chapters funnel down towards the overarching conclusions. The reader is reminded of the nature of this study being one whereby the researcher's interpretations cannot be wholly removed from the data and thus, the line between findings and discussion is intrinsically blurred. This chapter will now discuss children's lived experiences with(out) water.

6.1 Water Relations – Living With(out) Water

Despite their short life experiences (aged 9-11 years), the children demonstrated varied and detailed experiences, interactions and relations with water. They could cite personally observed changes over time and assigned significance to water for both themselves and those around them. Seen in both negative and positive lights, water was both the source of fun, leisure and play, as well as danger, disruption and restriction. This section will present some of these lived experiences, everyday practices and relations, and will make reference to some of the knowledge and perceptions that children inhabit, before expanding this in the later sections. The methods adopted to gather this data, and the approaches used to produce these themes, can be found in Chapter 5.

Table 3: Thematic Breakdown of Chapter 6: Water Relations

Water relations - Living with(out) water	Livelihood, Economy, Food Security and Daily Activities	
	Safety Concerns, Access and Mobility	<ul style="list-style-type: none"> - Education - Leisure, Play and Friendships
	Pollution	
	Changes Over Time	<ul style="list-style-type: none"> - River Water Levels - Temperature and Weather

Before addressing the individual themes identified, several of the maps that students in both the rural and urban school were asked to create of their local area are presented. These help *set the scene* for some of the differences in water relations between the geographies of the two cohorts, which will be unpicked further as this chapter progresses. Overall, these maps highlight the more intertwined relationship that those children from the rural school had with the water around them. All 10 participants in the rural school drew a river on their maps (see Figures 9-11). Conversely, in the urban environment, only two of the 10 maps included water (a lake and a river respectively) (see Figures 12-14). The majority of maps in the urban school were more in line with Rabbit's drawing **Error! Reference source not found.** in Figure 14. The significance of this will be returned to as the chapter progresses.



Figure 9: Mapping of Local Area by Trung Cuoc, rural, male, 11



Figure 10: Mapping of Local Area by Mai, rural, female, 10



Figure 11: Mapping of Local Area by Be Meo, rural, female, 11



Figure 12: Mapping of Local Area by Apple, urban, male, 11



Figure 13: Mapping of Local Area by Kallen, urban, female, 10



Figure 14: Mapping of Local Area by Rabbit, urban, female, 9

6.1.1 Livelihood: Economy, food security and daily activities

Water pervaded many aspects of both rural and urban life, however for the rural participants, there appeared to be a deeper acknowledgement and awareness for the benefits associated with both the Delta, river and the rainy season. One of the benefits frequently returned to, was the contribution water had on local livelihoods and the local economies:

Florence: Is the river a big part of your life when you live here [Thoi Lai District]?

All: Yes.

Florence: Yes. Can someone tell me why? Why is the river important?

Be Meo: Because in the rainy season, there are lots of fish in the river for us to catch. For some families, fishing is the main source of income.

Florence: So when the rainy season comes, there is more fish?

All: Yes.

Florence: Does anybody here, in their families do they have fishermen¹?

All: No.

Florence: No? What sort of job do your parents have?

6 participants: Farmers.

4 participants: Workers.

Florence: Is the river important for the farmers?

All: Yes.

Florence: Why is that, because I do not know?

Mai: Because the river is the water supply for the farmers' fields and makes the crops grow better.

(Rural - Be Meo, female, 11; Mai, female, 10)

Trung Cuoc: It [the rainy season] is the water resource for the people.

(Rural, male, aged 9)

Chuot Cute: It [the river] is the water supply for the fields.

(Rural, female, 10)

Together, and with agreement from their peers, Be Meo and Mai were able to identify two significant advantages brought by the rainy season and the waters surrounding them. Even where no one identified as having a fisherman in their family, an awareness of the critical role that the river plays in providing a livelihood for this group of people was known and acknowledged. With over half of the rural participants having parents working in farming, the importance of the river and water systems for farming practices was also acknowledged. Having established the significant role the floods, rain and rivers all played in helping crops

¹ After listening to the audio and reading the transcripts of this conversation, I realise I used the gendered term "fisherman". This may have excluded the discussion of female family members; however later conversations confirmed that the participants did not have parents that were fishers, as students explicitly named their parents professions. This does not mean that they did not have female family members that were fishers, however.

grow, children then went on to provide an in-depth explanation of the multiple stages of rice farming, where several participants were able to make explicit links between successful farming and economic and food security:

Unidentifiable in recording: Finally, we sell the grain rice.

Chuot Cute: No, first we need rice to feed ourselves. We need to eat.

(Unidentifiable in recording, Rural, male, n.a; Chuot Cute, rural, female, 10)

Chuot Nhac: We use the money [from selling the rice] to buy food.

(Rural, male, 9)

Gau Den: Without the paddy fields, we can't grow rice anymore. So we don't have food.

(Rural, female, 11)

In doing so, the rural participants demonstrated the value that water played in the sustainability of livelihoods, the economy and food security within their region. Indeed, they were able to explain the whole process of rice farming, citing comments such as “we just know” and “because our parents or grandparents are farmers” when asked how they knew such detailed information about these processes. This suggests that such farming knowledge, and the importance of water, is common sense to many rural inhabitants, passed on naturally through generations. The benefits brought by the rain were built upon further, with multiple conversations that explained the consequences a lack of water can have:

Florence: what happens if there is not enough rain?

Gau Den: There will be a drought. The land will dry up and no rice can grow.

(Rural, female, 11)

Ti Chuot: Rain at the right time is good.

Florence: So, when is the right time?

Ti Chuot: When the paddy fields are on drought, we need rain.

(Rural, Male, 10)

Be Meo chose to document a lack of water in her grandparent's rice field and took the photograph in Figure 15. When Be Meo discussed her image, she explained how a lack of rain and extreme heat hindered the productivity of her grandparent's rice field:

Beo Meo: Some years we don't have enough rain.

Florence: So why did it happen this year?

Beo Meo: This year is too hot ... That's my grandparents' rice field.

Florence: So, when this is too dry, how do your grandparents feel?

Beo Meo: They feel sad because they won't have a good crop.

Florence: Can the rice grow if it's like this?

Beo Meo: No.

(Rural participant, female, aged 11)

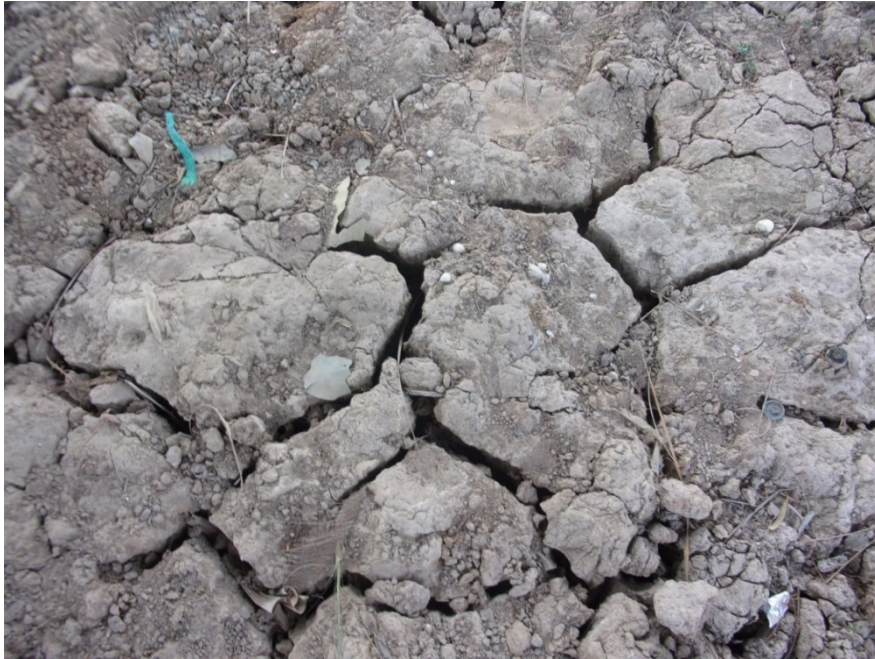


Figure 15: Drought in grandparent's rice field (Photograph taken by Be Meo)

Beo Meo was both aware of and able to articulate, the value rainwater played in the success of rice cultivation and recognised the impact a lack of rainwater had on her family member's emotions. Rain is not the only source of water here however, and many participants added how locals utilise the rivers and canals to provide water to the rice fields, particularly when rainwater is scarce:

*Gau Trang: We pump water from the river into the field through the pipes, with or without the pumping machine.
(Rural, male, 11)*

*Ti Chuot: In the dry season, there is a good chance that we will get drought.
[...]*

Florence: So what happens when there is a drought? What do people do?

*Ti Chuot: We pump the water [from the river] into the fields to take care of the drought.
(Rural, male, 10)*

Gau Trang: The machine [cultivator] crushes the soil into small pieces. It makes the soil softer. Then we pump the water into the land.

Florence: Which water? Where is the water coming from?

Chuot Con: From the river.

(Rural - Gau Trang, male, 11; Chuot Con, female, 10)

Figure 17 depicts a pumping system commonly found in the Delta that Ti Chuot and Gau Trang are referring to.



Figure 17: Pumping System in Ricefield taken by Researcher

However, children were aware that sometimes the river did not provide enough water to solve the issue:

Beo Meo: [...] now the water is low so it's hard to pump.

Vi (Interpreter): They [the farmers] use water from the river, right?

Beo Meo: Yes. It looks like there are many people pumping the water though, so the water level is going down.

(Rural, female, 11)

Beo Meo knew that water resources could deplete when many people used river water. Though there was no explicit mention of groundwater (a significant issue within the Delta is unsustainable groundwater extraction), an understanding that this was not an unlimited supply suggests that she understood the concept of sustainability, at least in reference to water, as applied to her local area. Chuot Con, much like her peers in the rural community, is knowledgeable about the rice cultivation process and the important contribution the river network makes towards this. However she expands on previous notions of water providing the necessary moisture to avoid drought, extending it to the other ecological benefits:

Florence: Why do they let the water in? What does that do?

Chuot Con: Because there are a lot of alluviums in the river. It's good for rice planting.

(Chuot Con, rural, female, 10)

The river was also referenced in relation to other livelihood benefits, such as cooking and cleaning, though it was acknowledged that the rivers degrading quality (to be returned to in Section 6.1.3), was negatively impacting these practices:

Florence: Do you like swimming in the river?
Trung Cuoc: I like it but not much. I still swim in it sometimes.
Florence: Why is that?
Trung Cuoc: Because the river is dirty now, I don't want to swim in it.
Florence: Why do you go in if you don't want to?
Trung Cuoc: Because we have water cut and I need to take a shower.
Florence: Do you have water cut often?
Trung Cuoc: We have water cut usually.
Florence: Oh really. So this is like a big bath for you. Will you take like soap into the river with you?
Trung Cuoc: Yes.
(Rural, male, 11)

Be Meo: There are many people use the river water for washing and cooking. When the water is not clean like this it's not good for them.
(Rural, female, 11)

These narratives all support the notion that those in the rural community lived with the waters around them, using the rivers in day-to-day life for work, and other livelihood benefits including bathing. Observations supported this, with many people seen washing pots, pans, clothes and themselves in the river. The urban participants however, whilst acknowledging water as a resource, less frequently considered the economic and livelihood benefits. The following excerpts are the only acknowledgements identified within any of the transcripts with urban children:

Muler: It [the flood] is good for the farmer.
Florence: Ah why is it good for the farmer?
Muller: It [the flood] makes the soil better, and there would be more fish.
Florence: Ah so it's good, so the flooding, it's not always a bad thing?
Muler: yeah.
Several students: Yes/no.
[...]
Muler: sometimes good, sometimes bad.
Jason: Only a bad thing.
[...]
Mina: Only that the silt from the flooding raise the level of the field.
(Urban - Muler, male, 10; Jason, male, 10; Mina, female, 9)

Florence: Is there anything good about the flood, for people living in the Mekong Delta?
Rabbit: Yes. It gives the Delta alluvium after the flood.
Vi (Interpreter): Why do we need the alluvium?
Rabbit: I don't know.
Vi (Interpreter): So why do you think alluvium is good?

Rabbit: I think it helps the trees grow better.
Florence: Right, okay, so there are some good things about the flood. So what would happen then if the flood stops?
Rabbit: It's not really good, because we won't have the alluvium.
[...]
Vi (Interpreter): So, if the flood stops, will our lives change?
Rabbit: No. I think there is no change.
(Urban, female, 9)

Though recognising benefits for farmers, they did not cite any economic or food security benefit for themselves or those living in the city. Interestingly, whilst recognising the impact a lack of flood water might have on alluvium supplies, Rabbit went on to state that there would be no change to their lives should flooding cease in the region. Any benefits were reserved for farmers and fishers, whom usually reside in the rural context (Nguyen et al., 2020). Mina's comment was only detected after the workshop and once the audio was transcribed. It is unknown if she realised the importance of this silt in preventing land subsidence in the Delta. Though water was regularly correlated with livelihood benefits in the rural communities, water was also associated with a loss of economic capital and food security. Just as children were aware of the impact a lack of water could have, so too were they aware of the impact of too much:

Gau Truc: If it rains too much, it will cause a small flood in our rice field and it'll not be good for the rice.
(Rural, female, 11)

Florence: Why is there so much water?
Trung Cuoc: Because the water comes from the rain.
Florence: Is that good for the rice or bad for the rice?
Trung Cuoc: It's bad.
Florence: Why is it bad? Sorry, I do not know anything about growing rice, so I need you to teach me.
Trung Cuoc: If it rains too much, it will flood the whole field.
(Rural, male, 11)

Gau Den: I used to see strong winds and heavy rains that made the rice fell down to the ground.
Florence: Does that happen often?
Gau Den: Yes. Like lately we have many big rains. When the rice is not strong enough, it will fall down.
Vi (interpreter): Does it die because of that?
Gau Den: Yes. Its root will come off the ground.
(Rural, female, 11)

Gau Den in particular, was able to recount her families' experiences of storms and, much as drought was associated with direct economic losses and adults' unhappiness, so too was too much water:

Gau Den: I remember there was one time we had a storm and our rice was not good and we couldn't sell it at a good price.

Vi (interpreter): Do you remember what year it was?

Gau Den: About 2016 or 2017.

Florence: Oh my gosh. What did your family do when that happened?

Gau Den: My grandpa also has a fruit garden.

Vi (interpreter): Did your family manage to save the rice?

Gau Den: We couldn't do anything about it.

Vi (interpreter): Did they just try to sell something else instead of rice?

Gau Den: Yes.

Florence: Did you parents struggle for money?

Gau Den: Not too bad. My mom sells cosmetics and my dad goes to the market selling my grandpa fruits.

Vi (interpreter): So normally who will take care of the rice field?

Gau Den: My grandpa. My parents don't own this rice field.

Vi (interpreter): So, when they had a bad crop like that, how did your grandparents feel?

Gau Den: They [my grandparents] were really sad. I feel sorry for them because they are so old [...] I feel sad for my grandparents. They are old and they have to worry a lot about the rice field.

(Rural, female, 11)

Equally, just as the pumping system was part of solving a lack of water by pumping water into the rice fields, children recognised how the pumping systems also helped remove too much water:

Gau Truc: We have to use a machine to pump the water out.

Florence: And that will help everything? Is that enough to solve the problem?

Gau Truc: We will use some fertiliser for the rice to make it grow stronger.

(Rural female, 11)

Once again however, just as was the case with a lack of water, it was recognised that the pumping systems are not always enough, highlighting again the importance of balance in the delta:

Florence: Has there ever been a big flood where all the water could not be pumped out?

Gau Truc: I can't remember clearly but there was one time my dad had to use the pumping machine for two or three days to take all the water out.

Florence: Did you manage to still get a good crop that year?

Gau Truc: We had a bad crop.

(Rural, female, 11)

Children in the rural cohort were also aware of how practices had changed over time. They recognised the impact of technological advances in supporting farmers, particularly in reference to the aforementioned pumps, but many were aware of the use of dyke structures, either historically or in other locations:

Florence: So what do farmers do before they had pumps?

*Gau Trang: Build the dykes ... The dykes stop the floods from coming in ... In the dry season we open the dyke ... in the past the technology was not good enough. Now we have better technology, so we use the pumps and don't use the dykes anymore.
(Rural, male, 11.)*

*Trung Cuoc: I think I heard about the dykes in Ca Mau province ... If we don't have the dykes, the water will raise higher and higher and come over the place.
(Trung Cuoc, rural, male, 9)*

The need to keep water out was thus acknowledged, and once again, highlighted the children's awareness for balance in the region, linking this to farmers economic prosperity. Economic losses were reported less frequently and under alternative circumstances in the urban community:

*Kallen: last year, I also saw some chairs and tables from a coffee shop floating along the street. The coffee shop owner had to build a wall to stop the water coming in.
Florence: How do businesses and the locals respond to the flood water? When they see it up to their waist, how does that make people feel?
Kallen's sister: Very sad. Because people lose their money to rent the shop.
(Urban - Kallen, female, 10; Kallen's sister, female, 14)*

Flooding here had caused a direct impact on local resident's income. In conversations with one parent who owned a coffee shop on the river front however, there appeared to be little to no concern for flooding to her own business. However, she noted the unfortunate placement of some coffee shops further down the road:

*Florence: Has it ever flooded here? Do you get any type of flooding in Can Tho?
Ami's Mother: Just a little.
Vi (interpreter): Did your coffee shop ever flood?
Ami's Mother: Never.
Ami's Uncle: The water level is really low.
Florence: How long does the water stay for when that happens?
Ami's Uncle: Few hours.
Florence: And where is the water coming from?
Ami's Uncle: From the river.
Florence: It sounds like a stupid question, but I do not live here so. So does the water in the river come over the top [of the river]?
Ami's Uncle: No.
Ami's Mother: It flooded over in this area [Ninh Kieu Quay District] but not in here [this shop], because this is my place.
Florence: So it would come up to the edge [of the riverbank] but not high enough to here?
Ami's Mother: Yes. My place is high.
Florence: Is that what most business do? Make their business higher?
Ami's Mother: Other coffee shops over there unfortunate when the water comes.
(Ami's mother, female, 40; Ami's uncle, male, age unknown)*

This distancing of negative impacts will be returned to in Chapters 8 and 9. In keeping with a theme of loss, Mini had experienced this in relation to personal possessions when her grandma's house flooded:

Mini: I lost my books when it flooded. [...] I put some books on my bed but they fell into the water.

(Urban, female, 9)

In general however, this was not a common experience, and whilst flood waters in the street were common during the rainy season, adaptive measures in the city were usually sufficient at keeping damages and loss to a minimum, with the most commonly cited impact being to mobility and transport (further explored in section 6.1.26.1.2). Most children following similar notions of indifference as Kallen and Mini, or annoyance/inconvenience like Jason:

Florence: What do you think about flooding?

Kallen: Usually I feel nothing because my house is not affected by flood.

Jason: Kind of annoying.

Mini: Boring.

(Urban - Mina, female, 10; Jason, male, 10; Mini, female, 9)

Overall, the benefits, and indeed negative consequences of water in this region were discussed in both schools, however these were considered in much more detail in the rural community where the economic and food security impacts were much more profound.

6.1.2 Safety Concerns and Spatial Autonomy

Whilst limited (dis)advantages stemmed from the urban environment regards economic and food security, they assigned many other negative consequences and risks to the waters that encapsulated their worlds:

Lisa: It [the flood] stops the motorbikes, causes traffic jams, salt-marsh forest, damages the streets, and dirty water from the sewage that makes the water polluted.

(Urban, Female, 9)

The impact of water on mobility (*it stops the motorbikes, causes traffic jams*), was frequently returned to:

Rabbit: I worry for the motorbikes.

Florence: She's scared for the motorbikes?

Nhan (interpreter): Yes.

Florence: Why are you scared?

Rabbit: That the water will stop the motorbikes.

Florence: What happens when the motorbikes stop?

Kallen: We can't go home [from school].

Rabbit: Yeah we can't go.

(Urban - Rabbit, female, 9; Kallen, female, 10)

Vi (interpreter): So, when the city was flooded, did your parents allow you to go anywhere?

Apple: No.

Vi (interpreter): So, did you just stay at home?

Apple: Yes. Even I don't want to go out.

(Urban male, 11)

Florence: So does it cause any damage to the business or to the road or to people home?

Ami's mother: No. Mostly affect to the way people travel. Can Tho is a lucky land.

(Ami's Mother, 40)

These experiences were very normal for Can Tho City, and students in the urban cohort expressed varying levels of concern for its impact on travel. Ami's mothers' comment of "*Can Tho is a lucky land*" suggests that she considers these impacts to be minor in comparison to other places. The normalcy of these events for children was highlighted when shown an image of a person laughing whilst on a motorbike in deep water (Figure 18):

Florence: So, Vi sent me these [photos] last night, from the internet. Do you remember this flood? It was in 2018. Do you remember?

Jason: It was very, very horrible ... I kept going late to the school ... Because there were too many cars, I couldn't go fast.

Florence: Yah, I mean look at this. Why is everyone so happy?

Jason: Because they have no job, so they no need to hurry up.

Mini: It is difficult to drive with the water and they cannot do anything else so they just smile.

...


Florence: If that happened in my country, people would not be smiling. People would feel very sad. What do you think is different? Why is that different?

Mini: People here get used to it and they are well-prepared for it.

(Urban - Jason, male, 10; Mini, female, 9)

Though students acknowledged the flooding in this image as being beyond the norm, Mini's comment at the end is particularly illustrative of the normalcy of this kind of event, and the resilience of the community in being able to laugh these events off. "*They cannot do anything else so they just smile*" also alludes to this community resilience, however this likely requires further exploration from the standpoint of *face*, whereby expressions of negative emotions can cause a loss of face, and thus moral and social respect for one's self and from others (Errasti et al., 2018; Sun, 1991). With "harmony being the best policy", negative emotions are typically suppressed, or expressed in private spaces (Liu, 2014: 206)




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Figure18: Selection of 2018 flood event photographs taken from an online Facebook group

Restrictions on mobility, and road accidents, were also commonly referred to in the rural community. When discussing a flooded road near the edge of Dong Thap province, Trung Cuoc explained his concerns for traffic jams and accidents:

Florence: How did you feel when you saw it [the flooded road]?
Trung Cuoc: Confused and scared ... I was scared that people couldn't go anywhere.
Florence: Do you think that was dangerous or safe?
Trung Cuoc: Dangerous ...
If people couldn't move, it could lead to traffic jams or accidents.
(Trung Cuoc, rural, male, 9)

Further, in the rural community, despite noting many benefits, children all recognised the danger that the rivers in particular could bring. However, despite this commonality, safety concerns, parental practices and children's subsequent spatial autonomy, varied greatly in each setting. As will be explored in section 6.1.2.1 and 6.1.2.2, this had consequences for children's access to education, friends, play and leisure, and in turn impacted their day to day interactions with nature and climate related hazards.

6.1.2.1 Education

In explaining why she could not always access after school classes such as English lessons, Ami explained it was:

Ami: because the distance between my house and my classes is very far and the flood stops the motorbike.

(Urban, female, 9)

Observations from myself at the beginning and end of the school day, and conversations with children, parents, teachers and adult informants, confirmed that children in the urban school were most often dropped off at and collected by their parents or carers on motorbikes. This has consequences for children's punctuality at school, particularly when teamed with flood waters which often inundate the streets during the flood season, were present:

Florence: So if the flood comes, do you stay at home?

Muler: I will go on foot and carry the motorbike with me.

Florence: So you still get to school? Does it take the same amount of time? Does it take longer to get to school?

Mini: No it makes us late.

Florence: Do you ever miss your classes?

Mini: Yes.

Florence: Oh no, and how does that make you feel, missing school?

Kallen: Sad.

Florence: Why does this make you sad?

Kallen: Sad and scared, because the teacher is angry.

(Urban - Muler, male, 10; Mini, female, 9; Kallen, female, 10)

Explaining a time when the flood waters were deeper than usual Lisa explained:

Lisa: [...] last year my mom and me drove in a car while the water was everywhere near the school and we must drive around the Xang Thoi Lake. The water was very high so my car couldn't move, then the people in the shops must drive my mom and me to my school.

(Urban female, 9)

Lisa's story was corroborated in a later follow up interview with her mother:

Lisa's mother: I saw this street was underwater so I tried to find another street to go but all the streets were like that. Then I stopped. I felt like I couldn't drive further so I stopped. Lisa and I went out of the car, then a man helped us go to school. He used his motorbike to bring us to school. I was so scared at that time.

Vi (interpreter): Was Lisa late for school that day? Or were you late for work?

Lisa's mother: Sure, she was late, and that means I was late too.

Vi (interpreter): So that only happen the one time?

Lisa's mother: Yes. But we had the flood for many days. And to avoid that happening again, we had to go out earlier, before 6 o'clock [am].

Florence: So is that during most of the flood season that you have to leave the house earlier?

Lisa's mother: Yes. Because if we go out late we have to face the flood and also the traffic jam.

(Urban, female, n.a)

Lisa's mother tried to adapt her route to get Lisa to school in the above example, but on this occasion the surface water flooding had caused too much disruption. Community support enabled Lisa to still get to school despite the flood event, and future journeys to school were adapted, leaving the house earlier to avoid these circumstances. Though Lisa and her mother's event was more disruptive than usual events, in general, leaving the house earlier to prevent delays as a result of surface water flooding was common practice in the wet season, showing how usual this was as part of adaptation. The support offered by strangers also demonstrates a sense of community resilience, likely underpinned by socio-cultural norms such as *Karma*, *collectivism* and a focus on *good moral character* (discussed in Section 2.3). Similar stories came from the rural community, though these centred on complete prevention of access to school:

Florence: How does the seasons and the weather affect children's schooling?

Grade 4 Teacher: Not much. If it rains heavily, we let the students stay at home for one or two days. We do the same in storms. But usually, the storm is not serious here. Before upgrading this school, it was flooded sometimes. We had to build a temporary road for students to get to school. But now we don't need to do it anymore because the school is good enough to deal with the flood.

(Grade 4 Teacher, rural, male, 53)

Here, the teacher highlights specifically how an upgrade in school building has facilitated children's continued access to education. However, they also acknowledge how schooling, when impacted, leads to disruption that prevents whole day access. This was found amongst student responses:

*Chuot Nhac: [be]cause of the flooded road, we couldn't go to school.
(Rural, male, 11)*

Trung Cuoc: When I was in grade 4, my principal announced that we would have 7 days off because of a big storm.

Vi (interpreter): At this school?

Trung Cuoc: No at [school name omitted] school.

...

Vi (interpreter) So at that time did everyone in your school have days off or was it just you?

Trung Cuoc: Everyone ... Because of the strong winds and heavy rains. The teachers thought we might get sick, so they closed the school.

(Rural, male, 9)

Gau Den: I don't like the rainy season. Sometimes I can't go to school in the rainy season... because when it rains I cannot ride my bike to school. Normally if it rains, my family will take me to school. But if it rains heavily then we cannot go out.

(Rural, female, 11)

In the rural context, though motorbikes were still common as a general mode of transport, *children's* mobility was more often reliant on foot, pushbikes and small boats/ferries. Again, this was confirmed by conversations with children, local informants, teachers and via personal observations at the start and end of the school day:

Florence: So when you go on the small ferry, do your parents go with you?

Be Meo: I go on my own ... This ferry carries the students of two schools, so normally there are many people on it ... The younger kids go with their parents but children at my age will go alone.

Vi (interpreter): When will they start to go to school on their own? At which grade?

Be Meo: Normally from grade 3.

(Rural, female, 11)

The fact that access to school was *not* governed by motorbikes meant that the impact water had on them was not felt in the same way. Instead, access appeared to be governed by parental/carer risk assessments, where they decided if it was safe (or not) for a child to a) travel to school alone or b) to travel to school at all. In the worst conditions, the school would take it upon themselves to close. These risk assessments sometimes meant that children were prohibited from attending school altogether, though the teachers comment of "*not much*", when asked how the floods impact children's education, suggests that this does not happen often. The deputy principal expanded:

The teachers have taught their students about going to school safely, so we haven't reported any casualty while going to school in the flood season.

(Deputy Principal, rural, male, aged 53)

Explaining what she does in the event of not being able to access school because of heavy rains or flooding, Chuot Cute said:

I have to do self-study at home.

(Rural, female, 10)

Though there could be element of social response bias to the above excerpt, if correct it demonstrates how Chuot Cute has adapted to these local conditions and disruptions to school access. Additional conversations revealed that in such events of school closures, many children would be at home on their own whilst their parents and family members worked:

Florence: So do you have a grown-up with you [when you study at home because you cannot get to school]?

Chuot Cute: Yes.

Mai: Only sometimes. Sometimes our parents must work.

Florence: What if they have to work?
Chuot Cute: We stay at home alone. It's scary.
 [...]
Florence: How long might you be on your own for?
Chuot Cute: Around two or three hours.
 [...]
Florence: So if you're on your own in the dry season, is that different to be on your own in the wet season?
Chuot Cute: It's different. There are thunder and electrical accidents in the wet season so I'm scared. In the dry season I don't feel anything.
 [...]
How many times might you be left on your own during the rainy season?
Unidentifiable in recording 1: Two or three times a month.
Unidentifiable in recording 2: Seven times. I have to stay alone many times.
Unidentifiable in recording 3: Ten times.
Unidentifiable in recording 4: Five times.
Unidentifiable in recording 5: Ten times.
Unidentifiable in recording 6: Eleven times.
Florence: Why is it different numbers for everybody? What makes the differences?
Chuot Cute: Because we have different backgrounds.
 [...]
Chuot Cute: Where I live is not safe. Like my friend said, sometimes we have some kidnaps here.
 (Rural – Chuot Cute, female, 10; Main, female, 10; Unidentifiable in recording 1-6, male/female, aged 9-11)

Children being at home alone is common practice in the rural communities. During the summer holidays and at various other points in the day, children will be left unattended whilst parents carry out their daily work or other duties. Again, this was confirmed by personal observations and conversations with children and adult informants. Despite this normality however, children noted feelings of fear when this happened during the rainy season. Reasons for this varied, as did children's exposure, however, the independence of children here could be a source of resilience for the community. If parents were not comfortable leaving their children unattended and indeed, if children were not independent enough to keep themselves safe, the adults' ability to work and thus maintain economic and food security for the family would likely be hindered. With many waterways pervading their day to day lives, in many instances in the rural environment, the water facilitated children's access to the school. Children cited travelling to and from school on ferries, or by boat:

Florence: So how do you get to school normally?
Gau Den: I go to school by bike on my own.
Vi (Interpreter): Do you have to get on the ferry?
Gau Den: Yes
 (Rural, female, 11)

In the urban school however, when discussing an image shared to me by an adult informant taken from a local Facebook group (Figure 19) the following conversation took place:

Florence: And here, look how high! And this boat, do you ever go to school like this?

Apple: No.

Muler: No, no, no, no, I would never go to school like that.

(Apple, urban, male, 11; Muler, urban, male, 10)



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Figure 19: Facebook photo of boat in 2018 flood

Though there are many waterways in the urban environment (Section 2.2), the infrastructure is more developed than in the rural spaces that surround it. Robust bridges cross the rivers at regular intervals, meaning that access to locations such as school can be obtained via roads. It is not necessary to use the rivers as a way of accessing day to day things. Conversely, in the rural communities, road infrastructure is less developed, and whilst bridges do cross many of the waterways, many of these are footbridges and do not allow for the safe passage of cars and motorbikes. Therefore, many students rely on small ferries, or personally owned boats, to access school.

Disruptions continued even when pupils accessed school grounds. Directly experienced by myself during some of the workshops, the heavy rains when paired with the tin roof of the rural school made any discussions almost inaudible, and were only possible because of the small group size and ability to sit in close proximity to one another. Personal reflections, where I questioned how a teacher could effectively teach a class of 30-40 students under such circumstances, were upheld by the children:

Chuot Cute: When it rains heavily, we can't hear what teacher says.

(Rural, female, 10)

In the particular urban school that took part in this study, the roof appeared to be made of concrete and brick. Though the rains and particularly thunder did cause disruptions in both settings, the impacts appeared to be heightened in the rural school because the tin roof exasperated the sound of the rain.

6.1.2.2 Leisure, Play and Friendships

Though leisure, play and access to friends may not seem important in the context of this thesis, they are. Access to these contribute to the resilience of children in the face of climate change and flooding (Mort et al., 2016), which can increase children's connection to their local environment and thus their likelihood to adopt pro-environmental behaviours (Derr & Chawla, 2012). Where children play, and how and if they access spaces independently, impact the perceptions they have over certain areas, and thus negotiate the motivation they have to protect these areas (Berns & Simpson, 2009; Collado & Corraliza, 2015; Rosa & Collado, 2019). How they use these spaces will also alter as climate change progresses. These shifts in behaviour need to be understood by decision and policy makers. In the context of this thesis, the water worlds of these children both inhibited and facilitated access to friends, leisure activities and play and, much as access to education was mediated by perceptions of safety, risk and danger, as too was their access to these three domains. For some children in the rural environment, the river was a source of recreation:

Florence: Do you play in the river?

Gau Den: Yes. I usually swim in this river in the afternoon.

(Rural, female, 11)

Florence: What's the best thing about living so close to the river?

Chuot Nhac: We can go fishing. [...] sometimes the river is clean and I can catch fish.

Florence: Who do you catch the fish with?

Chuot Nhac: My dad and my grandpa.

Florence: And do you go onto a boat or do you do it at the shore, how do you do it?

Chuot Nhac: Sometimes we use a fishing stick, sometimes we use a net. And we do it on a boat.

[...]

Florence: And do you do that for fun or is that to make money?

Chuot Nhac: Just for fun.

(Rural, male, 9)

However, these interactions were directly reliant on the safety of the river, with all students agreeing that the waters were unsafe to play in during the rainy season, and marked as dangerous on the aforementioned mapping exercise (Figures 9-11).

*Gau Trang: [The river} is more dangerous in rainy season.
Florence: Why is that? Why is it more dangerous?
Gau Trang: Cause the river water level will get higher [...] The water shallows in the dry season, and it will get higher in the rainy season.
(Rural, male, 11)*

With 90 percent of rural participants concluding that they preferred the dry season to the wet, many suggested this was because they could access friends and play more during this time:

*Chuot Cute: I feel comfortable in the dry season.
Gau Den: Because I can go to school or play with friends in the dry season
...
Unidentifiable in recording: [The river is] safe in the dry season.
(Rural – Chuot Cute, female, 10; Gau Den, female, 11; Unidentifiable in recording, male, n.a)*

The safer conditions in the dry season however, did not transpire to all children playing in the river during these months. Children cited a variety of reasons; inability to swim, flow conditions, parental worry, crocodiles, and pollution, as deterrents from entering the river, with many explaining how they once played there, but no longer do because of increases in these concerns, particularly pollution and water conditions:

*Chuot Nhac: My parents don't allow me to play near the river. They scared that I would drown.
Mai: Because I don't know how to swim.
...
Gau Truc: There are crocodiles in the river.
(Rural - Chuot Nhac, male, 11; Trung Cuoc, male, 9; Mai, female, 10)*

*Florence: Do you swim in the river sometimes?
Ti Chuot: Yes, but only in the past ... Because the water is dirty now.
Florence: Was it not dirty before?
Ti Chuot: No.
(Rural, male, 10)*

*Florence: Do you enjoy swimming in the river?
Mai: A little bit.
Florence: Do you think there is any danger?
Mai: It's very dangerous with the ones who can't swim. And sometimes dangerous with people who can swim, when the water flow is strong.
(Rural, female, 10)*

These deterrents appeared to map to genuine issues of safety, though the severity of each of these safety fears varied. Extensive degradation and hunting have meant that wild crocodiles in the region have been considered extinct for over 30 years (Webb et al., 2010), however there are rare media reports of crocodiles escaping from breeding farms in the Delta which may fuel these (Vietnam Net, 2015). Some safety risks were mitigated by adults, either by way

of restriction of access, or in the case Trung Cuoc and Figure 20, by marking out areas considered particularly unsafe:

Trung Cuoc: This is the stick which my grandpa put there like a fence to remind me not to go in this area. Because there are some spike trees that people throw into this area.

Vi (Interpreter): Is your house here?

Trung Cuoc: Yes. But there is a road between my house and the river.

Florence: Ah so that keeps you safe. Do you like swimming in the river?

Trung Cuoc: I like it but not much. I still swim in it sometimes.

Florence: Why is that?

Trung Cuoc: Because the river is dirty now, I don't want to swim in it.

(Rural, male, 11)



Figure 20: Photograph taken by Trung Cuoc of bathing area in the river - Safety Measures

This practice meant that Trung Cuoc could more safely access the river, however he went on to explain how the “dirty” river made swimming a less enjoyable experience, a point to be returned to in section 6.1.3. Not all risk assessments were left to the adults however, and Mai detailed a personal experience swimming in the river:

Mai: I just felt like the flow was getting stronger and faster so I swim to the bank and go home.

(Rural, female, 10)

The necessity for these risk assessments appeared to be upheld, and likely reinforced, by stories of children dying or drowning in the river:

Be Meo: There was a boy who swam with his friends in the river. The others came back but he stayed there, kept swimming alone. Then he died in the river and no one found his body.

...

Florence: How old was the child? Did you know him?

Be Meo: Ten, eight or nine.

...

Florence: How did you hear that story?

Be Meo: I watched on the news.

Mai: Teacher [name removed] said.

Florence: So the class teacher. And that was here where you live, not somewhere else? Is that here?

Mai: Yes it was near here.

(Rural - Be Meo, female, 11; Mai, female, 10)

Conversations with farmers and the Deputy Principal ran parallel to this:

Farmer 3: There are children who die in the flood season, usually the ones under 5 years old because they could not swim. If their parents are a little careless, they will fall into the water and die. That's why people here teach their kids how to swim at the age of 4 or 5. My child's friend also died a few years ago. He went to Mid-Autumn party in the school and when he came home, he went down to the canal to wash his feet and he slipped into the water. Along the canal here, every house knows a child that died in the flood season. They get used to the fact that there will be some kids die in the flood season.

(Farmer 3, An Giang Province, Male, age unknown)

Deputy Principal: In the recent years, there were only one or two students drowned. But they drowned at home, not when they were going to school. Last year, a grade 1 student drowned at home while playing near the river. The teachers had taught their students about going to school safely, so we haven't reported any casualties while going to school in the flood season ... We haven't received any complaint from the community. They knew that it was their fault because they didn't pay attention to their children's safety. Besides, the family received some money from the insurance company, so they were okay with that. To sum up, it was not the school's responsibility that student died at home because of lacking parents' attention.

(Deputy Principal, rural, male, 53)

These stories both corroborated and amplified children's concerns for the water, and likely contributed to their fears. The deputy principal's narrative offers an alternative lens however, almost positioning them as normal and expected. They also highlight the real and lived risks for children in the rural context that were not mirrored in the urban school. Instead, in the rural school, water related deaths were discussed as external to their location, with parents suggesting that children in the urban context are not at the same risk because "*here the parents here take really good care of their kids*" (Urban parent, female, 45).

The decisions that children in the rural area made in relation to this water and their play, impacted their day-to-day lives significantly, and likely informed their relationships with the water. However this did not deter students from viewing their environments, the river and the water surrounding them in a positive way:

*Be Meo: I think it's beautiful [the river at sunrise]. That's why I took this photo for you to see (Figure 21).
(Rural, female, 11)*



Figure 21: Photograph by Be Meo - The River at sunrise

*Florence: What is your favourite bit about [living in your hometown]?
Gau Den: I like the scene of the river in the afternoon at sunset (Figure 22).
(Rural, female, 11)*

Despite the disadvantages and risks that the river poses, it appears that the rivers and rains benefits overall outweigh the negatives for these children:

*Florence: When you think about where you live, do you like that you have the river or would you rather that you didn't have the river?
All: We want to have the river.
(Rural - male/female, aged 9-11)*



Figure 22: Photograph taken by Gau Den - Sunset

However, the urban participants did not refer to swimming or playing in the river, lake or any other natural body of water. These spaces instead were referred to as dangerous, polluted and unsafe:

Florence: Do you think the river is dangerous?

Apple: Like 50-50 percent

Florence: What makes it dangerous?

Apple: There is nothing but when I look at the river, I feel scared.

Florence: Is the water scary?

Apple: Yeah.

Florence: So, you like the river, but it can be dangerous, is that right?

Apple: Yes

Florence: Does it ever flood?

Apple: Yes [...] it is like there is no fence, but there are fences there. The water overflowing makes it like there is no fence there.

(Urban, male, 11)

Mini: Now when I go to the river, I see the water is black [...] because everyone throw trash into the river (See Figure 23)

(Urban, female, 9)

As previously alluded to, the river networks in each respective location are very different. The sheer scale and depth of the Hau Giang (Bassac) River that passes through Can Tho City, and the number of large cargo/mining boats and ships that frequent it, make this an unsafe place for children to swim or play (Figure 24). Hồ Xáng Thối Lake has a barrier to prevent swimming (see Figure 25), and with a concentrated population around the smaller rivers, they are often heavily polluted and/or trafficked. This makes these water spaces both dangerous and undesirable locations for swimming, recreation and play, especially for children. Further, even



Figure 23: Photo taken by Florence outside Mini's house, showing polluted "black" river

if it was safe, the spatial distance to and from these spaces is likely deemed unsafe for a child to make on their own. This reduction in spatial autonomy in urban spaces is often referred to as “urban risk” (Weller & Bruegel, 2009: 629). Thus, in living in a city, children’s access to open natural, spaces was contingent on adults. As gatekeepers to children’s spatial freedoms, these



Figure 24: The Hau Giang River in Can Tho City (Photograph taken by Florence)



Figure 25: Hồ Xáng Thối Lake in Can Tho City (Photograph taken by Florence)

children appeared to have reduced opportunity to explore natural spaces than those in the rural cohort, who in contrast spent most of their time outdoors playing away from the gaze of adults.

In the rural area, children's homes were often built along the banks of rivers, or considered within a safe walking distance to open spaces (e.g. ricefields), and rivers (Figure 26 and 28). The rivers here were narrower and shallower, and whilst boats still frequented these waters and posed a hazard, they appeared to be smaller in both size and number than those found in the city. Provided children can swim, risk analyses from parents and children largely deem



Figure 26: Rural home that with a river to the front and ricefield to the back (Photograph taken by Florence)

access to these spaces during the dry season as safe, and thus, these waters are visited regularly by children for many reasons, including play. Indeed, many observations in the rural communities from myself confirmed that children do play in these waters regularly (Figures 29 and 30).



Figure 27: Children playing independent of adults in ricefields (Photograph taken by Florence)



Figure 28: Rural River regularly visited by children for recreational purposes (Photograph taken by Florence)



Figure 29: Children playing in the Rural Rivers (Photograph taken by Florence)

Both children's spatial autonomy and physical proximity to places of importance in the rural context was a recurring theme that appeared to mitigate some of the access issues felt by the urban context, such as access to friends. Children reported living far from one another, and with roads being heavily trafficked by motorbikes, they relied on phone calls to keep in touch with their school friends when not in school:

Florence: Do you live near your friends?

Apple: No. I use phone to contact with my friends.

Florence: Telephone. So you speak to your friends on the phone?

Apple: Ya.

Florence: So when you are not at school, do you see your friends? Or the school is the only time you get to see your friends?

Apple: Only in school.

Florence: So is the school important for keeping friends?

Apple: Yes. Knowledge and friends.

(Urban, male, 11)

Their spatial freedoms were much more limited here, and minimised their interactions with both one another, and with the natural environment. Conversely, in the rural context, children regularly met up outside of school, utilising not only the river, but other indoor and outdoor spaces:

Florence: Do you ever play in the rice field?

Gau Den: After we harvest and burn the rice, I can go there and fly my kite.

Florence: Where do you play when the rice field growing?

Gau Den: I play on the road or go to my grandparents' house.

(Rural, female, 11)

Though not a direct interaction with water, playing in the rice fields was observed on numerous occasions whilst present in the rural context, and only possible because of the agricultural practices that were underpinned by their water worlds and open planes of land. Groups of children, away from adults, would kick footballs around and fly kites for hours on the burned rice fields (e.g., Figure). The urban children's limited access to friends outside of the school environment could exasperate the impact that severe flooding might have in the future, as play and friendships are often reported as essential in the post flood recovery of children (Mort et al., 2016).

Though many other factors facilitate the rural participants relative freedom compared to that of their urban counterparts, the lessened reliance on adults for their mobility could be considered as necessary for the resilience of these children and the community at large, as it allows for day-to-day socialisation and economic activities to continue. This is particularly important given that flood events are likely to increase in the region with climate change. Further, this spatial autonomy appears to allow the rural participants a greater connection to nature, evidenced throughout the above via their understanding of water, ability to make observations of changes, and positive language towards their environment. Similar narratives have been found elsewhere in exploring young people's nature-culture connections in both urban and rural spaces (Green & Lliaban, 2020; Mergen, 2003; Vanderbeck & Dunkley, 2003). With children's interactions and spatial freedoms in nature both widely theorised as impacting their connection to nature (Beery et al., 2015; Green & Lliaban, 2020; Weller & Bruegel, 2009), and thus their current and future pro-environmental behaviours including those related to climate change (de Groot & Steg, 2008; Steg et al., 2012), this will be returned to and expanded upon at various points throughout this thesis.

6.1.3 Pollution

Pollution, most often in terms of litter in the waterways, was also discussed as a part of living within their region, both in the urban and rural areas. Students showed dismay for this, with many students choosing to take photographs of the litter to represent changes in their environment (Figure 31:



Figure 31: Changes to the River (Photograph taken by Be Meo)

Florence: So can you tell me why you took these pictures when I asked you to take them about changes in the environment?

Be Meo: Because in the past we used to have a clean beautiful river but now it's polluted and it's getting darker because of many reasons.

Vi (interpreter): You mean this picture?

Be Meo: Yes

Florence: Right, so which bit is getting darker, all of the water?

Be Meo: Yes. It's not clean water anymore.

Florence: What's making it dirtier?

Be Meo: Garbage.

Florence: Do you see many people throwing garbage in the river?

Be Meo: Yes

Florence: Does your family sometime throw garbage in the river?

Be Meo: Rarely. Usually, we will burn the garbage.

Florence: How does it make you feel when you see all the garbage in the river?

Be Meo: I feel like our environment and the air is not clean.

Vi (interpreter): But how about your feeling? Do you feel scared or angry or something?

Be Meo: I feel nothing because I see it a lot.

Florence: What effect does the garbage have on the area? Is there any bad effects or good effects?

Be Meo: It has bad effects.

Florence: What sort of bad effect?

*Be Meo: There are many people use the river water for washing and cooking. When the water is not clean like this it's not good for them.
(Rural, female, 11)*

Be Meo, much like her rural peers, cited personally observed changes whereby litter had increased in the river. The normalcy of the litter was so engrained that, whilst recognising it as a *bad* thing, she expressed feeling nothing. Other students noted the normalcy of the litter, however appeared to show heightened dismay:

*Florence: What can we do to protect the river, you said it needs protecting?
Chuot Nhac: We should stop throwing garbage and dead bodies of animals in it.
Florence: Do you see lots of garbage in the river?
Chuot Nhac: Yes.
Florence: How did it end up there? Why are people throwing it in there?
Chuot Nhac: I don't know.
Florence: Do you ever throw anything in the river?
Chuot Nhac: Only when my parents tell me to do so.
Florence: And how does that make you feel?
Chuot Nhac: I feel like I don't want to do it. I want my parents to burn the garbage instead of throwing it in the river.
(Rural, male, 11)*

*Florence: ... you said that you still throw things in the river. Why do you do that when you know that you shouldn't?
Mai: Because the adults tell us to do it.
Florence: But you know that it's not right?
Mai: Yes.
Florence: How does that make you feel?
Mai: I feel a little bit sad. But we are children, we don't know how to burn the garbage without our parents' help. But the parents are too busy to help us burn the garbage so we have to throw them into the river.
(Rural, female, 10)*

Chuot Nhac and Mai go on to explain how they have little choice but to carry out littering. Indeed, conversations with adults confirmed that infrastructural constraints in rural areas meant these were the only available options:

*Chic's Mother: In the city, we have a rubbish disposal system. And we have people collect our rubbish everyday. In the countryside, they don't have those things and the problem there is more serious.
(Urban, female, 45)*

Adult informants confirmed that many parts of the rural environments do not have reliable waste management systems. Household waste is not always collected by the state efficiently, reliably, or at all, and this leaves many of the residents here with little choice but to burn or throw it in the river. Some of the children demonstrated a mental conflict with this, but with

no other alternative, and under the instruction of their parents, they did so anyway. This almost certainly impacted the rural participant's relationship with the water, with litter arising as a negative sentiment in every workshop, and as explored in section Leisure, Play and Friendships6.1.2.2, leaving many students choosing to no longer enter the waterways for livelihood or recreational purposes as a consequence. Offering an alternative observation however, Gau Den explained how she had seen litter reduce in her local area:

Florence: What about this one? Why did you take this one?

Gau Den: Because I see the river was polluted in the past but now it's not polluted any more.

Vi (interpreter): Where is this river?

Gau Den: At my house.

Vi (interpreter): Is this in front of your house or behind?

Gau Den: In front.

Florence: So now it's cleaner, how does it get cleaner?

Gau Den: Because people don't throw their garbage into the river anymore. They used to do it in the past but now they all have their own bins.

Florence: So you have like bin collection people who come and empty the bins?

Gau Den: I'm not sure.

Florence: So people used to throw things in the river but now they don't, is this correct?

Gau Den: Yes.

Florence: Do you ever see some people still throwing things in the river?

Gau Den: Sometimes.

...

Florence: So this is a change that you've seen in your environment. You have seen the river getting cleaner. Have you seen any other changes in your environment in your life?

Gau Den: In the past, there weren't many trees, but now people plant lots of trees.

Florence: So the changes that you have seen have made your environment better, is that correct?

Gau Den: Yes.

Florence: Have you seen any negative changes, any bad changes?

Gau Den: Around where I live I only see the positive changes.

(Rural, female, 11)

Gau Den was alone in making this observation in the rural environment on these topics. Nonetheless it highlights potential improvements in the infrastructure and people's habits in relation to waste. Though it was not confirmed whether waste collection services had improved on a state level, it suggests that local to Gau Den, there had been some minor improvements. Despite suggestions that those in the urban cohort were less connected to *nature* (6.1.2), in the urban school students still appeared to care for their *environment*, and demonstrated similar levels of concern surrounding litter and pollution:

Florence: [Pointing to Figure 32] Oh this one, is this in your environment? Why did you choose [to take] these pictures?

Lisa: Because it's near my house and it's easy for me to take photos of it. And I think it makes the air polluted ... Some people have good awareness and some people don't see

the bin around and they just throw garbage everywhere like this ...Because it satisfies them ... They are too lazy to hold the garbage in their hands. They cannot keep it until they find a bin.

(Urban, female, 9)



Figure 32: Changes in the Environment - Litter (Photograph taken by Lisa)

Mini showed a similar dissatisfaction, describing Figure 23, explaining how the area had deteriorated over time:

Mini: Now when I go to the river I see the water is black.

Florence: Black, not blue? Have you ever seen it blue or has it always been black?

Mini: I've never seen it blue.

Florence: Never seen it blue? Has it been blue before you were born?

Mini: Yes.

Florence: How do you know that?

Mini: Because my daddy said that.

Florence: Your daddy told you that it has been blue? So why is it not blue anymore?

Mini: Because everyone throw trash into the river.

(Urban, female, 9)

These conversations and photos clearly illuminate the issue of litter in the urban environment and children's concern for such. With the main rivers, smaller waterways, and general environment home to large amounts of litter (see Figure and Figure), this was as obvious to these students as it was in the rural school – if not more so. However, the following field notes were taken immediately after an unrecorded discussion with the children in the urban school:

Mini said it makes her sad to see littering. I asked them all to be really honest with me, and whether or not they ever littered themselves, despite knowing it is not good. They all looked very sheepish at first, and then started laughing and pointing at one another, blaming each other for littering sometimes. They laughed when Jason admitted he once littered in school, and then probably picked it up when they did a litter pick with school a few days later. Apple said he saw his friend littering and he feels angry because he tells him all the time but doesn't listen. Apple said he picked the litter up.

The events that unfolded here clearly show a similar disconnect between the issue and children's contribution to the problem. Much like in the rural school, though seemingly passionate about the issue, their actions sometimes ran counter, and instead created a cognitive dissonance (Festinger, 1976). This might explain why Be Meo said she felt *nothing*, and whilst the children above laughed. In the rural school however, they appeared to have reduced agency over their actions. The barrier that prevented the urban students from dealing with their waste appropriately is unknown, as there are many more outlets for refuse waste in the urban area. Further, littering here was discussed in reference to single items, as opposed to collective household waste as was the case in the rural school. Agency will be returned to in Chapters 8 and 9.

6.1.4 Changes over Time

Some students were able to correlate their observations with changes over time, many of which scientists link to being a direct consequence of climate change ((Bussi et al., 2021; Connor et al., 2020; Dung Duc Tran et al., 2020; Long Phi Hoang et al., 2018; Wilson, 2017). This included changes in water levels in the river, temperature and weather.

6.1.4.1 River Water Levels

Though water levels have been discussed in the context of the river as a local resource, these have not been explored from this alternative dichotomy in depth. In the rural area in particular, students discussed their observations of water levels as changing over the years, making comments such as *“the water lever is so high and I can't go swimming anymore”* and *“I can see that the river is getting higher and the rain is heavier”*. It appears that students at the rural school had noticed the inconsistencies in the water level in the rivers around them, though, it was difficult to detach where children discussed these seasonal changes and when they discussed abnormal changes. Indeed, many of the changes in water levels experienced in the Delta are a result of naturally occurring seasonal changes, as recognised by the students:

*In the dry season, the water level is low. In the rainy season, the water level is higher.
(Unidentifiable in recording, Rural, male, n.a.)*

Nevertheless, in recognising that the rivers offered predictable patterns, they were able to note how the river was surpassing what was usual, instead increasing in height year upon year. This matches Manual and Telemetry Water Level readings in the Delta between 2016 and 2019, and indeed reflects a general trend since readings began in 1979 (Mekong River Commission, 2022b). Though these students were not always able to link these observations to

climate change (to be explored further in Chapter 7), it appears that they *do* notice these changes. The urban cohort made some similar observations:

Mini: The level of the water rises annually

...

Florence: how are you able to see this? What lets you know that it gets a little bit higher every year?

Mini: my father told me

Kallen: it increases obviously

Rabbit: a time every month

(Urban – Mini, female, 9; Kallen, female, 10; Rabbit, female, 9)

Again, it was difficult to detach if there were seasonal changes as part of the rivers natural flux, or as changes over a longer period of time. With relatively short life experiences, in both cohorts is unlikely that without additional input, these changes are obvious enough for children to make accurate observations in annual trends. Further, in the urban cohort, these observations were less frequently cited than those in the rural cohort. This is likely a consequence, in part, to their reduced connection to their natural environment and interactions with the river as explored in Section 6.1.1 and 6.1.2. Conversely, in the rural school, where children had their access to the water mediated as a direct result of its conditions, where they regularly played and bathed, and where their parents livelihoods were directly impacted as a direct result of the water level, these changes were likely hard to avoid and not observe. This regular engagement facilitated their observations of changes in the rural school, whilst conversely in the urban school, their lack of engagement likely prevented it.

6.1.4.2 Temperature and Weather

Another cited change in both cohorts, were noticeable changes in weather and temperature:

Florence: So when he said about the abnormal changes, is that between two seasons or is that something he's seen over many years?

Chuot Nhac: I've seen it worse every year ... It's sunny now, then it suddenly rains.

(Rural, male, 11)

Be Meo was able to link these weather changes to the flora around her:

Florence: What are you showing here?(Pointing to Figure 33)

Be Meo: When you gave me the camera is after Tet holiday. But the weather changing make this flower not blossom at the right time. This flower only blossoms around Tet holiday in February while the last time you came and gave me this camera is in April.

(Rural, female, 11)



Figure 33: Changes in blossom patterns (Photograph taken by Be Meo)

In noticing these changes, Be Meo was able to articulate the wider impact that changes in weather has on plants. These were also acknowledged by her teacher:

Rural Teacher: in the past, the rainy season started in March. But now, it rains a lot even in February. The rain is unusual. The weather is unusual. Climate change is responsible for the disease of rice trees. The weather changes, the fog comes and affects the rice, too ... Global climate change affects people here. For example, we can't grow rice because of saltwater intrusion. How can we farmers earn our living? Climate change does not only affect our economy but also our health. As you can see, while it's sunny and the rain comes suddenly, it's not good for your health. Our main product is rice, so we are affected seriously by climate change. Normally, every family can earn up to 1000 to 2000 dollar each harvest season. But because of climate change, the rice is affected by some diseases and we can't earn much money like we used to."

Clearly the changes in weather systems are having a severe livelihood impact on this region, particularly in the rural area, where incomes are underpinned by stable climate and weather patterns. The fact that this is visible is important, as it signifies an understanding of the cause and effect that these changes make, and may increase peoples willingness to take action (Lieberman & Förster, 2009). These lived experiences will be explored further as they are combined with more formal knowledge of climate change in the following chapters.

Similar narratives were borne out of the urban school:

Kallen: Some years it rains a lot. Some years it gets really, really hot, like this year ... We have some orchids at home and we water them quite much. But with the hot weather like

this, you can see the water stored in their leaves in this photo. The orchids are really soft and full of water inside. You can feel it when you touch them.

Vi (interpreter): So, what will you do with them?

Kallen: I don't know what to do. The hotter we get, the worse they are ... I think the weather in Vietnam is suitable for this kind of flower but now that our weather is getting hotter as well as we have high humidity, this flower cannot live well anymore. One day I checked the temperature and I saw it was 39 to 40 Celsius degrees.

Florence: Have you seen it happen before where they go like this and look like they are dead?

Kallen: No. Normally they look beautiful.

(Urban, female, 10)

Again, Apple however, made comments that suggest his experiences as normal:

Apple: It's changing but not too much. Sometimes looks like it will rain but then it doesn't.

Florence: Okay. Has it getting hotter or anything like that?

Apple: It's the same.

(Urban, male 11)

Living in a location that naturally experiences extreme weather and temperatures, with two very distinct seasons characterised by specific conditions, children's ability to notice climatic changes is likely hampered, particularly given their relatively short life experiences (Konisky et al., 2015). These students have not grown up in a world where climate change does not affect their region, therefore detaching normal from abnormal change is challenging (Hassol et al., 2016; Konisky et al., 2015). Thus, without information that explicitly links these changes to climate change, children will likely not conjoin the two. How these personal observations link to students more formal concepts of knowledge will be explored in the following chapter.

6.1.5 Chapter Discussion and Summary

This chapter has demonstrated how children in the rural community appeared to have a deeper appreciation for the benefits of water. It is interpreted that this is a consequence of water being more entangled in the rural children's lived experiences, with their families' livelihoods underpinned by the fine balance of water necessary for successful farming practices. Here, children were physically closer to the river, and more intertwined via play and recreation, as well as bathing and transport. The urban children in this study, conversely did not have parents whom worked directly in agriculture or with careers that inherently relied on the supply of ample water. The waterways were not always close to where they resided, nor were they a source of play and recreation, and instead the water surrounding them appeared to serve children few recallable benefits. The seasonal weather changes also appeared to impact the lives of those in the rural school most significantly, with the flooding season sometimes restricting access to school and friends. Conversely, in the urban environment,

whilst surface water flooding in the rainy season sometimes disrupted transport and the journey to school, it rarely ceased access completely.

Observations and transcripts confirmed that children in the rural cohort spent a great deal of time outside, and seemingly matched that of the wider discourse that romanticises rural childhoods as more interwoven and connected with nature (Dunkley, 2018; Vanderbeck & Dunkley, 2003), and the concurrent realm or research that connects human-nature experiences to emotional intimacy with nature (Chawla & Gould, 2020; Pyle, 2013; Soga & Gaston, 2016). Indeed, in the rural cohort, they assigned many more positive nature-oriented sentiments, using words such as *beautiful*, *lush*, *peaceful* and *green* to describe their environments, and appeared to show dismay towards many negative environmental practices that they had seen deteriorate their environment over their lifetime – including littering. There are numerous studies that link interactions with water and nature as fundamental to pro-environmental behaviours, and there is even more evidence that such behaviours predict one's likelihood to take climate action (Berns & Simpson, 2009; Collado & Corraliza, 2015; Derr & Chawla, 2012; Rosa & Collado, 2019). These early experiences then, could be important factors to consider, and may put those in the rural school at a greater likelihood of employing climate mitigating strategies in the future.

Nevertheless, whilst urban students did not demonstrate as many positive sentiments about nature, they did show a similar level of dismay for environmentally damaging practices to their urban environment, again most obviously in response to litter and pollution. This suggests that they do care for their environments, despite their lived experiences appearing to not physically position them within nature on a daily basis. Interestingly, their experiences with nature instead focussed on micro interactions and observations, such as noticing house plants struggling to grow due to changes in weather and temperature (Kallen's orchid). This variation in experiences with nature will be further discussed in Chapter 9.

Whilst this chapter has demonstrated differences to children's experiences in each location, it has also highlighted how drought and flooding are real issues already being felt within the region and in each locality. Pollution, particularly litter in the waterways, also surfaced as an overriding concern. These issues impact children, and appear to be learned through direct observation and lived experience. Though the reader is reminded that the purpose of this study is not to draw statistical comparisons between the two cohorts, socio-cultural differences between them, from parenting practices (i.e. freedom to explore independently), to infrastructural differences (i.e. governmental waste disposal systems), appear to

significantly negotiate children's lived experiences. The starkness of these differences will be returned to over the next three chapters to highlight the role of the socio-cultural and physical environment.

Chapter 7 Knowledge of Climate Change, Water Resources and Environment

The following chapter will present and discuss the findings in relation to children's knowledge of Climate Change. I will draw upon the various influences identified within the children's socio-cultural environments which informed their knowledges and, using Chi and Roscoe's (2002) 'mental mode framework'¹, I will bring the readers' attention towards both formal (i.e. complete, correct and/or coherent) and naïve (i.e. incomplete, incorrect, and/or incoherent) knowledges. Doing this is necessary for several reasons. First, it contextualises and informs the later chapter that analyses children's perceptions. Second, effective Climate Change communication depends somewhat on the identification of preconceptions and misconceptions in knowledge if it is to be effectively rectified (Chi & Roscoe, 2002; Cross & Congreve, 2021). The consideration for where these knowledges originate, i.e. what other knowledge's inform Climate Change knowledge acquisition, and what part(s) of a child's lifeworld/society/culture act as major sources of these knowledge's, is important because exposure to different types of information, and thus what one might expect a child to have already learned, is socio-culturally mediated (Hampson & Rich-Tolsma, 2015; Lindon & Brodie, 2016). Thus, considering this element within a context such as the Mekong Delta, whose future is reliant somewhat on the knowledge and perceptions of its future citizens, Climate Change initiatives can not only take account of *what* knowledge's already exist, but *where* these knowledge(s) originate.

Before beginning however, it is important to define the term knowledge and its application in this study. Knowledge here, refers to one's familiarity, awareness and understanding of information, namely, scientific information (Grimm, 2014) will consider the children's awareness of "facts" as acknowledged within the scientific community and IPCC (2021) based understandings, and systematically address how various ideas are linked together to form what they consider to be coherent arguments. Though I acknowledge there are multiple types of knowledges, including those that are local, indigenous, experiential and so on, these best fit into children's lived experiences and perceptions. This chapter is different

¹ A more detailed overview of learning theory can be found in Section 3.2.

then, as it specifically looks at *scientific in/accuracy*. With the purpose of this chapter being three-fold, that is to uncover their knowledges, to discover their overlaps and connections, and to address where they originate, children's knowledge has been categorised into 4 overlapping schemas, all of which feed into a wider web of Climate Change environmental knowledge. These four schemas are:

- Climatic, Atmospheric and Hydrometeorological Hazards
- Litter and Pollution
- Trees and Deforestation
- Geological Hazards.

By dissecting their knowledge this way, I will highlight the many overlaps that lead to children's coherent, yet incorrect *mental models* (Chi and Roscoe, 2002).

Children demonstrated varying levels of knowledge relating to Climate Change, with much of their knowledge in relation to environmental concerns and natural hazards more generally, emerging in tandem. The spider diagrams below (Figures 34-37) were created by the participants in each respective school (urban and rural) and have been included here to *set the scene*, as they are representative of many of the key *naïve knowledges* (Chi & Roscoe, 2002) that will be discussed and returned to throughout the chapter. The first of the four themes to be explored, is Climatic, Atmospheric and Hydrometeorological Hazards and Changes.

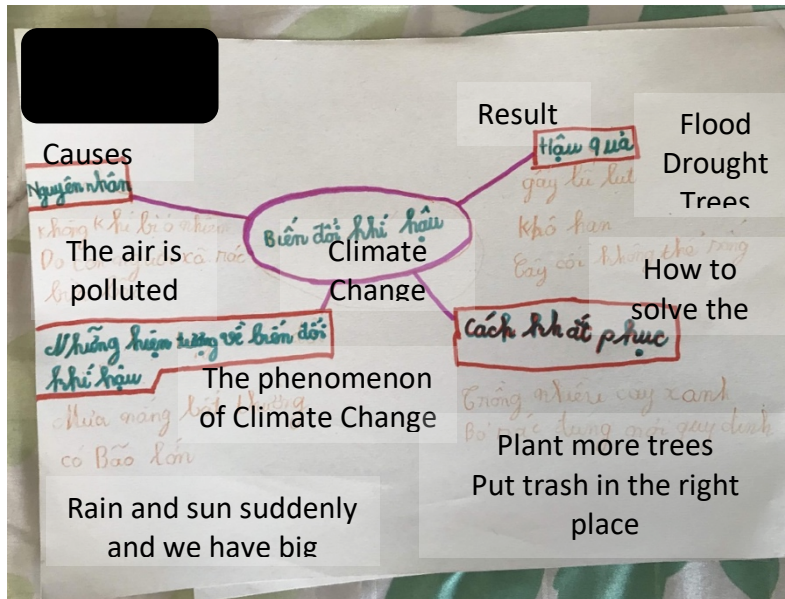


Figure 34: Mind Map by Gau Den, rural, female, 11



Figure 35: Mind Map by Gau Trang, rural, male, 11

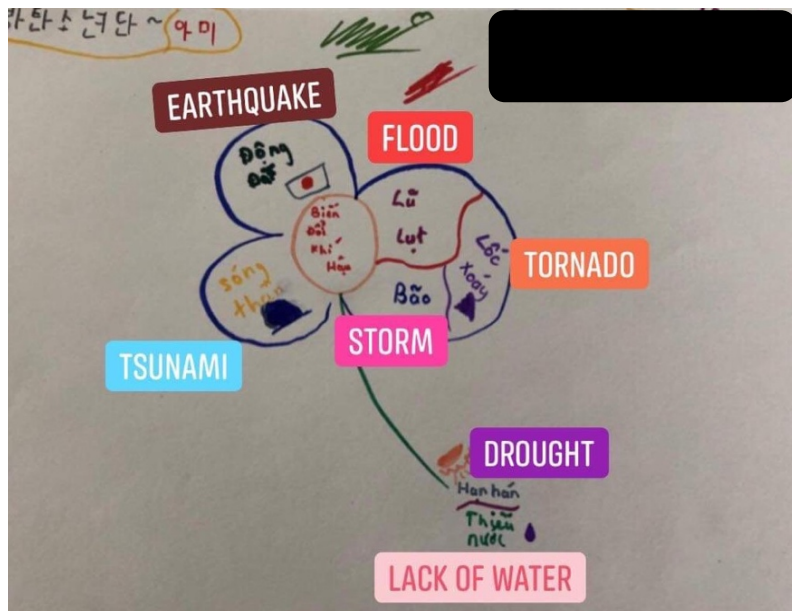


Figure 36: Mind Map by Lisa, urban, female, 9

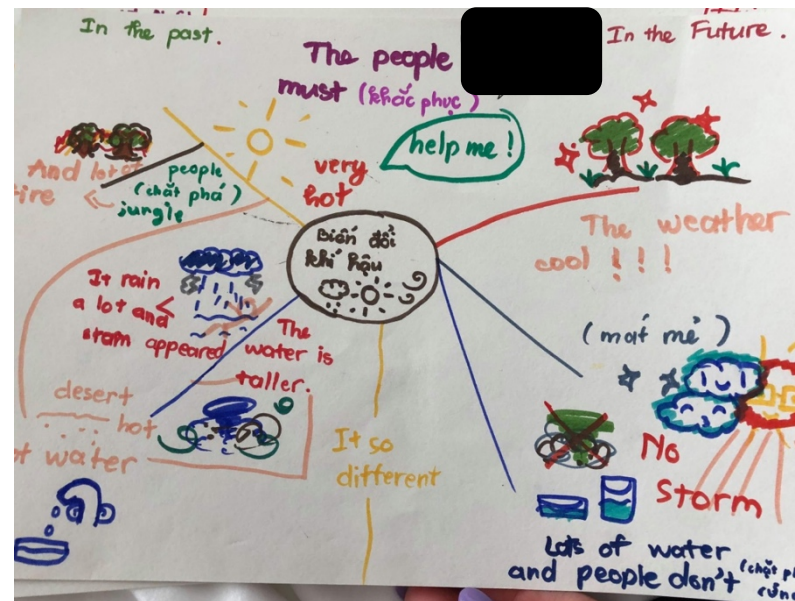


Figure 37: Mind Map by Chic, urban, female, 11

7.1 Climatic, Atmospheric and Hydrometeorological Hazards and Changes

In both schools, children were able to discuss Climate Change and its links to climatic, atmospheric and hydrometeorological hazards and changes. However under closer inspection it became difficult to decipher whether the students were discussing Climate Change under its official definition and as:

“a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (UN General Assembly, 1992: 4),

or as annual, non-human related changes in climate (seasonal patterns) and/or day-to-day weather. Though many students used the words *Climate Change*, the citing of the weather forecast as their source of information “*I watch the weather forecast*” (Rural, female, n.a), spider diagrams such as those above, and the language used such as that below, suggested that some students, particularly in the rural cohort, made this misinterpretation:

Gau Den: Climate Change is the change from one season to another season.

Mai: I think the same.

Florence: The same? Does anybody have a different thought?

Be Meo: I think it's the sudden change of the weather. For example, in a day, it's raining then suddenly it becomes sunny.

(Rural: Gau Den, female, 11; Mai, female, 10; Be Meo, female, 11)

Weather describes atmospheric conditions over the short term, from minutes and hours to years, whereas climate describes the average of these conditions over a period of at least 30 years (NASA, 2005). While weather patterns are indeed affected by changes in climate, the two terms are not interchangeable. This confusion is not uncommon amongst school children, and indeed adults, worldwide, as evidenced in numerous studies (Cartwright et al., 2021; Lombardi & Sinatra, 2010; Papadimitriou, 2004). Nevertheless, This is a major misconception as it renders the full understanding of Climate Change as incorrect from the offset. If Climate Change is a part *usual* weather and seasonal patterns, it is a) nothing out of the ordinary and b) humans influence over changes is likely minimised. Like Be Meo above however, some students explained Climate Change as sudden changes in weather:

Trung Cuoc: [Climate Change is] like the weather is hot and then suddenly cold.

(Rural, female, 11)

This narrative still focusses on short term changes within a day however, and is focussed on weather, as opposed to longer term changes in climate. Further, sudden daily changes are a usual part of weather patterns in the region, even in the absence of Climate Change (World Bank, 2022), perhaps blurring understanding further. Some students in the rural school, did recognise Climate Change as something out of the ordinary however, with Chuot Cute (rural, female, 10) stating “*It gets hotter and sometimes we have rains and sun at the same time. **It never happens before***”. This observational knowledge is reaffirmed in chapter 6, where students in both cohorts made frequent mention to temperature and weather changes, and was also present in conversations surrounding Climate Change with teachers and parents:

Deputy Principal: But now, it rains a lot even in February. The rain is unusual. The weather is unusual.
(Rural, male, 53)

Though in the previous chapter it has been evidenced how many students experienced the impacts of Climate Change first-hand (erratic rainfall, increasing temperatures, water shortages, flooding, etc.), it appears their experiences were not scientifically enforced in a way that enabled them to make links with Climate Change. Further, with climate being defined as changes over a 30-year-period, their lived experiences do not cover such a timescale and thus cannot, without supplementary information, be drawn upon to make accurate observations. Much as As Schad et al. (2011) found in Northern Vietnam, experience of Climate Change events alone does not ensue understanding of such events, and instead, there is a need for specific connections to be made in order to further understandings. Indeed, this also compliments the findings of Copsey et al. (2013), who, as explored in chapter 4, found a large majority of Vietnamese experiencing Climate Change hazards, whilst only 58% confidently said that they had heard of the term “Climate Change”.

What is also particularly significant from the above, is that, in making this correlation, students did not link Climate Change to humans. It could be, that in seeing Climate Change as largely seasonal or weather patterns that sometimes changed suddenly as is typical for the region, they could thus not associate it with humans. Nevertheless, as will be evidenced, children were generally aware of the impact that humans had on nature and the planet, and the actions of humans were frequently discussed under the

remit of *Environmental Degradation/Protection* – sometimes then correlating this to weather. Clearly then, some understanding is there, however without the foundational knowledge of Climate Change specifically, they were unable to conceptualise it in this way.

Though similar sentiments were shared amongst both rural and urban participants, it appeared that urban participants had a greater depth of understanding in relation to humans influence on a changing climate, and how this impacted regional and global weather patterns. Ami for example, in explaining why the delta might flood, said:

*Ami: Because the world is changing every day. And also the weather. We cannot know what might happen ... [These changes are happening because] humans are wasting natural resources. And we also don't know how to protect the environment. The factories are releasing more pollutant into the environment.
(Urban, female, 9)*

Ami's explanation here, particularly "*because the world is changing every day*" suggests she recognises Climate Change as an ongoing issue over a period of time. She also recognises that humans contribute towards these changes. However, Ami also previously said that Climate Change was the normal changes in weather, thus suggesting some inconsistencies in her knowledge. Below Kallen links her experiences to global scientific knowledge:

*Kallen: [in the future, Can Tho] would be more developed. But we shouldn't litter too much. Because I think the water has raised because of the ice melting, and the ice melting is the result of global warming. There must be some reasons for global warming.
Vi (interpreter): what do you mean?
Kallen: I mean, like, we should solve the problem of water raising from the root.
Florence: right, so will the water keep on going up with Climate Change or will the water stop going up?
Kallen: sometimes it reaches the peak, and it stops... it goes down slowly, but the day after I can go up more. It's the reason the level goes up every year so we should solve it [Climate Change] completely.
(Urban, female, 10)*

Kallen here has applied her more global knowledge of the warming temperatures, melting ice caps, sea level rise and water displacement, to her observations of raising river waters in her area, therefore concluding this as a part of Climate Change. Though, much as was the case with the links made to observations in the rural school, the rivers changing water levels are a usual part of seasonal and environmental patterns in the Delta. Though these are acknowledged as changing in response to the climate crisis

within the scientific community (Mekong River Commission, 2022), it is hard to determine if Kallen's observations are a consequence of this, or usual changes to be expected over seasonal shifts and day to day fluctuations. Further, melting ice caps and subsequent sea level rise, though a major issue to the region, are not considered the cause for her observed fluxes in the river. It is interesting then, that several children made this connection between melting ice caps and river water levels in the urban school, whilst only one child in each school specifically linked melting ice to sea level rise. Her mother made a similar analysis, suggesting similar misconceptions in adult knowledge:

Lisa's Mother: I think in recent years [flooding] is more serious ... The first reason is that the river water level is rising in recent years. The second reason is the weather changing and we have more sudden rains. The last reason I can think of is our sewer system is not good enough and we also have too much garbage in the sewers for the water to go through.

Vi (interpreter): So why is the river water level rising in recent years do you know?

Lisa's Mother: Perhaps because the earth is warming, and the ice is melting.

(Urban, female, n.a)

Nevertheless, despite these inconsistencies, both Kallen and her mother are able to make coherent connections that takes account of global processes. Though not entirely confident in their analysis, evidenced through the use of words such as "maybe" and "perhaps", they are able to recognise that Climate Change is a multidimensional phenomenon with many interfering factors. With children in the rural school sometimes struggling to provide answers surrounding Climate Change, they were asked about global warming to see if this change of wording highlighted any other knowledge. This prompted some discussion around ice caps:

Florence: Have you heard the words global warming before?

All (5 students): No.

Florence: Have you ever heard about the ice caps melting?

All (5 students – Unable to distinguish who said yes or no): Yes/No.

...

Ti Chuot: I heard that the icebergs in the North Pole are melting.

Florence: Is there any consequences of that happening and where did he hear about it?

Trung Cuoc: I heard it on TV, but I can't remember much.

Florence: Do you think that where you live changes at all?

Trung Cuoc: No.

(Ti Chuot, male, 10; Trung Cuoc, male, 9; Chuot Cute, female, 10)

Citing the television as his source of information, Ti Chuot had heard of ice bergs melting, however with an incomplete understanding, he could not explain how this

linked to other elements of Climate Change, or how this may impact the world. This global interconnected knowledge appeared to be largely lacking from the rural school, further reinforcing the aforementioned weather/climate connection. Whilst some of already explored dialogues highlight how students linked Climate Change to an increase in water, some students believed that Climate Change would make floods obsolete:

Florence: As Can Tho gets warmer, could that increase flooding or ...?

Chic: No, I don't know. I guess there will be no more flood. But trees will die, and the air will be polluted.

(urban participant, female, aged 11)

In dialogue that will be further explored in the succeeding sections, Chic explained how Climate Change, as caused by human behaviour (air pollution, deforestation, and litter), were causing an increase in temperatures and leading to drought. For some students, such as Chic who said “we will have droughts. And trees can not grow, they will die”, they did not correlate rising temperatures with increasing floods, and instead, reserved correlations solely to drought. This was shared amongst other participants:

Rabbit: ... I think the sun is related to Climate Change ... Like, if it shines too much, we will have droughts.

Florence: What makes the sun shine too much?

Rabbit: I don't know.

(Urban participant, female, aged 9)

One explanation for this could be that, without explicit instruction of how Climate Change can increase flooding, their conclusion instead correlates with scientific concepts such as heat and water evaporation (increased temperature, leads to less water), without fully understanding the water cycle or Climate Change (not to be unexpected for this age range). This runs parallel to Hassol et al (2016: n.p) who suggests that, without a full understanding of the atmospheric processes of Climate Change, “the combination of both wetter and drier conditions can seem counter-intuitive”.

It therefore seems logical to conclude that flooding would decrease, and drought would increase, as global temperatures warm. Nevertheless, another student (Mini), made it clear that she recognised how there are multiple possibilities in regard to hydrological changes as brought about by Climate Change (“A storm or a flood will

come, or a drought”). Additionally, many of the spider diagrams depicted both flooding and droughts as consequences, suggesting an understanding of multiple and diverse hazards as a result.

7.2 Litter and Pollution

Throughout the workshops in the urban and rural school, an overwhelming majority of participants appeared to systematically attribute litter, a form of pollution, to Climate Change or weather changes. They saw it as both a cause of Climate Change, and thus



Figure 38: Changes in environment - Lisa, urban, female, 9

also a solution. This is evident in in Figure 34, where Gau Den marked “*put trash in the right place*” as a solution to Climate Change, and in the below, where Lisa chose to photograph litter outside of her house (Figure 38) to convey the changes she had seen in her environment. When asked why she chose to take it, she explained, “*I think it makes the air polluted*”, before later linking pollution to Climate Change.

Many students also made predictions for the future based on these incomplete knowledges, stating: “*the weather will be hotter because we litter a lot*” (Mini, urban, female, 9). Elaborating on these discussions’ children demonstrated varying levels of coherence and accuracy in their arguments as to the processes behind this, with some students openly saying they did not know, and others providing answers such as Chic below:

Chic: [Litter] pollutes the air and make it hotter.

Florence: How does it pollute the air? What happens?

Chic: The garbage stinks. Its smell is not good, so it pollutes the air.

(Urban, female, 11)

Observations from myself at the time of the discussion would suggest Chic was confident in this joining of these ideas. For Chic, her argument is thus coherent. She recognises pollution as a source of global warming – a correct idea. She thus applies her knowledge of litter, for which is a type of pollution, to conclude that the bad smells it lets off pollute the air, thus causing an increase in global temperatures. A similar narrative was demonstrated by Kallen, who explained “*People litter > the environment is polluted > global warming > melting ice > flood. It’s like a cycle*”. Here, Kallen brings together her aforementioned ideas surrounding Climate Change, melting ice and flooding, and links this directly to litter and pollution. These explanations suggest that, though their knowledge’s were not wholly correct or complete, their connections were generally coherent. In being able to provide explanations, albeit simple ones, many students joined together existing concepts in a coherent and explainable manner, with no reason to doubt their explanations. These misconceptions appear to mediate what children consider as solutions to Climate Change, with schools in both cohorts consistently noting picking up litter, or not littering, as solutions:

Florence: What can children do?

Chuot Nhac: Stop throwing trash away.

Mai: Put them in the right place.

Gau Den: Stop throwing stuff into the river.

Examining these “knowledges” against the backdrop of the scientific consensus, though there is a link between litter and Climate Change (the production and processing of packaging and waste contributes towards global CO₂ emissions, therefore plastic demand – particularly single use plastic - is a huge driver in global CO₂ emissions), this was not explained by the children and instead, their conclusions focussed on litter in the environment, most often linking this to air pollution. Again, this is not a wholly inaccurate link - when organic waste decomposes it releases CO₂ and methane - however children rarely distinguished between various types of litter, and where they did, they highlighted plastic waste. Further, the degradation of organic waste is a natural part of the CO₂ cycle and not a significant contributor to Climate Change. Their conclusions therefore overemphasised and incorrectly assigned the role

of litter in relation to Climate Change, and thus they also concluded litter picks, and not dropping litter, as solutions.

Some students were aware of a gap in their knowledge, explaining:

*Unidentifiable in the recording: ... We litter too much and then it makes Climate Change and pollutes the environment ... when the air is polluted, we won't have oxygen to breathe, and it affects our health. Somehow this changes the weather.
(Rural, female, n.a.)*

The use of the word *somehow* indicates that she is aware of her knowledge gap. The significance of this acknowledgement will be returned to later. From a socio-cultural perspective, litter in a general sense emerged as one of the biggest concerns for parents in the study:

*[the main environmental issue in the area] is garbage disposal
(Ami's Mother, urban, 40)*

Another parent directly linked Climate Change to waste stating “*people give lots of dangerous waste on the earth, and that make the weather change*” (Kallen's Mother, urban, n.a.), whilst Lisa's mother insinuated that picking up litter and planting trees would help solve the climate crisis:

*Florence: When you talk about say Climate Change with your children, do you talk about it on a global scale, or would you talk about how it affects here?
Lisa's mother: I talk to them lots of things. I want them to like planting the trees and not to litter.
(Urban, female, n.a.)*

Further, interviews with teachers and headteachers all made specific mention to litter and pollution when discussing Climate Change:

*Deputy Principal: I think we should educate the kids from very small things. There is no need to teach them big things at this age. For example, we teach them to stop using plastic bottles or boxes, save electricity, classify their garbage. Protecting our environment is one way to stop Climate Change.
Urban, female,*

Thus, it appears that children were not alone in making this connection, and adults within their microsystems, whom they have daily contact with and are largely responsible for their learning, also made this link. Therefore, it could be that this misconception is been explicitly taught, a consideration to be returned to in Chapter 9. Alternatively, and perhaps fuelling the misconception in adults, a lack of correct

information may be leading to various schemas of knowledge interacting to make coherent, yet incorrect links. This will be readdressed in Section 7.5.1.

This previous chapter also highlighted how each school encourages litter picks that are specifically targeted towards children as being good for the environment because they reduce pollution. As will continue to be explored, with Climate Change inherently linked as being a consequence of not looking after the environment, and with pollution, including litter, also being taught as a way human do not look after the environment, it seems reasonable that this could lead some students to assume that litter causes Climate Change, and vice versa, picking up litter can solve Climate Change. This had consequences for children's perceived agency, a topic to be returned to in Chapter 8.

7.3 Trees and Deforestation

Many links between trees and deforestation, and the causes, consequences and solutions to Climate Change were evidenced across both schools. With some students having a relatively low awareness of Climate Change however, this was sometimes done indirectly via conversations surrounding the future of their location, for which Climate Change will play a major part in:

*Be Meo: I think it [the environment] will get worse because the population will explode and **people will cut down a lot of trees.***

Florence: Right. Okay, so the people who think it's going to be worse, do they think that there is anything we can do to stop it getting like that?

*Mai: I think we **should stop cutting trees** and throwing trash around.*

Be Meo: We shouldn't pollute the oceans with toxic trash and cut trees. We must protect our environment.

Florence: What can children do?

Chuot Nhac: Stop throwing trash away.

Mai: Put them in the right place.

Gau Den: Stop throwing stuff into the river.

*Be Meo: **Growing more trees.***

Chuot Nhac: We can give people advice to protect environment.

(Rural participants: Be Meo, female, aged 11; Mai, female, aged 10; Chuot Nhac, male, aged 11; Gau Den, female, aged 11)

With trees being one of the largest CO₂ capturers on the planet, they are critical in the fight against Climate Change (Bastin et al., 2019). Though this reasoning was not explicitly made by the students, those in the rural context were aware of the role trees played in keeping the air "clean and fresh" (Gau Den, female, 11), with further

students able to attribute rising temperatures to “People cut[ting] down all the trees” (unidentifiable male). In the rural cohort, they also assigned trees additional benefits to localised mitigation against flooding:

Ti Chuot: *If we don't protect the environment, we might get floods.*

Florence: *How can we protect the environment then?*

Ti Chuot: *I don't know. My friend told me we shouldn't cut the trees down because they could help stop the floods.*

(Rural, male, 10)

Florence: *What do the trees do to help Climate Change?*

Student female: *Because the trees can prevent the floods.*

(Rural, female, age unknown)

From personal observations and children's photographs, drawings and dialogue, trees were much more present in the lives of the rural children than for those in the urban school. They were a common feature in their environment, and being based within an agricultural village, many livelihoods were dependent on fruit trees in particular. This might explain their ability to notice and comment on this correct mitigation link. With flooding expected to increase in both frequency and magnitude in this region, this knowledge, whether linked to Climate Change or not, is likely critical to their future resilience.

Fostering this connection in both schools, planting was actively encouraged, and children were aware of the benefits this brought the environment. For Be Meo, this included the fight against Climate Change:



Figure 39: Planting Activities at School. Photograph on Be Meo's Camera

Florence: Is this one your photograph? (Figure 39)
Vi (interpreter): Who took this photo for you?
Be Meo: My friend. I try to show the solution to Climate Change.
Vi (interpreter): What are you doing in this photo?
Be Meo: I was planting the flowers.
Vi (interpreter): The school made you do that, or you just wanted to do?
Be Meo: Like every class has a small area like this to plant their trees and flowers. And we have to take care of our plants.
Florence: What lesson do you do that in?
Be Meo: This is in the break time.
(Rural participant, female, aged 11)

In the urban school, Lisa also chose to photograph some of the environmental activities in the school (Figure 40):

Lisa: ... This is the lobby upstairs. We grow many plants to protect our environment.
Translator: Did the students plant it or the teachers?
Lisa: They bought the trees and then the students take care of it. But when the students cannot take care of the trees, our teachers will look after it.
Florence: So why do the students not take care of it?
Lisa: Because they don't know how to take care of it.
Florence: Do your teachers teach you how to?
Lisa: Some teachers.
Florence: So why did you decide to take a photo of this?
Lisa: Because I think when we plant a lot of trees, it means we are protecting our environment.
(Urban participant, female, aged 9)



Figure 40: Planting at School. Photograph taken by Lisa

In these examples, it is clear how schooling is supporting the connection of trees to environmental protection and Climate Change. However, their narratives surrounding

the images, particularly in the urban school, suggest that this is not always purposeful, with Lisa admitting that some children do not know how to “take care” of the plants, and that teachers end up assuming the responsibility to do so. In Be Meo’s example, she specifically linked the activity to Climate Change. Indeed, the rural teacher said:

“We teach them to grow more trees. We tell them that the trees can help us low down the temperature and make the air cleaner”.

Despite this however, Be Meo was the only student in the rural cohort to link the schools planting activities to Climate Change specifically, with others discussing it under the remit of *environmental protection*. Indeed training resources from central government aimed at primary teachers encourage educators to engage children in these activities stating:

“Children can help protect environment by: collecting garbage and putting it in the right place, growing trees, cleaning the environment around them, etc... In order to have a fresh, green, beautiful and safe environment.”

Though it does not make an explicit link to Climate Change here, an excerpt from a national primary school textbook did state:

*Each of us can contribute to reducing Climate Change, preventing global warming through many practical actions such as: using reasonable energy ..., reducing waste, **participating in planting tress and protecting forests.***

This might explain why these activities were taking place in both schools, and with such guidance coming from central government, it is likely these practices are conducted in other Vietnamese schools. With guidance and textbooks making specific links to Climate Change, this may further explain why some children directly accounted these behaviours to such changes.

Children in the urban school made some additional and alternative links between Climate Change and trees:

Florence: So, what’s happening now then?

Rabbit: Fire in the jungle.

Florence: Why is that happening, do you know?

Rabbit: Because people cut down the trees in the jungles and it’s very hot.

Florence: Why does the fire start?

Rabbit: Because the weather is too hot and then the leaves just burn itself.

Florence: How does that relate to Climate Change?

Rabbit: I think the forest fire polluted the air.

Vi (interpreter): Why do forest fires pollute the air? Is forest fire a cause or a consequence of Climate Change?

*Rabbit: Climate Change causes forest fires.
Vi (interpreter): Because it gets hotter?
Rabbit: Yes. And people cut trees down and burn the forests.
(Urban participant, female, aged 9)*

Contextualised within a conversation focussing on present and future scenarios in relation to Climate Change, above, Rabbit suggests that fires in the jungle are caused by people cutting down trees and high temperatures. Much like Chuot Nhac, she links these fires to Climate Change when considering the resulting pollution (explored in section 7.2 above) whilst they burn. She goes on to say that Climate Change is *causing* forest fires, but it is ambiguous if she believes this to be because of an *increase* in hot weather, or if this occurrence is independent of Climate Change. Children in this instance then, understood the loss of trees as both a consequence and cause of Climate Change; a complex process to understand. Given the students age, they appear to conceptualise this knowledge in a coherent manner, albeit still with existing gaps. Nevertheless, in highlighting forest fires as both a cause and consequence of Climate Change, this often students to position it as an issue elsewhere:

*Lisa: ... the weather is very hot and they [people] always cut the trees down to build our houses. The trees are hot and start to burn.
Florence: Does any of these photographs that you have taken have an effect in this area? Do you see any of this where you live?
Lisa: We have factories here. But the forest fire usually is in other countries.
(Urban, female, 9)*



Figure 41: Photograph of a fire taken from an online search engine - Lisa, urban, female, 9

The photograph from Lisa (Figure 41), and the comments made alongside, suggest she positions these as climate related contributors and consequences unrelated to her country, however there are several areas that have experienced and are at severe risk of fires within the Delta (Dang et al., 2021). These are predicted to increase as periods of drought and reduced humidity increase as a result of Climate Change (Quan et al., 2017).

Finally, though some of the below dialogue has already been discussed in section 7.2, when considered as a whole, it enables the reader to see how multiple schemas are integrating and informing one another. Chic demonstrates how her knowledge of litter, pollution, trees, deforestation, Climate Change and hydrological hazards have combined to make what she considers a coherent narrative of Climate Change, albeit with incorrect and incomplete links.:

Chic: I think the weather is getting hotter.

Florence: What's making it hotter?

Chic: Because people litter too much.

Florence: How does the littering make the country hotter?

Chic: It pollutes the air and make it hotter.

Florence: How does it pollute the air? What happens?

Chic: The garbage stinks. Its smell is not good, so it pollutes the air.

Florence: The smell of the garbage? I see. What do you think will happen as it gets hotter?

*Chic: **We will have droughts. And trees cannot grow, they will die.***

Florence: How do you know all of this? Where do you learn it from?

*Chic: I learn it in school. **I know that if a tree doesn't have enough water, it will die.***

(urban participant, female, aged 11)

For Chic, and many of her fellow participants, litter is making the weather hotter because litter pollutes the air. Pollution and litter are linked, as too are pollution and increases in temperature. The smell of the garbage is what makes this happen, and as these temperatures increase, drought will become more prominent, meaning trees will struggle to grow because trees need water to survive. Here we can see how these various knowledges and schemas, both formal and naïve, are coming together, overlapping, and upholding one another. With gaps being evidenced in teacher and parent knowledge, and inconsistencies within teacher training materials and school workbooks, it becomes clear why these misconceptions may be occurring.

7.4 Geological Hazards

Included within the hazards discussed, a common misconception across both groups was that earthquakes and tsunamis are a consequence of Climate Change:

Florence: Does where you live get affected by Climate Change?

Unidentifiable in recording: No.

Florence: No? So where is affected by it?

Unidentifiable in recording: In a bigger place than this area, it could be an earthquake there.

Florence: Right, so places where earthquakes happen.

Vi (interpreter): Could you give an exact example where earthquakes happen?

Unidentifiable in recording: For example, the place where my great grandma lives. It has earthquakes. But I don't remember where is it. Just very far away from here.

(Rural, female, n.a)

Florence: So, what is happening in this picture?

Jason: Tsunami.

Florence: Where is the tsunami?

Mina: In another country.

Florence: Another country, so not in Can Tho. So, is that a part of Climate Change? We get more tsunami in other places, is that what you saying?

Mina: Yes, I think so.

(Urban: Jason, male, 10; Mina, female, 9)

In the scientific literature, there is *some* preliminary evidence that suggests a tenuous link between Climate Change and earthquakes, most notably resulting from changing stress loads as ice caps melt, and as water evaporates and falls elsewhere. Indeed, these earthquakes could theoretically cause tsunamis, as could landslides that are likely to occur as a result of thawing ice (NASA, 2019b). However, at the time of writing this thesis, evidence is tenuous, and the impact considered minimal, and thus these events are rarely considered an impact of Climate Change amongst scientific communities (NASA, 2019b). There was, unsurprisingly, no evidence to suggest that students understood earthquakes, tsunamis and Climate Change within this complex context, however earthquakes were always noted amongst discussions of extreme weather events such as storms, tornadoes, floods and drought. This might suggest that earthquakes were being incorrectly categorised as an atmospheric and climate related hazard, as opposed to a geological one, and thus explain in part, the coherent but incomplete connection between Climate Change, earthquakes and tsunamis. Interestingly, earthquakes and tsunamis were discussed by member of the Department for Education, and some teachers:

F: So, what sort of element of Climate Change might be educated to the children?

*L: The changes of the weather, natural disasters, storms, floods, the sea level rise, tsunamis, etc.
Gov official*

It was also a part of the teacher training on environmental protection as seen in Figure 42, with the text translating to “Why do the floods, tsunamis, etc. happen continuously around the world?”:

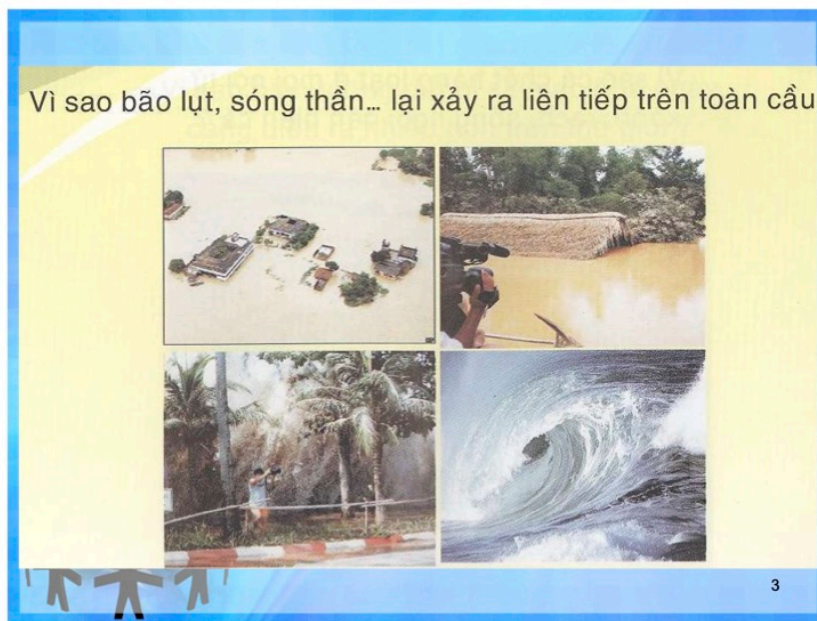


Figure 42: Official Teacher Training Materials for the Curriculum of Environmental Protection

Though not explicitly linked to Climate Change here, its inclusion in the training on *Integrating Environmental Protection Contents into the Primary School Curriculum*, suggests that tsunamis are considered under the same or similar context as other types of flooding. This is reinforced by the explanation by the governmental official’s quote that preceded. Though only a small section, this is a major incorrect and incomplete proposition that demonstrates a general lack of understanding, and seemingly widespread misconception, that could be borne from a lack of understanding about differences in the causes of different hazards – namely the processes – be it climatic, atmospheric, hydrometeorological or geological. When considering geological hazards as a schema within itself, it may be the case here that it is not being separated from climatic, atmospheric and hydrometeorological hazards. These links, particularly the incorrect convolution of scientific ideas, will now be explored.

7.5 Schematic Overlaps

The preceding sections have highlighted the messy and integrated nature of Climate Change knowledge amongst respondents, and how this interacts with various external knowledges, experiences, and circumstances. These sections have begun to highlight how Climate Change knowledge ultimately depends upon the acquisition and understanding of multiple other schemas or subjects, and that Climate Change knowledge is not acquired in a vacuum.

Clearly, demonstrated at various points above, children use their pre-existing knowledge as separate to Climate Change, to inform their Climate Change-oriented prepositions. They apply their knowledge of the weather and seasons, recycling and pollution, plants and trees, earthquakes and tsunamis, to formulate conclusions as this interacts with newly assimilated climate content. As this section will go on to further evidence, it appears that this sometimes occurs because of a lack of explicit climate teaching at school, meaning Climate Change knowledge is incomplete and thus enabling children to make incorrect, yet coherent links. Other times, it appears that these misconceptions are borne as a direct result of explicit teaching, whereby these misconceptions are embedded into adult knowledge and passed down to children without them needing to make their own connections. Thus, the purpose of this section is twofold. First, it will address the overlaps in knowledge that enable these misconceptions to occur, largely from a lack of knowledge and the overriding misconception that Climate Change and environment are categories to be used synonymously. In doing so it will focus on the incorrect but coherent mental models that appeared to occur amongst the majority of students. Second, it will demonstrate facilitators of these misconceptions within children's environments, particularly focussing on school.

7.5.1 Coherent, yet incorrect, mental models

[a]n incoherent or "fragmented", mental model can be conceived as one in which propositions are not interconnected in some systematic way. Such a model cannot be used to give consistent and predictable explanations. Furthermore, because many parts may be unconnected, students are often aware that they lack complete understanding. Alternatively, mental models can be coherent, meaning that the constituent propositions are related in an organised manner. (Chi & Roscoe, 2002: 6).

As already alluded to, coherent models do not equate to *correct* models and, for many children, they were able to “generate explanations, make predictions and answer questions in a consistent and systematic fashion” (Chi & Roscoe, 2002: 7), albeit with incorrect or incomplete links and ideas. The sections above have largely positioned these schemas as separate. However, the following section will detail some examples that highlight the interplays between schemas, and the cascading effects of one incorrect idea into multiple others. The purpose of this section is not to address every (in)correct, (in)complete or (in)coherent link or schematic overlap, however. Instead, it is to highlight some of the most prominent, coherent links made that led to incorrect prepositions, that illustrate how this happens across multiple spectrums and on various occasions within this given context. This process will first be detailed by Kallen, arguably one of the most knowledgeable participants in regard to Climate Change and other environmental issues:

Kallen: *Some years it rains a lot. Some years it gets really, really hot, like this year ... I always think that humans makes it happen ... Because humans destroy nature. ... For example, we destroy the forests then we don't have trees to stop water from the rains and it causes floods.*

Florence: *Okay, do you think that it will keep on changing, in the future?*

Kallen: *If humans change, it will change in a better way. Now I'm trying to protect the environment by not using single-use plastic.*

...

Florence: *So what about the weather then, is plastic and the garbage related to this? Does that have any impact on the weather?*

Kallen: *Yes. For example, garbage could harm the animals. Like this bottle, or the plastic bag, if it's thrown into the water, some fish or turtles could be stuck in it and not get out. They could even die.*

Vi (interpreter): *But what is its impact on the weather?*

Kallen: *If the animals die more and more, the environment will be polluted seriously.*

Florence: *Is there anything else change the weather? So previously when you showed me these photos, you said about it getting hotter and that is the human impact. Is it just like the garbage and the plastic or is there anything else that humans are doing that making this impact?*

Kallen: *They're cutting the trees down and they're overusing fertilizer and chemicals. Lots of factories are giving black smoke into the air.*

Kallen's statements, when considered as individual prepositions, are generally correct:

- Humans are destroying nature.
- This is creating unpredictable weather patterns.
- Humans' destruction of trees does contribute to increased flooding.
- Garbage does harm, and even kill, animals.

- Animal remains do pollute environments (as the bodies decompose CO₂ and methane is released, and they carry many parasites and bacteria that have negative consequences on human health).
- Humans are impacting the world's weather systems by cutting trees down, overusing fertiliser and chemicals, and releasing black smoke into the air.

However, the ways in which these overlap and are pulled together to make a coherent narrative, is not wholly accurate. More specifically, there are many missing elements that means emphasis is being positioned in the wrong places. For example, Kallen clearly recognises that plastic and single use items are bad for the environment, thus suggesting this is a firm preposition within the wider schemas of *environmental protection* and *litter and pollution*. At various other points, she made references to how litter caused global warming, and discussed how her family practices had changed in light of her plastic pollution knowledge (7.1 and 7.2). However here, she links this to Climate Change by suggesting that, when animals die because of plastic pollution, they themselves pollute the environment and cause Climate Change. Whilst indeed Kallen is correct that plastic does contribute to the climate crisis (the production of plastic and processing of it as a waste material is one of the most greenhouse gas intensive industries in the manufacturing sector), and indeed dead animals do emit CO₂ and methane as they decompose, the explanation she has provided is not discussed within scientific discourse as a major contributor to the climate crisis. Though environmentally, the death of animals via plastic is a cause for concern, it does not accurately represent the actual state of affairs in relation to Climate Change. This overemphasises the impacts of certain behaviours on Climate Change – such as littering.

Here, it appears that Kallen is compensating her lack of climate knowledge by applying her knowledge from other schemas such as environmental protection/degradation, to “fill the gaps”. Climate Change and environmental degradation/protection are intrinsically linked, with many naturally occurring overlaps. They are both the result of human’s overconsumption of natural resources, and many activities to mitigate one, indeed support the mitigation of the other. However, embedded within the conversation above, her knowledge of environmental degradation/protection is

perhaps applied as an explanation for Climate Change too readily. Whilst this helps Kallen create a coherent mental model, it is subsequently incorrect. Likewise, Chuot Nhap from the rural school, had many confounding ideas, that he managed to bring together to make a coherent explanation:

Chuot Nhap: I'm drawing about Climate Change [Pointing to his image] It's raining, and pollution, storm, flood, wind, thunder and lightning.

Florence: Why do you put all these things on for Climate Change?

Chuot Nhap: Because they all relate to Climate Change.

Florence: Okay, and what's this one, pollution? Can you tell me some more about pollution and Climate Change?

Chuot Nhap: I think that is the air pollution ... Air pollution causes Climate Change ... I learned about them in my science class. I sometimes have some collecting time when we go out and pick up all the garbage around the school.

...

Florence: Why do they [you and your peers] need to pick up the garbage when it gets in the environment?

Chuot Nhap: Because we must protect our environment and keep it clean.

...

Florence: And so the other things, why do you put them on for Climate Change? How do they relate to Climate Change?

Chuot Nhap: They are like air pollution. They all cause Climate Change.

... The thunder and lightning could set some houses on fire, and then the trees can be burnt down. It makes the air polluted and somehow it changes the weather.

(Rural, male, 11)

Though Chuot correctly links air pollution with Climate Change, he then overemphasises the link between litter and air pollution, which leads him to think that picking up litter will help prevent Climate Change. He cited the reasons for picking it up as to “*protect the environment*”, and thus these schematic overlaps become apparent to the observer. He then links lightning and consequent forest fires to Climate Change. Again, much like Kallen, this is not an incorrect preposition², however positioning lightning only as a cause of Climate Change, and not also as a consequence, his explanation remains incomplete. In not demonstrating this bidirectional relationship, Chuot, much like his peers, overcompensates the role of litter in the creation of Climate Change.

² Lightning storms have increased with Climate Change (Hayhoe et al., 2018), and are a known cause to forest fires. Indeed, these forest fires do contribute towards high CO₂ emissions significantly, whilst concurrently wiping out major Co₂ capturers (forests) in the process (Van Der Werf, Guido R et al., 2017; Williams et al., 2019; Witze, 2020) (Van Der Werf, Guido R et al., 2017).

Much as the evidence in previous sections has shown, it appears that Climate Change was wrongly and simplistically used as a synonym for environmental degradation. Whilst there are numerous overlaps, not all environmentally damaging practices cause Climate Change, and conversely, not all acts that are good for the environment will solve the present-day human-induced climate crisis. This simplistic correlation has been identified in other global studies (Fleming et al., 2021). The most obvious example of this at all data collection points was litter, prevailing as an overwhelming cause for Climate Change, and thus picking up litter considered the main vehicle for prevention of, and solution to, Climate Change.

With some students explicitly stating that Climate Change is because “*we don’t protect the environment*” (Kallen, urban, female, 10), and with children having a strong awareness that both picking up litter/not littering and planting trees/preserving existing trees are practices considered as good for the environment, the link between the two schemas *makes sense* and becomes coherent. As will be explored in Chapter 8, this appears to impact children’s perceived risk of Climate Change, the actions they take in light of this, and the agency these children have both collectively and as individuals.

Of note is that some children answered questions with “*I don’t know*”, when discussing Climate Change. In doing so they demonstrated an incoherent, or fragmented, (and knowingly incomplete) mental model (Chang & Pascua, 2016). Answers were not always consistent, and there was, particularly at the beginning of workshops, an obvious attempt to answer questions for which they did not know the answers to. Though this may appear to demonstrate a lack of understanding, the fact that some students knew what they did not know, under Chi and Roscoe’s (2002) theorising, could mean their mental models are easier to repair as there is not a chain of embedded and interconnected thoughts that require *undoing* (Mayer, 2002). This finding, whereby students suggest or perform acts of environmental stewardship that are not related to global warming directly, as solutions to Climate Change, has been found elsewhere (Bodzin et al., 2014; Cartwright et al., 2021; Kiliñç et al., 2011). Indeed, the findings presented thus far, will likely come as no shock to many climate knowledge researchers and practitioners, as Climate Change is a highly scientific topic

that requires a high degree of abstraction (Taddicken et al., 2018). Understanding Climate Change requires both attention and dedication, a holistic approach, and relies heavily on other preparatory subjects being understood, as indeed has been demonstrated thus far (Anderson, 2012; Boon, 2010; Cartwright et al., 2021; Cross & Congreve, 2021; Cutter-Mackenzie & Rousell, 2019; Rousell & Cutter-Mackenzie-Knowles, 2019). Expecting children aged 9-11 to fully comprehend Climate Change, its causes, consequences and solutions is unrealistic. Without explicit support from a More Knowledgeable Other (Vygotsky, 1978), personally observed changes appear to do little alone in enabling children to relate these lived experiences with scientific “facts”. With this in mind, the evidence provided above does not exist to suggest children have more or less knowledge in relation to Climate Change and flooding than they should. Instead, it is there to provide the starting points for targeted intervention. The *Mental Model’s* and prepositions presented can be remedied, with incorrect and incomplete knowledge on a singular proposition level being those that are most readily changed (Chi & Roscoe, 2002). Providing explicit information that corrects these singular incorrect beliefs, or expands on those that are incomplete, in an age-appropriate way, can achieve this. However, remedying those beliefs that are embedded within a system or *mental model*, is much more challenging, particularly when the mental model is coherent, yet flawed, as many of those who participated in this study appeared to have (Chi & Roscoe, 2002). Highlighting these common misconceptions then, can support curriculum redesign, and specific climate related interventions. As continuously returned to however, climate knowledge is influenced by many socio-economic factors, some of which have already been explored. With this in mind, the next section will turn towards this environment, making a specific focus on school, to highlight some of the key opportunities and existing barriers that appear to be present within the lifeworld’s of these students.

7.5.2 Opportunities and Barriers to Children’s Climate Knowledge

In theorising why children accounted general acts of environmental stewardship to Climate Change, a common precursor to Climate Change education is environmental degradation, recycling, plants and sustainability. Embedded in concrete experience, litter and pollution are considered the “gateway” to Climate Change understanding (Ford et al., 2022). Further, as evidenced in Chapter 6, litter and in particular plastic

pollution, was something extremely tangible within children's environments. It was an obvious environmental problem, as well as one that they were feasibly able to tackle and take meaningful action against, as indeed they did within their school litter picks. In analysing children's narratives alongside interviews with parents and teachers, personal observations and policy documents, the previous sections have drawn upon some of the origins of these specific naïve knowledges. However, there is supplementary evidence particularly pertaining to school that highlighted the potential sources of these misconceptions from a more general perspective, that will here be explored. In an interview with a Rural Deputy Principal, they explained:

"In science class, we teach them how to protect air and water environment. We teach them that the smog from motorbikes, dead animals and agricultural activities can pollute the air. We teach them that we shouldn't throw trashes into rivers. They must understand it so they won't throw anything into the water. After studying, the students have to apply what they had learned into reality. They must come back home and tell their family about environmental protection. They can ask their parents not to raise cattle near home. They can ask their father to use biological pesticide instead of chemical on the field to protect the water environment. In Vietnamese class, we talk about the benefits of growing trees. In outdoor activities, we show them that after cleaning the school and the yard, all the trash is gone and the environment around the school becomes so fresh. We also encourage them to grow more trees to protect the environment. In Geography class, we teach them about the growing tree activities in Vietnam Central Highlands."
(Rural, male, 53)

This overview of the integrated nature of environmental education into the school curriculum demonstrates the various subjects taught, and the multiple topics covered. He does not however, make any explicit note of Climate Change. Whilst it was not possible to conduct a full analysis of the curriculum³, it appears that reviews of Vietnamese Curriculum are limited, with literature searches similarly providing very little. Indeed, in gaining access to some training materials aimed at teachers to support them in implementing the curriculum, analysis found that once again, there was no explicit mention of Climate Change. When an urban teacher was asked how she felt about Climate Change and whether she worried, she said:

Urban teacher: Of course, it's a concern for the people in the area. We don't know when the disasters will happen. But the kids have no idea about it.
Florence: So the kids, do they not have anything in lessons learning about Climate Change?

³ I was unable to access the curriculum during the period of this research. I was advised that schools did not have the rights to share this with outsiders, and my in-country contacts were also unable to share.

Urban teacher: Not about Climate Change but about the environment, like protecting natural resources. We teach the kids that the natural resources are limited, and we should save them. And like, if we restrict indiscriminate exploitation then the climate will not change too much. We teach these things but not in a lesson about Climate Change. (Grade 5 teacher, urban, female, 36)

This absence supports and runs parallel to the children's narratives and the theory being proposed above, that children confuse environmental degradation and Climate Change. Whilst some elements of Climate Change are being included in lessons, without great focus or explicit naming of such, children leave the classroom with a general lack of understanding in both cohorts. Whilst a child did share their grade 4 nationally mandated science textbook to the researchers, in which Climate Change was mentioned, this was only evident on one page, and thus likely only for one lesson (Appendix C). These findings were corroborated by a government official who, when asked if anything existed from the central government about Climate Change in education, responded:

"Not yet. Maybe we will have it in the new curriculum next year... Climate Change is a new problem, so the students don't know much about it. I hope this will change in the future. Do you see this newspaper? It says that the Mekong Delta will disappear in 100 years from now".

A rural teacher also said:

Because Climate Change is just for extra classes, we cannot teach the students thoroughly and completely about the environment and how to protect it." (Grade 4 teacher, rural, male, 53)

Interestingly, Kallen's research outside of the school environment had enabled her to conclude that the textbooks used in school were outdated:

We only learn about the environment in general, not specifically about the garbage. Our textbooks are reformed every 5 years. So now we still using the old book and it's not updated. (Kallen, urban, female, 10)

The two schools in this research, much as other schools throughout the country, are mandated to follow a curriculum centrally controlled by government. Whilst Nguyen's (2019) Vietnamese textbook review suggests that Climate Change is included within four core subjects, here it appears Climate Change is reserved for extra classes (explored further in Chapter 9). With a Department of Education Official further

acknowledging a lack of sufficient coverage, Climate Change education appears to be side-lined for other subjects. One parent showed dissatisfaction with this:

Florence: Do you think they [schools] do enough on Climate Change?

Kallen's Mother: Not enough ...I want the schools to have some lessons about Climate Change and social activities. Now in Vietnam children learn more about Math (Urban, female, 39)

Though, she also suggested she was of a minority in thinking this:

Kallen's Mother: I don't think many people are like me. Out of ten people, there would be 1 or 2 people think like me.

Florence: So what do the other [parents] prioritise?

Kallen's Mother: Math, English.

Kallen's father: Literature.

(Urban, female, 39)

Indeed, some anecdotal evidence in this study suggested this might be the case. At one point in the research when children took their cameras home to photograph changes in their environment, one child returned explaining how their parents had not allowed them to participate as they should be studying for more important subjects.

Nevertheless, many conversations outside formal data collection explored cultural shifts in both teacher and parent opinions, whereby the approach to learning and vision of the child was changing in Vietnamese culture. There were also many discussions of people becoming more environmentally conscious, with a new eco-store opening in Can Tho City, for example. This supplementary data typically follows suit with wider literature, that suggests youth in particular are increasingly environmentally aware, mirrored in changing idioms (i.e. "Cha me dat dau con ngoi do" or "Children must sit wherever their parents put them" (Liu, 2004: 388), changing to "*parents must sit where their children want*" (Vi, pers. comms. 2021). This may allow for future changes, such as the new curriculum mentioned by the government official, to be more fruitful. However if Kallen's mother is correct and she is of a minority with other parents still prioritising other subjects, then increasing Climate Change education within schools may be a greater task. This will be returned to in chapter 9.

Regardless of future trajectories, it appears that at the time of researching, the curriculum was not up to date with current Climate Change predictions and research, with content within this realm largely lacking and sometimes, incorrect. This was recognised by officials, as well as environmental researchers in the area. As has already

been explored throughout this chapter, though teachers did discuss Climate Change in their interviews, much like the children this was often used as a word interchangeably with environmental protection. Many of the children's misconceptions were also identified in teacher and parent interviews, and even within some training materials. Therefore, it is likely that whilst some of the incorrect connections made by children were through their own schematic doings and a result of lacking information, many others may have been explicitly and intentionally taught by those around them, whom are also making the same incorrect, incomplete yet coherent connections. In either case, with school thus far prevailing as a major source of children's information, and with teachers appearing to demonstrate similar inconsistencies, it appears this is an area necessary for targeted intervention.

7.6 Chapter Discussion and Summary

Children's Climate Change knowledge is messy and nuanced. Under the analytical framework of Chi and Roscoe (2002), there existed elements of correctness, and coherence, as well as the opposite, though rarely did knowledges appear complete. This chapter has shed light on these common misconceptions and has theorised how and where some of these disjointed links are being made and has identified some of the facilitating factors that support these incorrect ideas. The most pertinent overlap appears to stem from an overlap between environmental degradation and Climate Change, with the two considered as parallels and thus the causes and solutions also being the same. This leads to the majority of pro-environmental behaviours being considered as solutions to Climate Change, even where the link does not exist. The findings get more complex, because almost all of the links made by the children do have some level of substantiation to them. Litter does contribute to Climate Change, planting trees will contribute towards the curbing of global heating, in some locations flood events may reduce and there is tenuous evidence to suggest that Climate Change does indeed impact tectonic plate activity and thus earthquakes. However, students did not demonstrate the level of understanding that reflects this complexity and instead, they overemphasised the significance of picking up litter as a key behaviour in the prevention of further Climate Change. A lack of climate education in schools, as well as incorrect beliefs also being harboured by significant adults in the environment appear to be contributing significantly. The interplay between these knowledges, and

how they are weaved together, ultimately goes on to inform, and is informed by, perceptions, that will now be explored.

The misconceptions made by children highlighted in this study, such those borne from the overlap of environmental protection and Climate Change, have also been found in other studies (Andersson & Wallin, 2000; Chang & Pascua, 2016; Shepardson et al., 2009). Of course, expecting 9–11-year-olds to fully grasp this concept is ambitious, particularly when adults make similar misconceptions (Fleming et al., 2021). In explaining why these occur, an overwhelming number of studies account it to the fact that Climate Change is a messy and complex topic with many interacting factors that is conceptually hard to grasp (Cross & Congreve, 2021). It is also often intangible, and hard to link to personal experiences, with many concluding this as to why psychological distancing occurs (Gifford et al., 2009; Gifford, 2011). The studies that have found this, however, tend to focus in the West, and in areas less impacted by Climate Change than the Delta. The fact that these inconsistencies existed in a location that is, and will continue to be, greatly impacted by the climate crisis, is thus significant.

Chapter 8 Perceptions of Climate Change, Water Resources and the Environment

Though knowledge and perception are intrinsically intertwined and often considered akin to one another, in this thesis they are critiqued separately. This is done here because “[p]erception refers to beliefs or opinions often held by many people based on how things seem to them” (Kisauzi et al., 2012: 275), whereas knowledge, as defined in the last chapter, is here more closely linked with the scientific consensus. If knowledge here is considered as scientific facts, then perceptions are much more subjective. Perceptions, here, are how we categorise the facts and knowledges we believe we know. They are the values we assign to our knowledges, how important we consider them to us and others, the risks we ascribe and so on (Arnoldi, 2009). They are laden with assumptions, opinions, beliefs and are heavily mediated by our social environment (Fleming et al., 2021; Metcalfe & Riedlinger, 2020). By dissecting the two, and considering them first as separate, the interaction between the knowledge children are exposed to and bare, and the perceptions they harbour can be more thoroughly understood when brought back together. The two most prominent themes to emerge from the data collection were risk, and agency, – that is – the perceived risk that Climate Change poses to themselves and the world, and the perceived agency that they as children have in tackling these risks. As this chapter evolves, it will draw out these key themes, and will interweave external literature in a critical review of these intersections, beginning with *perceived risk*.

8.1 Risk Perceptions

Risk perceptions of Climate Change were wide and varied, with some participants not considering it a risk at all, and others demonstrating genuine climate concern for both now and in the future. These variations existed across both perceived likelihood, and perceived severity, of Climate Change hazards. In considering that awareness of Climate Change is necessary to analyse the risk it poses (Aksit et al., 2018; Copsey et al., 2013), and that children’s *knowledge* in relation to Climate Change was also varied (Chapter 7), these deviations are unsurprising. A greater focus was given to the perceived risk that Climate Change posed to themselves and the Mekong Delta specifically, a focus largely driven by the fact that this area is at such great risk, and that personal risk is consistently found as a determiner of positive behaviours and action (Aksit et al., 2018; Copsey et al., 2013; Liberman & Förster, 2009; Maiella et al., 2020; Rodríguez-Cruz & Niles, 2021). In the following section however, because so many participants lacked a clear understanding of Climate Change, conversely having knowledge of environmental issues more broadly (Chapter 7), peoples risk perceptions for their locations

future in general were analysed, most often from the position of likelihood and severity of future flooding. With flooding being one of the major challenges that the region will face as Climate Change impacts increase, this section will thus consider risk perceptions from both dichotomies.

An overwhelming majority, even for those with heightened risk perceptions of Climate Change and the associated hazards for this region, positioned such risks as spatially and temporally distant from themselves. Not considering it a risk that impacted them here and now, Climate Change and the associated hazards were considered a risk for others, occurring elsewhere in space and/or time. A significant body of evidence in support of this was found within the transcripts from both the urban and rural school, with many of the overriding themes visible in Lisa's extract below, where she discussed the multiple photographs in Figure 43:

Florence: Do any of these photographs that you have taken have an effect on this area? Do you see any of this where you live?

Lisa: We have factories here, but the forest fire is in other countries.

Vi (interpreter): What about the garbage?

Lisa: Yes, we have that here. A lot ... Sometimes [the flood] makes [people] late for school and some people might die.

Florence: Do you know if that has happened here?

...

Lisa: Yes ... In 2018 ... in the Middle of Vietnam.

Florence: But that doesn't happen here?

...

Lisa: We [in the Mekong Delta] only have accidents, but no one dies. Because water is all over the street, people sometimes can be stuck in a drain cover and fall down. It could break their arms or legs.

Florence: Do you think that any of these things [pointing at the photos] would change in the future in Can Tho?

Lisa: Maybe. But my teacher says the Mekong Delta is going to be flooded in the future.

Florence: Do you think it will?

Lisa: I think so ... [in] about hundreds of years later.

Florence: Do you worry about it?

Lisa: No, because I'll be dead at the time it happens.

(Urban, female, 9)



Figure 43: Selection of Photographs Taken by Lisa (Urban, female, 9)

There is a lot to unpack in Lisa's commentary and her corresponding photos above. First, when tasked with representing Climate Change via photography, she chose to take photos from online, as opposed to ones in her local area. She was not alone in deciding to do this; Rabbit also chose to photograph images from online, though it should be noted that no one in the rural school did this. When Lisa and Rabbit were asked why they chose to take these photographs, they explained it was because "*they relate to Climate Change*". This suggests that both Lisa and Rabbit, despite having an awareness of Climate Change (as evidenced in chapter 7, were not able to identify its impact within their environment. Further adding to this, whilst Lisa and many of her peers acknowledged that the Mekong Delta does flood, in discussing flooding as a disaster, they regularly positioned the middle of Vietnam as being the location

that experienced loss of life during a flood event, suggesting the floods in the Delta are more of a hindrance to mobility, as opposed to what she considered much worse and life-threatening disasters that occur in central Vietnam.

Some students elaborated to say that they considered themselves “*lucky*” (Rabbit, urban female, 9) to live in the south of Vietnam as opposed to central Vietnam, once again psychologically distancing themselves from the hazard of flooding and Climate Change. Much like Sou’s (2015) research in Bolivia, it appears there is a level of relativity in the construction of risk perceptions, in that the children here are gauging their current level of risk by comparing their experience to others. Gifford et al. (2009) term this *spatial optimism bias* and have found it common throughout international studies.

This specific distancing to the middle of Vietnam was evidenced in both cohorts, with one male student in the rural school saying “[*In Geography*], we learnt about floods in the Central Highlands in Vietnam ... They’ve got heavy rains and the water washed away everything”¹. Gau Den, another participant from the rural school said, “we have learned about [*Climate Change*] in Vietnam, but not in the whole world or where we live” (rural, female, 11). Similar narratives arose from the urban school with Kallen saying “the textbooks are not about Can Tho” (urban, female, 10).

Indeed, the geography curriculum at the time of data collection specified central Vietnam as a case study location, and conversations with a DOE official who concluded that teachers “have to follow those textbooks. [Teachers] cannot use other textbooks to teach in school” (Department of Education Official, male, n.a.). Teachers and parents also discussed central Vietnam as a particularly vulnerable place to Climate Change and flooding:

I mean this land is peaceful and we never see any disaster or something. But last year we had a quite big flood. To me, as a small individual, I do worry about Climate Change. However, the people here haven’t known about it yet. People in the Middle of Vietnam are more worry than us because they have disasters like big storms every year ...

This community has lived with the flood for a long time. So, worrying about money is the biggest part of their life, not the flood. And now the infrastructure is good, so they don’t even care about the flood ...
(Grade 5 teacher, urban, female, 36)

¹ Unidentifiable in recording.

Whilst acknowledging some risk to their area, adults are also positioning Central Vietnam as worse off, thus continuing the spatial optimism bias. They account poverty as a barrier to concern about flooding and Climate Change, something also highlighted by teachers in the rural school ("*worrying about money is the biggest part of their life, not the flood*" [Deputy principal, rural, male, 53]), with some adults concluding their safety because of infrastructure and development in the region. This may in part explain this lack of applicability to their own environment, and thus the spatial distance applied. Whilst the middle of Vietnam is typically characteristic of sudden, high impact flooding that causes greater loss to life and economy, this distancing is particularly important given the Deltas position as one of the most vulnerable locations to such hazards in the face of Climate Change.

Some students however, gained supplementary information about Climate Change and flooding online, and thus positioned the flood to locations within the Delta. However, in doing so, the risk was still removed from themselves to neighbouring villages and towns:

Gau Den: I read it on the newspapers from the Internet. The flood is in Long An and Can Tho [City], but not here.

Florence: So here does not flood and you do not think it will flood or will it flood in the future?

Gau Den: No.

(Rural, female, 11)

Here, where children were aware of localised flooding, it was via media outlets and occasionally, family and friends. Narratives followed similar trends within parent and teacher interviews:

I think that kind of flood will never happen here. In the rural area, there are more canals, so it's easy to get a flood. We don't have lots of canals here in the city. Also, the parents here take really good care of their kids.

(Chic's Mother, Urban, female, 45)

In these two extracts, both consider the other to be at heightened risk than themselves. Chic's mother in particular socially distances herself from those who she believes will be impacted, accounting this to a difference in parenting. A teacher within the rural school noted the volume of canals as protection, instead using this as an explanation for why the issue was reserved for elsewhere:

Florence: So, do you think this area is at risk of flooding in the future?

Grade 4 teacher: I think this place is peaceful plain and the number of floods is less than in other places. Some provinces like Kien Giang, Bac Lieu has more floods than this area. Another reason is the huge canals system in the South of Vietnam. They reduce the volume of water flowing through the land and keep the floods low.

(Rural, Male, 53)

Whilst not viewing flooding as a major risk to the area, this teacher did acknowledge that Climate Change posed unique issues to their region (explored in Chapter 7). Again however, despite having a heightened sense of the impact Climate Change was, and would continue to have, on their region, particularly in relation to farming practices (saltwater intrusion and crop diseases), the economy and health, they added:

*Climate change is just for extra classes; we cannot teach the students thoroughly and completely about the environment and how to protect it.
(Grade 4 teacher, rural, male, 53)*

This suggests that even those teachers who showed knowledge of Climate Change within their local context, do not feel they have the capacity within the curriculum to teach it to their students. Further, the fact that this teacher, despite their additional knowledge in relation to Climate Change, did not themselves make the connection between flooding and Climate Change in their region, is significant. Amplifying this, the same school's deputy headteacher said:

*I don't really see any effect [from Climate Change]. I can't predict exactly [what the future holds], but as I see on the news and the weather forecast, [the Mekong Delta] won't change much. Maybe it's getting warmer ...
(Deputy Principal, rural, male, 53)*

Given their leadership position within the school, this may impact children's access to climate information, and thus negotiate their risk perceptions. Parental interviews often made similar notions:

*Can Tho is a peaceful land. This is the best city in the Mekong Delta, so we don't have much [of a] problem [with Climate Change] to worry about.
(Ami's Mother, urban, female, 40)*

Students did not only distance themselves spatially however, and Lisa's comment of "my teacher says the Mekong Delta is going to be flooded in the future ... in about hundreds of years later ... I'll be dead by the time it happens" temporally distanced Climate Change in her region to a point so far in time she did not consider it to be of relevance to her. Many additional narratives positioned Climate Change impacts in the future tense, with statements such as "[Climate Change] will cause storms and floods in the future" (Trung Cuoc, rural, male, 9) and "[now the weather is] the same. I think it might change a little bit [in the future] ... we will get more rain ... I just have a feel[ing]" (Apple, urban, male, 11). These were again accompanied with narratives that suggested students did not consider these major concerns:

I think [Climate Change] will influence Can Tho City a bit, but the disasters will affect other places very much. It only effects Can Tho a bit.

...

*I think just a bit because I'm not sure that it will come right now ... it may come in dozens of years or hundreds of years
(Kallen, urban, female, 10)*

Here, though acknowledging that Climate Change will impact her location, Kallen reserves this for long in the future, not considering it as something that will make a significant impact. This is particularly significant given her much more refined and detailed understanding of Climate Change and environmental issues compared to her peers, as evidenced in Chapter 7. With many participants considering flooding and Climate Change as something temporally distant, a specific line of inquiry into students' predictions for the future of their localities in general was made. Rabbit believed the risk of flooding would reduce in the future:

Rabbit: I think we will get less flood in the future.

Florence: Why will we get less flood in the future?

Rabbit: I don't know. I just guess. Can Tho be developed, less flood and no drought.

Translator: So, is it better or worse?

Rabbit: Better.

(Urban, female, 9)

Though she cannot explain entirely why she believes this, there seems to be the perception that development in the region will prevent these things in the future. Indeed, the belief that the future of Can Tho would be better was a widely shared narrative, though conflicts did arise:

Florence: So, what do you think your hometown will look like in 50-years-time?

Chuot Nhap: We will have more advanced technologies. The future will be better.

...

Mai: The environment will get worse because there will be more and more factories which pollute the air.

...

Gau Den: After 50 years from now, the environment will be cleaner because people will be aware of the environment.

Be Meo: I think it will get worse because the population will explode, and people will cut down a lot of trees.

Rural: Chuot Nhap, male, 11; Mai, female 10; Gau Den, female, 11; Be Meo, female, 11)

Similar conflicts of opinion were evident in the urban school:

Florence: Ah, interesting. Do you think in the future these things [flooding and a lack of water] would happen?

Unidentifiable in recording: Things will get worse.

(Urban, female, n.a.)

They think that in 50 years Can Tho will be beautiful and green with lots of trees because people will become good and plant more trees.

...

Muler believes flooding will increase in the future because the water will go up because ice is melting. The ice is melting because the Earth is warming but he doesn't know why.

...

*Mini said in the future we will find a way to stop the flood i.e., Building dykes and in 30 years Can Tho will be beautiful because people will plant lots of trees.
(Urban: Workshop notes: Visit 2 – Workshop 1 Group 2)²*

Some students had largely optimistic imageries for the future that were solution focussed, somewhat acknowledging current environmental issues in doing so. This would suggest they held what Ojala (2015) calls *constructive hope*, as opposed to *hope based on denial*. Hope based on denial, however, also appears to be commonplace in the additional narratives explored above, though as will continue to be explored, it appears this stems from lack of knowledge as opposed to a politically driven case for *hope based on denial*. Others however, perceived the future of the delta from a more pessimistic perspective.

In either case, they independently linked their predictions to both environmental improvement and degradation and considered the role of technological advances and the collective action of humans in their projections. There appeared, in each school, to be no singular majority. Hope and optimism will be explored further in Chapter 9.

When asked specifically about their risk perceptions towards flooding, children continued to distance themselves spatially and temporally, suggesting that a lack of previous flooding predicted a low chance of such an event occurring in the future:

Florence: What do you think about flooding?

Kallen: Usually I feel nothing because my house is not affected by flood.

(Urban female, 10)

Florence: Do your parents protect your house from flooding?

Muler: My house has never been flooded before, so we didn't prepare for the flood. But if the flood come, we will build my house higher.

Florence: Do you think they should do that now or do you think there's no need to do that now?

Muler: I think there's no need to do that because this place never be flooded.

² The recording for this workshop was accidentally deleted from the recording device immediately after. Florence and Vi (interpreter) collectively wrote notes after the session to ensure as much data was retained.

Florence: Never ever? Okay. Do you think Climate Change will ever make it flood? In the future, long in the future.
Muler: No.
(Rural male, 10)

This was reinforced by Ami's mother who, when specifically talking about flooding in the future, said:

Can Tho is better than any other province. We never have storms or floods ... My place [business] is high ... [the flood] mostly effects the way people travel. Can Tho is a lucky land.
(Ami's mother, urban, female, 40)

Her comment suggests that she does not consider the low-level surface water flooding that Can Tho City experiences, as a flood at all. So used to these water patterns, she considers the location she lives as "lucky". Though, she did acknowledge that other places flood in the Delta:

Ami's mother: Yes, in Dong Thap province. Like the floods just stay for 3 to 5 days and go and come again. It happens every year, but people cannot do anything but live with it. They are too poor, and they have to worry about their lives. The responsibility is on their government.
Florence: To your knowledge, has there ever been like a death or injury because of the flood in the Mekong Delta?
Ami's mother: Yes, a lot. But people still live in the flood area. They won't move. They don't have enough money to move to another place unless the government helps them to move.
Florence: So, this again in the rural community, is that right?
Vi (interpreter): Yes.
(Urban, female, 40)

These extracts reinforce the lived experiences of children explored in Chapter 6, where flooding was mainly a hindrance to mobility, rather than a threat to life in the city. Having only memories and experiences with slow onset flooding, Ami's mother barely considers it a flood at all, and thus, much like the students, concludes that her home will be safe in the future. This is important for several reasons, that will be explored in Chapter 9 of this thesis. Some children however, had access to second-hand stories of historical flood events from teachers, parents, and grandparents:

Unidentifiable in recording: Thu [teacher pseudonym] used to tell us about a big flood ... She said in 1995, there was a big flood that flooded 2 or 3 provinces, but not here.
Florence: Do you think that anything like that could happen again and affect here?
Unidentifiable in recording: Yes.
Florence: Why do you think that?
Unidentifiable in recording: If there are some heavy rains continuously in many days, we will be flooded ... I only think about it when the rains come.

(Rural, male, n.a.)

Gau Den: My parents told me about [the flood and storm].

Florence: Is that about a storm and flooding in Can Tho?

Gau Den: Yes ... More than ten years ago.

Florence: So, your parents told you about that, they told you the story. What did they say happen?

Gau Den: I don't remember. I only know that it's about the flood and storm.

Florence: Yeah, do you think that will happen again, what they told you?

Gau Den: Not now but I think it will happen in the future.

Florence: Why would that happen in the future do you think?

Gau Den: I haven't seen anything now but it's like a part of Climate Change because of humans. People will have more and more bad effects to the environment and then that will be what we get.

(Urban, female, 11)

These appeared to lead to heightened risk perceptions for flooding, with one student explaining how he considered this reality when it rained. Gau Den was able to specifically link the risk of flooding to Climate Change, however she still distanced the threat, concluding it something reserved for the future, unable to see any effect now. However, there were only a few mentions of such intergenerational knowledge exchanges between children, their parents, grandparents, and teachers that made students aware of these past events. The significance of this will be returned to in Chapter 9.

Nevertheless, some students also cited their own personal observations where they had noticed changes over time, for which they appeared to correlate to an increased risk:

Florence: ...Why do you think that could be a big flood?

Chuot Nhac: Because the river's water level is raising year by year.

Florence: So, the floods are getting worse every year? Is that correct?

Chuot Nhac: Yes.

Florence: How does that make him feel? Does that worry him or...?

Chuot Nhac: Nervous.

Unidentifiable in recording: The water level is so high, and I can't go swimming anymore.

(Rural: Chuot Nhac, male, 11; Unidentifiable in recording, male, n.a.)

As explored in Chapter 6, children in the rural school appeared to have a deeper connection to the water around them. They noticed many changes in the hydrological cycles of the area, as well as in temperature and weather. It appears here, that they were more likely to draw upon this in the forming of their risk perceptions for future flooding and Climate Change. It is likely however, that these observations and their interactions with risk perceptions were more nuanced, as some of their observations will be expected and annual changes, whereas others will be out of the norm and as a direct result of Climate Change, with the two being difficult to

distinguish between. Further, with formal education largely lacking to aid children in connecting their observations with the scientific concept of Climate Change, these risks were not always attributed to such. This will be returned to in Chapter 9.

The variation of perceptions amongst students was also evident in adult discussions and interviews, with the deputy principal in the urban school discussing two scenarios:

Deputy Principal: The government talks about protecting the environment all the time on the media. I think if it can make a change in people awareness, Can Tho and the Mekong Delta can be a better place in the future. But if there is no change, then 50 years later we will be definitely underwater.

Florence: Does that worry you?

Deputy Principal: Of course, I do worry. Because 50 years later I won't be here anymore, I'll be definitely dead, but my grandchildren are still alive. I'm scared of seeing the water level raising higher and higher every year, especially in this area near the Xang Thoi Lake. Let say if each year the water is 1 centimetre higher then 50 years later it will be extremely high.

(Rural, male, 53)

The deputy principal in the urban school appears to cite a similar projection to that of Lisa above, and a governmental official:

Some experts predict that 50% of the Mekong Delta will be submerged by 2050 ... Climate change is a new problem, so the students don't know much about it. I hope this will change in the future. Do you see this newspaper? It says that the Mekong Delta will disappear in 100 years from now.

(Department of Education Official, male, n.a.)

Though their predicted timings are different, they appear to have accessed the same or similar information in terms of scientific projections for the future of the Delta. There have been several studies in recent years that offer varying predictions as to the future of the Delta, with one of the most recent studies suggesting up to 12 million people – around 75 percent of the population - will be displaced with 1 metre rise in sea level (Minderhoud et al., 2019). The same government official later suggests “many people are aware of this research. Though people in rural areas may not know about it. But in the city, people know a lot about it” before stating “[Climate Change] is a new problem. The media have just talked about it recently, so I think the teachers may not know about it. But they will have more information in the future” (male, n.a.). From here, conversation turned to the education of local impacts of Climate Change:

Florence: So currently, nothing exists from the central government about [the localised impacts of Climate Change], is that correct?

*Department of Education Official: Not yet. Maybe we will have it in the new curriculum next year.
(Male, n.a.)*

As mentioned earlier, teachers, students and government officials discussed the existing curriculum as rigid, with all teachers having to teach from the same textbooks throughout the country, and with little space for Climate Change, particularly within local or regional contexts. Climate change was limited within science textbooks, and teacher training materials considered Climate Change from a global perspective, making incorrect links to tsunamis. When the government official was asked how Climate Change is currently taught, he said:

*We teach about environmental issues on a global scale. We teach about the melting glaciers, deforestation, and wildlife conservation. We mainly focus on the issues in Vietnam but sometimes we teach the students about the global issues.
(Department of Education Official, male, n.a.)*

Nevertheless, he was hopeful that a new curriculum being released the following year would provide more flexibility, and ensure that local issues such as these were taught within school:

*In my opinion, we should let the children know [about local issues caused by Climate Change]. Because they will be the ones who live in that time. They need to know to prepare for it. Maybe they will be the ones who save this place in the future ... There is a section in the new curriculum called "local education" in which we can teach about specific issues in this area. The section makes up 20% of all the curriculum. I can teach about local history, geography, and people in that section. We can create our own program base on that section ...
It will be implemented next year. Now, there is only one set of textbooks for all the country. But the teachers [will soon be able to] change it to suit local conditions.
(Department of Education Official, male, n.a.)*

Briefly mentioned in Chapter 7, and further discussed here, this suggests that the localisation of Climate Change may be possible in a way that is not currently viable under curriculum constraints. However, this will also require the development of adequate teacher knowledge of localised Climate Change, for which this thesis has thus far demonstrated as inconsistent and largely lacking. The same official also noted some potential barriers to this:

The teacher's ability and the number of students in a class. In other countries, there are fewer than 25 students in a class. And here, in some districts, there are about 40 students per class. It's hard to teach too many students like that. But if we teach them in that active way, sooner or later they will be able to study by themselves. The old curriculum focuses mainly on providing knowledge for students. The students have to study passively a lot of information. That teaching method is time-consuming and boring. But next year, we will decrease the amount of knowledge and focus on the student's ability and strength ... There are just a few teachers who will not accept the changes. They are too old to change their mind. And it's very

*hard to change at first. The teachers don't get any higher salary, but they have to work harder to adapt to the changes.
(Department of Education Official, male, n.a.)*

These barriers, namely class size, teacher knowledge and teacher motivation, are important considerations as this new curriculum that will allow for localised teaching of Climate Change should local districts decide, will likely be critical to the success of its implementation. There is also no guarantee that local governments will chose to teach such topics within their schools.

Despite the consensus of both adult and child participants spatially and temporally distancing both Climate Change and flooding, some appeared to show deep concern for the future of the Delta, blaming government for the lack of action:

*Florence: What do you think Can Tho and the Delta might look like in the future?
Lisa's Mother: I think it will get worse. I don't see our government doing anything to solve these problems ... It's very difficult to find a solution.
Florence: Do you discuss your concern with your children?
Lisa's Mother: I talk to them a lot about it. Because I want them to know about the problems, and do something in the future and have good awareness ...
But as far as I see, no one is doing anything. Like in our city, we have flooded many years and they still didn't change anything.
(Urban, female, n.a.)*

In considering how this links and interacts with their wider knowledge networks, students lived experiences (Chapter 6), clearly inform and mediate students' perceptions of Climate Change and non-climatic related events. As this interacts with their more formally derived knowledge (Chapter 7), they may begin to correlate annual changes with Climate Change, and changes derived from the climate with annual norms (Konisky et al., 2015). Though Climate Change is lessening the predictability of the rainy season, and in general increasing the frequency and magnitude of largescale flood events that go beyond those of benefit to the region, the students are aware that the rising water levels in the river are an annual and "normal" part of life in the Mekong Delta. Thus, without formal instruction, the likelihood of these links being made is reduced.

This is particularly important here because, where teaching cannot be localised to suit specific conditions and highlight these interactions between global and local, education fails to prepare children and youth with the adaptation and mitigation strategies that they will require as Climate Change impacts increase in their area (Akerlof et al., 2013; Crona et al., 2013; Konisky et al., 2015; Muttarak & Lutz, 2014; Twigger-Ross et al., 2015). Particularly in Vietnam where impacts are extremely wide and varied due to a number of factors such as topography and weather patterns, having central Vietnam as the focus area throughout the country serves

little applicable purpose to those elsewhere in the country. Further, learning only about the causes, consequences, and global solutions to global warming specifically, cannot prepare children for the adaptive capacities that are required to face the multiple associated hazards as applicable to their region (Crona et al., 2013; Cutter-Mackenzie & Rousell, 2018; Poortinga et al., 2019). Even those behaviours cited by children and teachers that do link to Climate Change, for example reducing emissions, this will make little to no impact on children's resilience to the impacts of Climate Change either now or in the future.

The perceptions that students have surrounding if, how, and when their area may or may not be affected by Climate Change play directly into the next section: their perceived responsibility and agency.

8.2 Agency

Agency here is defined as the "the capacity of an individual to actively and independently choose to affect change; free will or self-determination" (Bell, 2016: n.p). This section then, will consider children's perceived sense of agency regards to Climate Change and the associated hazards to the region in which they inhabit. In doing so, it will also draw upon some of the structural constraints and facilitators that became apparent during the research process. These are the socio-cultural conditions that appear to determine children's actual and perceived agency. Again, with many of the children having limited understanding of Climate Change, this section, much as the above did, will also consider the agency they perceive themselves to have in relation to environmental issues in their location in general. In doing so, this section will consider agency from several positions: does action need to be taken; what action needs to be taken; who is responsible, and how much agency do they as children have?

To take action against environmental issues and Climate Change, one must first believe that action needs to be taken (Gifford, 2011), however as the risk perceptions in the previous section have highlighted, children had differing opinions as to the risk level of both Climate Change and flooding and thus, whether or not action was required. For those who had limited understanding of Climate Change, and/or saw Climate Change and flooding as an issue for elsewhere or so far in the future it did not concern them, they generally demonstrated low levels of personal agency, citing several factors, including lack of knowledge, as a barrier:

Florence: Do you think children can make a change? Do you think children can make people change?

Ami: Yes. They study in good schools and their teachers teach them about how to save water and the environment also.

Florence: Do you think you will make a change?

Ami: Yes. But I think some children are very naughty. And they don't know how to make a change.
Florence: Which one are you?
Ami: I'm not sure, because I still don't know what to do.
(Urban, female, 9)

Here, though positive that children can make a difference Ami admits that she herself is not sure of what action to take. This was shared with other participants who also felt their lack of knowledge prevented them from making a difference, with utterances following similar tracts to “*I cannot help anything*” and “*I just say, but I cannot help much*” (unidentifiable in recording, urban, female, n.a.). This was mirrored in many adult discussions, with the deputy principal at the rural school stating, “*I know many things about Climate Change here, but I don't know how to deal with it*”. Nevertheless, the Department of Education official was confident that through education, children would be the ones “*who save this place in the future*”. In discussing the wider population however, the Department of Education representative said:

[People] are worried. But they don't think much about the solution. They think that only people who are responsible for it should be worried about it. People tend to think that the government will take care of everything for them.
(Department of Education official, male, n.a.)

Indeed, many of the adults interviewed, and indeed several of the children, suggested the responsibility to solve local challenges was on local and national government, evidenced not just here but throughout several of the quotes within this chapter. This psychological distancing and consequent lack of personal action and agency reflects other studies that suggest those with higher confidence in their government to uptake Climate Change initiatives thus reduces their own responsibility (Pidgeon, 2012) One parent expanded on this to explain her dissatisfaction with current governmental efforts to combat local environmental issues such as Climate Change and flooding:

I don't see our government doing anything to solve these [environmental] problems ... It's very difficult to find a solution. ... as far as I see, no one is doing anything. Like in our city, we have flooded many years and they [the government] still didn't change anything.
(Lisa's Mother, urban, female, n.a.)

This narrative appeared to be present in the children's workshops:

Florence: Who should fix this problem [increasing flooding in the Delta]?
Mina: The people who litters
Lisa: The peoples committee of Ninh Kieu District ... the government
(Urban: Mina, female, 9; Lisa, female, 9)

By casting the issue as caused by others and not themselves, be it the people who litter or the government, both children and adults appear to reduce their risk perception and dissolve their own responsibility in tackling local issues. Vietnam is a single party communist state, characterised with high government control and formalised structure (London & London, 2014). This will be returned to in Section 9.3.4. Interestingly, other adults in children's immediate environment minimised their personal agency by believing the measures of other actors was enough:

Here, thanks to the closed dyke system, a construction of the Bac Nao project, we can prevent flooding.

Farmer, An Giang Province

The dyke system is in good condition. The roads and the new national standard schools are good, too. So, I think there won't be anything to worry about the flood in the future.

Deputy Principal, rural

In believing that existing standards were sufficient in preventing future hazards associated with Climate Change such as flooding, these adults concluded that they were not at risk and thus no action from them was necessary – likely reducing their likelihood to discuss Climate Change with their children. This encouraged what Gifford (2011) terms optimism bias, whereby overly optimistic projections for the future inhibit personal actions towards Climate Change. This will be returned to in Chapter 9. Another reason for perceived limited agency originated from the belief that local hazards were beyond human control:

Apple and Muler said that the storms and the floods come because of God. Muler said his parents didn't tell him that, he just thinks it. He thinks there is nothing humans can do to stop them coming, but that humans can prevent the bad things associated with them i.e., building walls.

(Urban: Workshop notes: Visit 2 – Workshop 1 Group 2)

Unidentifiable in recording: [the floods come] because God decides it.

Jason: God doesn't like short things, so he makes it taller.

Florence: Ah he doesn't like it when the flood is small, so he makes it big.

Jason: Just for fun.

(Urban: Unidentifiable in recording, female, n.a.; Jason, male, 10)

God, in these conversations, was not assigned to a particular religion, and further discussions with local informants noted that, though there are many religions in Vietnam, many children and youth will discuss God as:

"An almighty force in general"

(Vi, Local Informant and Interpreter, female, aged 24)

Whilst Jason's response appeared to be more in jest, the other students seemed to consider this as an indivertible fate. Fatalism is often considered as a barrier to individual action, frequently correlated to riskier behaviours (Johnston et al., 2013; Ngueutsa & Kouabenan, 2017). It is also typically associated with Vietnamese culture (Nguetsa & Kouabenan, 2017), specifically the Buddhist belief that what one what did in a previous life, predetermines their experiences in their current life (Avason, 2021). However here, whilst Muler in particular suggests little that can be done to prevent local flooding, he acknowledges that the impacts of flooding can be mitigated and adapted against. This could mean his will to action is less likely to be impacted, a finding similar to Taylor's (2011: 241) research in Indonesia, whereby she argues the fatalistic narratives are "more an acknowledgement of the limits of human abilities" as opposed to a complete limitation of human action. However, one parent said:

I do see and hear in the media about our problem nowadays, but we cannot do anything about these problems, so I don't think much. Like, we will just follow our government instruction, if they say you need to move your house, then just move your house. That's it.
(Ami's mother, urban, female, 40)

Here, much like those quotes above, she assigns responsibility to the government and in line with Apple and Muller, she also deems Climate Change and flooding as something beyond her control. In doing so however, she removes her own ability to make a change. This was mirrored with the deputy principal in the urban school, who also saw limits to her personal actions:

My neighbours and I just try to do little things to protect the environment and encourage each other to do it. But I think we cannot worry about bigger things like building the dykes or something like that. Because it's not in our control.
(Deputy Principal, urban, female, 50)

Here, the principal recognises a distinction between that within and outside of her control. Focussing on communication and encouragement amongst her neighbours and taking small actions that she suggests are within her control, she appears to have some agency herself, however, sees a limit to this. This was similar to Kallen's Mother:

*I think the Climate Change is the bigger problem but it's like too big for an individual to solve. It will need lots of people to make a change. Because most of the problems in Climate Change come from the factories or something bigger. **As an individual, I think plastic issue is more practical to us and we can make a change with this issue by ourselves.***
(Kallen's mother, urban, female, 39)

With plastic pollution being such a big issue for the delta and being such a concrete part of all participants experiences clearly visible in day-to-day life (chapter 6), Kallen's mother is afforded a level of agency and self-efficacy by focussing on this, as opposed to the intangible threat of Climate Change that she assigns to factories and "something bigger". This was similar to many of the children whom, despite discussing Climate Change as an issue elsewhere in space and time, afforded themselves agency by taking small, individual actions:

*[To prevent the weather from changing] I plant the trees, save water, and don't litter.
(Ami, Urban, female, 9)*

Students generally positioned these actions as protecting the environment, and thus many concluded were part of the solution for Climate Change and/or flooding. These actions are tangible, feasible, and the impact of such can often be seen (greener environments, water shortages less often, and less litter respectively). This is unlike the intangibility of Climate Change (Cross & Congreve, 2021), that is much more complex to solve and with the impacts of taking action or not less visible in daily life (Cartwright et al., 2021; Cross & Congreve, 2021; Heck, 2015). This finding is common amongst other studies that address the effectiveness of actions to reduce human-induced Climate Change, with many students suggesting acts of environmental stewardship not related to Climate Change directly (Bodzin et al., 2014; Cartwright et al., 2021; Kılınç et al., 2011). In the face of similar findings within her own research in Vietnam, Heck suggests:

The notion of feeling somewhat helpless or unable to commit to actions on a personal level to make substantial global change seems to be a feeling shared by people all over the world. For this reason, the focus on cleanliness in one's own behavior, community and immediate surroundings is a logical reaction. This equating of "green" environmental behavior with "keeping clean" does not necessarily address the need for a shift in human behavior away from wasting energy and mass consumption. However, it does show one way of addressing the issue in a manageable way that makes individuals feel like they are helping the environment." (Heck, 2015: 28)

Though these actions, as were explored in Chapter 7, are more actions of environmental protection as opposed to climate mitigation, they still demonstrate a sense of perceived agency, and ability to make change, because children *believed* that indeed they did.

Environmental action and this increased sense of agency can also provide the "gateway" into further environmental concerns such as Climate Change (Ford et al., 2022). However, these could also act as ceiling behaviours, or single-action bias (Weber, 2010). Ceiling behaviours are

typically single actions taken to tackle a worry, such as an environmental crisis. By taking their singular action, they worry less and are less likely to take further action, regardless of whether the action they have chosen to take is the most effective or not (Thomas & Sharp, 2013). Under the impression that their actions are making a difference, this may explain some of their lowered risk perceptions previously explored.

This may also explain some of the inconsistencies in children's behaviour – whereby many of them participated in these pro-environmental activities inside and outside school (explored in Chapter 6), however also carrying out activities they knew were damaging:

Florence: you said that you still throw things in the river. Why do you do that when you know that you shouldn't?
Unidentifiable in recording: Because the adults tell us to do it.
F: But you know that it's not, right?
Unidentifiable in recording: Yes.
(Rural, female, n.a.)

Compounding this, in Chapter 6, findings highlighted how infrastructure in the rural setting was not sufficient. Despite having knowledge that these practices were damaging for the environment, there was no other feasible option beyond burning, burying, or throwing rubbish into the river for many rural families. Children's agency appears to diminish when they partake in practices they consider damaging, clearly articulated in saying "because the adults tell us to do it" thus removing their choice. Gau Den explicitly linked this lack of agency and choice to being a child:

But we are children, we don't know how to burn the garbage without our parents help. But the parents are too busy to help us burn the garbage, so we have to throw them into the river.
(Gau Den, rural, female, 11)

These inconsistencies between actions and belief are known as cognitive dissonance (Festinger, 1976) within psychological discourse, whereby one's behaviours and beliefs are in direct opposition with one another, appear to cause some children with discomfort, expressing sadness when having to partake in the actions they know to be harmful:

Florence: How does that make you feel [when you throw the rubbish in the river]?
Gau Den: I feel a little bit sad.
(Rural, female, 11)

These inconsistencies between students' belief and action, were mirrored somewhat in the urban school, where students admitted that they still littered, despite knowing its negative consequences for the environment, and in some cases Climate Change. This was similar to

Taylor's (2011) study in Indonesia, where children noted the impact litter had on flooding, whilst also admitting to littering. Interestingly, in these instances, parents were not telling them to do so, and students appeared to have more free-will in choosing to litter or not.

For some children, particularly Kallen, this dissonance appeared to fuel changes in not just her own but her families' behaviours (to be returned to in this section). However, for others, this disequilibrium may have the opposite impact and, where children still carried out behaviours such as littering, they may end up instead changing their beliefs as a way to reach equilibrium (Gifford, 2011). Indeed, this might explain why many of the children in the urban school laughed when discussing how each other still littered for example, despite knowing its negative impacts. Further, though recognising that litter is bad for the environment, being so present in their worlds, the actions of one may be considered futile (Bandura, 1997; van Valkengoed & Steg, 2019).

A method growing in popularity to change societal beliefs and practices, is through intergenerational knowledge transfer from child to adult (Lawson et al., 2018; Lawson et al., 2019). Interestingly, both schools appeared to encourage this:

They [the students] know how to protect the environment. When they come back home, they tell their parents to dig a household rubbish pit to store garbage (Grade 4 teacher, rural, male, 53)

Despite this however, on many occasions this has not prevented negative environmental practices at home. When asked if adults listen to children, many students answered "no". Chuot Nhac gave an example of this when discussing with his parents' some footage of Climate Change that he had seen on TV:

Florence: Do you ever talk about these things [Climate Change] with your family?

Chuot Nhac: Yes.

Florence: What sort of thing do you talk about?

Chuot Nhac: I told them [my parents] that the storm is bad.

Vi (Interpreter): Who did you tell that to?

Chuot Nhac: I told that to my parents. I told them we had to strengthen our house to prepare for the storm.

Florence: Oh, you told your parents that? What did your parents say when you said that?

Chuot Nhac: My parents said that we just prepare when the storm comes, we don't need to do it right now.

(Rural, male, 11)

In this example, Chuot Nhac has tried to exert some agency by communicating to his parents, however his socio-cultural and economic position of a child, means he needs his parents to

listen in order for his new learning to become meaningful action. It appears that his agency here has not been realised by the adults around him. The reasons for this, however, could be a consequence of many confounding reasons, and indeed could be why despite the efforts from school to encourage intergenerational knowledge exchange, negative practices continue.

First, these intergenerational exchanges are unlikely, particularly in the rural community, to override the aforementioned infrastructural barriers that compound parents' actions as well as children's (e.g., lack of adequate waste disposal infrastructure). Second, from a socio-cultural perspective, several adult participants pointed towards poverty as a barrier to action, suggesting immediate finance as the main worry for locals, particularly in the rural areas. With daily food and money issues taking priority, resilience activities for events that they believed may or may not happen, were not always prioritised (further explored in 8.1). Further, Vietnam is a typically optimistic society (Avason, 2021; Dinh et al., 2020). This typically characterises people as reactive, as opposed to proactive – a characteristic that would explain Chuot Nhac's parents' response of "*we just prepare when the storm comes, we don't need to do it right now*".

Finally, as explored in Section 2.3, typical Vietnamese culture values a hierarchy in which children are expected to be subordinate to adults (Graham et al., 2014). This may prevent both children from discussing such matters with parents, or, where they do discuss them, they may be dismissed. Kallen however, appeared to be the exception to this and, in noticing several environmentally damaging activities at home, she convinced her parents to reduce their plastic consumption by swapping to reusable materials:

*My daughter is not the type of girl who tells her parents about everything in her day. She just talks when she feels like she wants to discuss something with us. For example, when she told me not to use these plastic straws, she said "Mom, you just need 5 minutes to wash the inox straw, it costs you no money and you can also protect the environment. A plastic straw needs 100 years to decompose, and you use hundreds of these straws in only a month. We should at least try to do little things that we could to save our environment together."
(Kallen's mother, urban, female, 39)*

Kallen here, unlike some of her peers who suggested that their position as a child was a barrier to action, has had her agency realised by her parents. She was listened to and has subsequently made significant changes in her whole family's practices. Though not always taking action towards Climate Change, and indeed though still largely spatially and temporally distancing this issue from herself (Section 8.1), this sense of agency and belief that one can make a difference to environmental problems, is particularly useful in the local and global fight

against Climate Change (Feldman & Hart, 2016). This belief is akin to a sense of self-efficacy and response-efficacy, that is, the perception that the individual can take action against a threat and whether or not the action will be effective in reducing the threat respectively (Feldman & Hart, 2015). Where either self or response efficacy is high, the chance of the individual engaging in action that will mitigate a threat, is increased (danger control).

Further studies have found children's confidence in their own knowledge as a large predeterminer of successful child to adult intergenerational knowledge transfer, and subsequent changes in family practices (Zampas, 2013). Whilst Zampas' (2013) was conducted in the UK and thus the findings should be applied with caution here, Kallen was confident in her knowledge, demonstrating a robust and coherent mental model particularly in relation to environmental protection, even where some inconsistencies existed within her climate knowledge specifically (Chapter 7). She appears to demonstrate a high biosphere value – that is – care for nature and the environment, which is consistently found amongst other studies as a predictor of many wider pro-environmental behaviours, including those related to Climate Change (de Groot & Steg, 2008; Steg et al., 2012; Steg et al., 2014).

Her communication with parents and self-efficacy *may* have stemmed the aforementioned school initiative that encouraged students to share their knowledge with parents to increase pre-environmental behaviours at home. However, Kallen often cited other sources for her knowledge such as the internet and television, and was particularly critical of her schools' practices:

*I do not evaluate the school highly. I do not believe them in this problem [environmental protection and Climate Change], I just try to change myself.
(Kallen, urban, female, 10)*

Here, Kallen is referring to the disconnect between the school conducting and encouraging litter picks, whilst correspondingly using and handing out single use plastic bottles and straws to staff and students every day. With school being a powerful tool in the formulation of behaviours, values, and beliefs (Alexander, 2000; Bialostok & Albert, 2012; Masseman, 2007; Moore, 2000; Sahlberg & Brown, 2017; Tho, 2016), this dissonance between the messages being given via explicit teaching and classroom activities, and the negative environmental behaviours they school themselves are participating in, could minimise the impact of the former. Though explicit education tells the students otherwise, social conditioning whereby these practices are commonplace both at school and at home, appears to override most children's behaviours. This likely impacts their sense of self-efficacy and agency, as well as

their perceived risk as they witness and conduct activities they know are damaging, in which they are unable to refuse participation in. To bring some equilibrium, students may psychologically minimise the perceived impact of their behaviours in order to justify them (Festinger, 1976). In contrast however, Kallen was afforded her agency at home, and thus likely has a heightened sense of self-efficacy, instead leading her to be critical of her school. It is likely that this influences, and is influenced by, her knowledge of Climate Change, for which appeared to be beyond that of her peers.

Though Kallen may be the only child who discussed successfully changing their parents' practices, many children noticed the negative impact that adults in general were having on their environment, and discussed communication efforts towards them as the solution to environmental issues and Climate Change:

*Mai: We should remind the grown-ups [how to protect the environment].
Chuot Nhac: They are busy with their work and sometimes forget it. We must remind them to protect the environment.
(Rural: Mai, female, 10; Chuot Nhac, male, 11)*

In doing so, they positioned themselves as the ones to do the communicating. Some students suggested posters in the local environment to remind people to not litter for example, or to "spread the word" amongst family and friends. Whilst some of the aforementioned section has highlighted that their position of child sometimes makes them feel powerless, they concurrently felt adults did not always listen to them. This suggests that they see themselves as better stewards of the environment than those adults around them. Indeed, this was mirrored in Duong and Born's (2019) that found younger generations appearing more nature-friendly than older respondents. In viewing themselves this way, this may invoke a sense of self efficacy that, with the right support, would likely be fruitful. However, without the appropriate support, and with the aforementioned barriers to children's voice, this may instead create feelings of hopelessness (Ojala, 2012).

8.3 Chapter Discussion and Summary

This chapter has addressed children's perceptions of risk and agency in relation to Climate Change and the associated hazards this presents to the Mekong Delta. It has uncovered the general theme that children psychologically distance Climate Change from themselves, believing it to be an issue elsewhere in the world, and/or so far in the future that it is not their concern. This process is better known as Construal Level Theory (CLT) (Trope & Liberman, 2010). CLT works on the premise that people construe the world from an egocentric viewpoint that includes oneself and one's immediate surroundings as the main reference point (Brügger,

2020). From this position, humans perceive the distance of objects and events in reference to this, with those more concrete psychologically close, and those more abstract, psychologically distant (Maiella et al., 2020). Here then, Climate Change and severe flooding are abstract events as, even though many have experienced the consequences of Climate Change already (as evidenced in Chapter 6), without having this explicitly linked, their experiences are not considered as related to Climate Change and thus, the concept of Climate Change remains abstract. Instead, it has been learned as something positioned elsewhere, both in space and time.

There appears to be little intergenerational knowledge exchange from parent to child, and past events seem to be largely under-communicated. Parental influence thus appears to be focussed insofar as children's incorrect elements, and the shaping of children's lived experiences (explored further in Chapter 9). The school curriculum does not cover Climate Change in depth and does not allow for the exploration of local or regional issues pertaining to Climate Change. This appears to affect children's perceived agency, in that, where it is not considered a significant issue, the will to act upon it is largely reduced.

Nevertheless, the students here appear to show agency in terms of environmental protection, most notably via collecting litter, planting trees, and conserving water. They see these actions as good for the environment and, with the previous chapter identifying children as making schematic overlaps between environmental protection and Climate Change, some also believe these actions to be beneficial towards solving the climate crisis. Though, these actions are not always followed, and there exists many conflicts and barriers in children's lifeworld's that prevent them from taking consistent and meaningful action against local environmental issues. This included a lack of knowledge, infrastructure, poverty, and some cultural constraints such as hierarchy and over-optimism, which meant children often engaged in practices that ran concurrent to their knowledge of what is damaging to the environment, or felt they were not listened to by significant adults. This likely had consequences for their perceived agency. Though, with a general acknowledgement for this disconnect amongst children, and with an apparent will to change adults' actions instead viewing themselves as *good stewards* of the planet, there appears to be space for authentic and meaningful action if the right support is allocated to children and these barriers are overcome. The fact that the acts they consider to be beneficial are more closely correlated with environmental protection in general, as opposed to Climate Change is important, however it does not render such action as useless, as these are considered gateway behaviours into wider environmental issues such as Climate Change, and indeed are actions that contribute positively towards the environmental crisis at large.

These actions, however small, show will and application to improve their local environments via the improvement of nature. Thus, these pro-environmental behaviours, again with suitable support and information, could provide the first step into climate action. When taking these psychological processes into account, the lived experiences, and the socio-cultural environment in which one resides, the values of those around a child, and the infrastructural barriers that make the avoidance of some behaviours almost impossible, become more important in navigating perceptions. These findings will now be brought together with the previous chapters, and positioned within the broader literature, to demonstrate how these findings advance knowledge, and can be used in various contexts.

Chapter 9 Climate Literacy and Climate Agency through the lens of Bronfenbrenner

The purpose of this study was to understand lived experiences, knowledges, perceptions of Climate Change of children living within the Mekong Delta. The findings have been discussed thus far over three Chapters. Chapter 6 addressed children's lived experiences of Climate Change with a focus the water around them, a necessary underpinning to contextualise the later presented knowledge(s) and perceptions of children. The findings showed that the lifeworld's of children living in the rural village were very different to those living in the urban city, despite being relatively close in proximity to one another. This Chapter further highlighted how flooding and drought are significant issues to rural livelihoods, with the supply of adequate water recognised as essential by children in these rural locations. Conversely, water pervaded life as more an inconvenience in the urban city, with very limited benefits attributed to the waters around them. In each location however, locals have learned to live with/out water, and students in each school could make some observational changes to their location over their lifetimes.

In Chapter 7, this was teamed with the scientific knowledge children have ascertained from various socio-cultural sources, mainly schooling, but also the aforementioned lived experiences, family, and media. Here, children demonstrated many misconceptions within their Climate Change knowledge, often confusing it for environmental degradation as a whole. This led the majority of students in each school, including those who appeared to demonstrate the most detailed and accurate knowledge(s), to believe that collecting litter would solve Climate Change.

Chapter 8 took this further, and considered the risk perceptions of children manifest in relation to Climate Change. Specifically, this addressed the risk they considered Climate Change to have in their locality, and the sense of agency they felt towards the given issue. With the respondents of this study not always recognising Climate Change as something that will affect them or the Delta, the data presented also included their perceptions of Climate Change associated hazards to this region – mainly flooding. It has also considered many of their beliefs and behaviours in relation to environmental protection in general. With students not considering Climate Change as an issue for themselves, their actions to prevent it, were expectedly reduced. Where they did act however, this was demonstrated in the form of picking up litter, tending to plants at school, or conserving water usage – actions that, in the face of Climate Change, do little to mitigate the impacts either personally, locally, or globally.

Further evidenced were some actions that conflicted with these pro-environmental behaviours, such as throwing litter in the river. These emerged despite students' revealed concern for the environment in general, with their agency instead being mediated by other socio-cultural factors such as a lack of adult responsiveness to the child's voice, culturally derived over-optimistic tendencies, and the infrastructural constraints of their province.

This aim of this Chapter then is to first demonstrate the overlaps between these three areas – lived experiences, knowledge, and perceptions, and second, to show how children's socio-cultural environments have led to their spatial and temporal distancing of Climate Change, and their actions and agency.

9.1 Influencers: Bronfenbrenner's Ecological Systems Theory

As continuously reaffirmed throughout this thesis, children's knowledge and perceptions towards Climate Change are not borne in a vacuum. Indeed, knowledge and perceptions influence one another, and various elements within children's direct and indirect environment contribute. Bronfenbrenner's Ecological Systems Theory (1979) has been widely applied as a tool to understanding children's development in a range of contexts, from disaster resilience (Boon, 2016) to perceived scholastic competence and self-worth in adolescents (Campbell et al., 2002). However here, I will apply this theory to understand the multiple actors and interactions that inform children's knowledge and perceptions of Climate Change and associated hazards, namely, the spatial and temporal distance applied and subsequent agency. Section 3.2 provides a more elaborate overview of Bronfenbrenner's Ecological Systems Theory, and indeed includes Velez-Agosto's (2017) critique for not embedding culture *throughout* the systems, instead reserving it for the exo-system.

In an effort to avoid this oversight, the following sections are not titled according to Bronfenbrenner's systems and are instead organised to represent the micro-cultures that have thematically arisen from the data. Broadly speaking, these include Formal Education, Lived Experiences and Family, and Media. With formal education appearing as an overwhelming influence, I explore this influence in the greatest depth. Starting first with those that directly interact with the child within their in these settings, I will gradually branch out to the macro and chronosystem, where broader sociological, cultural, and political factors, as well as changes over time, will be discussed. My foci here will be how these interact to inform children's overwhelming perception that Climate Change and its associated hazards are not an issue for them specifically, instead reserved for elsewhere in space and or time. Before providing some final thoughts, the Chapter will offer some contributions in regard to the

broader cultural norms that provide both opportunities and barriers to children's Climate Change and Environmental perceptions that appear to permeate all the identified cultural microsystems.

9.2 Formal Education

Schooling and formal education are considered major contributors to the knowledge, perceptions, and beliefs of a society (Bartlett & Burton, 2016; Meyer, 1977; Morrison, 2012). For children who attend school on a daily basis, teachers in particular become a direct part of their microsystem and are thus integral to their development (Bartlett & Burton, 2016; Bowen & Bowen, 1998; Lippard et al., 2017). This includes the development of children's Climate Change knowledge and perceptions, with Marchezini and Londe suggesting:

“[t]he identification of teachers' perceptions on Climate Change is an important step in finding ways to listen to and engage with them in the formulation of Climate Change adaptation plans, especially because they will be among the people responsible for preparing the younger generations of citizens” (Marchezini & Londe, 2020: 2325).

Given this influence, alongside workshops with children, this project interviewed teachers to ascertain their perceptions and knowledge(s) in regard to Climate Change. However, teachers do not act entirely independent, and they themselves are governed, bound, and intertwined within multiple and varying external factors that ultimately dictate their own (and children's) perceptions, and the material they are able to teach. By addressing this from the various layers within Bronfenbrenner's ecological systems theory and considering the social, cultural, and political factors that uphold this, both the direct and indirect influence that formal schooling appears to have on children's spatial and temporal distancing of Climate Change and their consequent agency will be explored. Subsequently, this section will highlight the potential barriers and opportunities for children's Climate Change learning in the Mekong Delta.

9.2.1 General Environmental Education and Climate Change Education

The teachers in each respective school within this study appeared to be embedded within children's daily experiences, playing a key part in regard to their environmental and climatic knowledge. They encouraged students to engage in pro-environmental behaviours and promoted their awareness of both environmentally positive, and negative, actions. However, this sometimes appeared to be tokenistic (Chapter 7, Section 3), and teachers demonstrated varying degrees of Climate Change awareness across both global and local scales, with many inconsistencies and misconceptions evident within their interviews (see Chapter 7 and 8).

Previous studies have commented on the capacity of Vietnamese teachers to effectively provide Environmental Education (EE) (Quang, 2019). This finding is in line with the majority of international literature that suggests inadequate levels of climate knowledge amongst teachers (Herman et al., 2015; Miléř et al., 2012; Quang, 2019; Seroussi et al., 2019). This is important because teachers' lack of knowledge likely means reduced confidence to teach Climate Change effectively, it hinders their ability to provide children with correct information within the school environment, and/or it disables them from successfully identifying and correcting children's misconceptions when encountered in the classroom (Boon, 2010; Shiyu Liu et al., 2015). This can make Climate Change and EE counterproductive, with teachers instead teaching their own misconceptions (Miléř et al., 2012).

As alluded to at the beginning of this section however, teachers often operate within frameworks and curriculums, and are somewhat bound by their own socio-cultural conditions (Joseph, 2012). Perhaps surprisingly then, from a macrosystem perspective, Vietnam has demonstrated a growing political will to increase EE within schools since the 1990s (See Section 2.1). EE and Climate Change Education (CCE) content are included within four key subjects in Vietnam's primary textbooks (see Figure 44 for an overview of Nguyen's (2019) breakdown of Environmental Issues within the Elementary Curriculum), and they provide Environmental Protection Training to in service teachers.

However, the research in this thesis suggests these efforts are inadequate in preparing teachers to communicate Environmental and Climate Change messages effectively. Whilst an in-depth exploration of *where* teacher's misconceptions originated was not viable here, this study did identify some barriers to their knowledge, and possible explanations for the spatial and temporal distancing.

Starting first with teacher-training materials, these cited inconsistencies, and appeared themselves to be disjointed providing only surface level understanding (Appendix C). The focus appeared to be EE as opposed to CCE specifically, and concentrated on global, as opposed to local issues. Government officials admitted these resources were not up to date with current science. It also appeared to be a singular training event, as opposed to an ongoing course that would sufficiently cover and reaffirm teachers' learning (Lee & Gough, 2021). From the broader socio-cultural and political systems surrounding this, teacher training in general is considered a main barrier to quality education in Vietnam (Lan & Jones, 2007; Nguyen et al., 2020; Thang et al., 2018), and in relation to EE and Climate Change specifically (Kieu et al., 2016). Expenditure in education, though high, typically finances administrative costs, teacher

salary and building maintenance, which whilst necessary and important, leaves a relatively low sum for teacher development and training (Lan & Jones, 2007). With Climate Change in particular being a complex issue that is, for the majority, misunderstood by the general public worldwide, targeted, and specific training is likely required to enable teachers to effectively provide EE and CCE.

Table 3
Environmental issues in Vietnamese elementary textbooks.

Grade	Book	Lesson	Contents	
1	Natural and social study	17	Clean school and class	
		22–24	Plants	
		25–28	Animals	
		29	Recognize plants and animals	
2	Ethics	14	Protect plants in public areas	
		13	Protect environment around area where we live	
	Natural and social study	18	Practice: Keep school and class clean	
		24–26	Where plants live	
		27–29	Where animals live	
		30	Recognize plants and animals	
3	Ethics	14	Protect animals	
		36–38	Protect environment	
	Natural and social study	40–55	Natural environment	
		56–57	Internship: Visit natural environment	
		13	Save and protect water	
4	Science	14	Protect plants and animals	
		25	Water pollution	
	26	Causes of water pollution		
	27	Some ways to make water clean		
	28	Protection of water resources		
	29	Save water		
	38	Wind, Typhoon protection		
	39	Air pollution		
	40	Protection of air		
	5	Technology	12	Plant vegetables and flowers
			13	Take care of vegetables and flowers
Ethics		14	Protect environment	
		41	Sun power	
Science		42–42	Fuel power	
		44	Wind power and water power	
		45	Electrical power	
		48	Save energy	
	62	Environment		
	63	Natural resources		
Technology	64	Importance of environment to human life		
	65	Impact of humans on forest		
	66	Impact of humans on soil		
	67	Impact of humans on air and water		
	68	Some measures to protect environment		
	10–15	Technical taking care of chickens		
	14	Protection of natural resources		

Figure 44: Identified Environmental Issues within the Elementary Curriculum (Nguyen, 2019)

This is particularly so in primary school, where similar to many other countries worldwide, primary school teachers take on a generalist role, teaching multiple subjects without specialism. Temmerman (2015) suggests that “[u]nder such circumstances it is unfair and unreasonable to expect primary teachers to be well versed in the content of all ... areas and to do them justice”. In an already overloaded curriculum (Nguyen, 2019b), the likelihood of primary teachers being *experts* of Climate Change and environmental protection in Vietnam reduces. Nevertheless, the generalisation of teaching at primary level does provide opportunities otherwise not possible through teacher specialisms. It allows teachers more opportunity to integrate EE and Climate Change throughout subject areas in a coherent manner, offering a holistic approach to Climate Change Education (UN CC:Learn, 2013). With a rigid curriculum that is criticised specifically for not doing this however, it appears this opportunity is not being maximised.

Indeed, there was a general lack of Climate Change content within primary school textbooks. Though some content was found in a Grade 4 Science textbook; the process of Climate Change was reduced to one page and therefore, unlikely to be covered in sufficient depth. This finding was similar to other studies both within Vietnam (Nguyen, 2018; Nguyen, 2019; Quang, 2019) and the wider world (Cross & Congreve, 2021; Cutter-Mackenzie & Rousell, 2018; Dufty, 2014) and appears despite the aforementioned efforts from government to increase EE.

Previous studies have highlighted several other barriers to EE and Climate Change education in Vietnam, including tensions between industrialisation and nature (Käkönen, 2008), a failure by government to fully embrace ESD principals (UNESCO, 2014), cross-subject incoherence (Nguyen, 2018), Western-centric approaches that are not culturally appropriate, and a high priority on examinations and core subjects such as Mathematics, Vietnamese Literature, Physics, Chemistry, Biology, and Foreign Languages that appear to outweigh EE and CCE (Quang, 2019). As a result, “EE has been treated as a disparate discipline and commonly taught as an addition to the fringes of the curriculum with limited cross-curricular activities” (Quang, 2019: 84) *or as Nguyen puts it*, leaves them instead as *add on* subjects (Nguyen, 2018).

The final point was particularly reinforced within this study, with teachers and children alike making comments in reference to this. Teachers specifically cited a lack of time in the school day for CCE and explained how Climate Change and EE were often reserved for extra-curricular activities (Chapter 7 and 8). This may be explained by Vietnam’s cultural underpinnings, namely Confucianism, whereby academic achievement and testing in core subjects are given high priority (Nguyen, 2019)¹.

There are, however, other global factors at play. As internationally competitive markets and transnational cooperation increased post World War II, as did standardisation across economies, policies, and culture, which in turn greatly affected educational policies, practices, and institutions (Sahlberg & Brown, 2017). These globalised education standards are now commonly viewed as an essential prerequisite to performing in an internationally competitive way, and student performance markers such as PISA now heavily inform curriculum content and provide some of the greatest motivational grounds for national school reform, particularly in transition and market-based economies (Sahlberg & Oldroyd, 2010). As such, focus remains of numeracy and literacy, propagating a specific vision as to what is deemed worthy

¹ This will be further explored in Section 9.2.2.

knowledge and indeed what constitutes as intelligence in a globalised world, with little to no consideration for cultural disparities as well as the holistic development of the child and other indicators of 'success' or 'ability' (Sahlberg, 2012). In relation to CCE and EE, this can leave little room to explore such topics within curricula, and much less for critical and creative approaches to such. These global forces, along with cultural traditions surrounding education in Vietnam, likely uphold and reinforce one another.

9.2.2 Local Versus Global

Perhaps the biggest barrier of all however, stemmed from the rigid curriculum that restricted *localised* teaching of Climate Change. From this Macrosystem perspective, Vietnams' education system typically operates via a centralised, top-down approach (General Secretary, 2013; Nguyen et al., 2020). Governed by the Ministry of Education and Training (MOET), teachers are obligated to follow a set of Government issued national textbooks for every subject. Whilst Climate Change and Environmental issues are included within some of these textbooks, these are static, and teachers are unable to adapt their teaching to the localised context. Central control is high, and thus teacher autonomy is low. The systematic barriers caused by this centralised approach become more apparent when taking into consideration those teachers that *did* demonstrate localised Climate Change knowledge. They specifically cited the curriculum as a reason for not being able to teach about local issues, and any rare citation of localised climate information from teachers was borne from ad hoc and *off topic* conversations (Chapter 8). Children noticed that the textbook was never about Can Tho, and regularly cited Central Vietnam as a location at greater risk than themselves – a location that is a case study within the Primary Geography Curriculum. Teacher training materials also appeared to miss opportunities for localised context, instead focussing on global issues. This lack of localised teaching could be why students often struggled to link personally observed changes within their environment to anthropogenic Climate Change, and therefore spatially and temporally distance the issue.

These curricular barriers have been noted elsewhere, with Reyes-Garcia et al. (2010) suggesting "students most effectively learn school environmental knowledge when teachers relate textbook concepts to the local environment". This is particularly important in indigenous communities, and/or where the most severe climate impacts are already being felt and where local societal responses will be paramount in tackling future climate challenges. However, this was not evidenced within current curriculum constraints. Further evidence beyond this study also suggests that those curricula where local knowledge is not ingrained undermine local environmental knowledge because people cannot feasibly commit adequate time to learning

both (Sternberg et al., 2001; Zent, 2001). With local knowledge likely to be necessary for the local adaptation of Climate Change in the Mekong Delta – particularly in rural areas (Phu et al., 2019) - it is important that globalised knowledge(s) do not take precedence (local knowledge(s) will be returned to in Section 9.3). Schooling offers the opportunities to intertwine the two, ensuring comprehension of both local and scientific knowledge(s), preserved and working together as opposed to against one another. Whilst Green (2013) suggests that “the centralised curriculum, text-books and teacher training in Vietnam mean that standards across the country relate to common goals and norms”, thus accounting it to Vietnams relative success story in relation to Education, here I suggest that this comes at a cost of localised common goals and norms that need to be acknowledged in the face of the climate crisis. Vietnam is a diverse country, and each region embodies its own culture. Even in the case of this research, local cultures and conditions appeared to differ significantly, despite their relative proximity to one another.

Nevertheless, changes to the GEC are occurring. Vietnam is currently in the process of deploying a new GEC for elementary and secondary education. With the current 2006 curriculum considered heavily circumscribed and outdated, it reflected traditional Confucian values of Education and socialist state control (Hoang et al., 2020). As a part of educational reforms however, central government are releasing more control to local jurisdictions, which will allow teaching content to be more applicable to local conditions (MOET, 2018). Specifically, schools will be trusted to deliver 20 percent of their own local content and will have a wider range of textbooks to select from. Framed as a change from a content-based curriculum to a competency-based curriculum, this reflects changing political, cultural, and social conditions in Vietnam (the chronosystem) (Hoang et al., 2020).

However, traditional values of education still appear predominant amongst Vietnamese society, as acknowledged by various local informants, and within wider literature (Hoang, 2010; Lan & Jones, 2007; Nguyen et al., 2020; Tho, 2016; Truong et al., 2017; WENR, 2017). This will challenge the application of the new GEC, and indeed is one of the barriers noted by other studies where similar initiatives have taken place in Confucian cultures (Kim & Hua, 2020). Additional barriers that permeate Vietnam’s education system noted both within this study and elsewhere include; class sizes, a hierarchical structure that typically oppresses the voice of children, and a rote learning approach that does not support the learning of complex issues such as Climate Change that require creativity and reflexive thinking to adapt and mitigate. Whilst the new GEC offers some hope for CCE, caution as to how successful it can be given the wide and varied social, cultural, economic, and political conditions should be made.

Overall, though only a small number of teachers were interviewed in this study, the fact that these teachers were implementing EE and CCE with obviously large gaps in their own climate knowledge, and thus transferring incorrect, incomplete, and (in)coherent ideas to the children, is significant. With their perceptions also positioning Climate Change as a largely distant issue, and with a curriculum that did not facilitate the teaching of Climate Change as contextualised to the local area, children left the classroom with similarly low risk perceptions. Whilst the political will to increase EE and CCE appears to be there, a disconnect between this, and the systems, information and training that are meant to enable, but actually disable, teachers, prevents effective CCE and EE (Milěř et al., 2012).

Whilst central government and policy appears to have recognised this gap via a new GEC that allows for some locally designed teaching, there is no guarantee that this will include climatic aspects, or that the content will be engaging, correct and meaningful. Thus, collaboration across the systems is required, to train and support teachers in their delivery of *localised* CCE and EE. Teachers are clearly a key component within children's microsystem in Vietnam, but their own embedment within wider systems must be considered. Thus, as will be further discussed in Chapter 10, their own knowledge and perceptions in relation to Climate Change, and the sources of these specifically, warrants further attention. With seemingly promising moves towards a GEC that decentralises some curriculum control to support localised teaching, a greater focus into teacher training that takes specific account of these identified misconceptions, as well as teachers own lived experiences and localised knowledge(s), is needed in the Mekong Delta.

Further, as explored in Chapter 7, parental perceptions and influences will also shape the success of any new curriculum. With education and schooling both reflecting and influencing the beliefs and values of the society in which it serves (Brown & Lauder, 1997; Joseph, 2012; Masseman, 2007; Reyes-García et al., 2010; Stephens, 2018; Tho, 2016), ensuring parents understand the value of Climate Change education in a society that traditionally values core subjects, such as maths and literacy (Hoang, 2010; Nguyen, 2019), may be challenging. In this study however, these barriers were identified by key members of government, teachers, and parents, showing again, promise for the future of Vietnam's Climate Change education that these risks are identified and planned for in the roll out.

9.3 Lived experiences and Family

Children's perceptions appear to be determined, to some extent, by their day-to-day lived experiences. Their socio-cultural and physical surroundings of which they are bound, create

specific and unique circumstances that both foster and inhibit their climate knowledge and perceptions. The various ways in which this occurs will now be explored, drawing specific attention to both how children's interactions with nature influence their environmental perceptions, and how lived experiences of climate related events/flooding effect risk perceptions. With parents and caregivers often being the most significant part of a child's microsystem (Lindon & Brodie, 2016), negotiating their daily activities, access to various spaces, experiences and information, the influence of family will be discussed alongside lived experiences as opposed to as a separate section. In doing so, this section will also highlight cultural opportunities and barriers for intergenerational knowledge exchange.

9.3.1 Spatial Autonomy

Much as might be expected, children in the rural school appeared to have more frequent lived experiences within nature than those in the urban school (Chapter 6). This was possible because of the various socio-cultural and physical conditions embedded in their micro, meso, exo and macro systems, and appears specifically as a result of both living in closer proximity to open spaces and differing cultural expectations on childhood spatial autonomy.

Children in the rural cohort were typically allocated a great deal of spatial freedom, allowed to explore their environment free from adult interference (Chapter 6). Urban children, in contrast, appeared to have less autonomy within their environments, a finding largely identified globally (Freeman et al., 2018), and tied to parental concerns around "urban risk" (Weller & Bruegel, 2009: 629). This difference in spatial autonomy is important here because engagement with nature during childhood has been identified as a predictor of pro-environmental attitudes and behaviours, including those related to Climate Change throughout the life-course (de Groot & Steg, 2008; Steg et al., 2012; Steg et al., 2014). These daily lived experiences become more important because, whilst both cohorts engaged in adult led activities such as planting at school (Chapter 7), there is suggestive evidence in other studies that such engagement as managed by *adults*, is not sufficient in creating the pro-environmental beliefs and behaviours needed to tackle the climate crisis (Dunkley & Smith, 2019). Instead, it is the *mundane* interactions that Dunkley & Smith (2019: 91) describe as the "[l]iving, playing and roaming in a rural place ... whereby individuals become conscious of their interrelativity with the nonhuman world through constant, mundane (in the sense of everyday, lived experiences, which may appear unremarkable) nature-culture interaction", that appear to increase children's environmental consciousness. With limited spatial freedoms in the urban school, this might explain why these children struggled to notice environmental changes around them - particularly evident during the photography exercises where some urban

children took photographs from online sources, as opposed to the rural cohort who were able to successfully notice environmental changes around them (Chapter 6, 7 and 8). Urban children of course had local knowledges unique to their own time, space and society, however these did not appear to centralise on nature in the same way they did in the rural school.

Children's exposure to the outdoors in both urban and rural landscapes is determined by a complex assemblage of socio-cultural and environmental factors (Freeman et al., 2018). As made clear in Chapter 6, this is largely governed by parental decisions made at a micro level, however influencing these decisions extends beyond the microsystem (Nguyen, 2019a). As explored in Chapter 6, the physical environments in both locations, despite being in relatively close proximity to one another, were starkly different. Legitimate safety concerns around traffic and "stranger danger" likely manage these parental decisions in the urban environment particularly (Freeman et al., 2018; Villanueva et al., 2012). Further, urban cultures in Vietnam are shifting as cities increasingly incorporate Western cultural values (Mestechkina et al., 2013). With approaches to parenting being culturally governed (Weekes-Shackelford & Shackelford, 2021), this has seen a shift towards the Western notion that views children as vulnerable and in need of protection (Duhn, 2012; Malone, 2007). This view of children and childhood typically reduces child autonomy, and thus, their spatial independence outdoors (Duhn, 2012). It appears that whilst the children in the city had greater access to Climate Change and Environmental knowledge at school and online, those children in the rural school were afforded more opportunities to foster a deep care and connection to their local natural environment that may support climate action in the future. Put simply, those in the city appear more connected to the global, whereas those in the rural appeared more connected to the local. It is an intertwining of the local and global that is required for Climate Change and Environmental understanding, however.

9.3.2 Lived Experiences of Climate Change

In the rural school, when discussing changes in their environment, many noted changes to river levels, storm patterns, increased flooding and drought (Chapter 6). They noticed flowers blooming at different times of year and accounted this to changing temperatures, and no longer swam in the river because it was too dangerous. All these changes can be linked to Climate Change as caused by humans, however with a very limited understanding of this concept both globally and locally, students in the rural school were unable to make this connection. This is interesting because Alkerlof et al.'s (2013) research suggests that experience of Climate Change increases one's risk perceptions of it. However here, with

limited understanding, the observed changes were largely attributed to naturally occurring events or fluctuations in weather and seasons (Section 7.1). As a region that is typically associated with these hazards, and as children with relatively short life experiences (aged 9-11), these observed changes become even more nuanced and challenging to identify as something *out the ordinary*, or as accountable to some alternative human induced force (Konisky et al., 2015). Indeed, many scientists struggle to account single events to Climate Change specifically, making Climate Change communication increasingly difficult (Hassol et al., 2016). With limited information relating to Climate Change specifically in their area, rural students therefore struggled to link their observations to Climate Change and humans explicitly and were thus unable to formulate accurate risk perceptions that might support increased pro-environmental, or climate mitigating, behaviours. Where they did make a link, this usually reverred back to collecting litter as a way to mitigate changes.

Conversely, whilst children in the urban school had a greater understanding of global Climate Change (though admittedly still not wholly accurate), observable local impacts appeared to be fewer. Livelihoods in the urban cohort were less impacted/reliant on water, and therefore the impact of Climate Change appeared reduced. With those in the rural cohort lacking global information, and those in the urban cohort lacking concrete experience, children in both schools were unable to “becom[e] conscious of everyday ecological landscapes, together with local environmental issues and their global connections”, and consequently did not recognise their locations as impacted by Climate Change *here and now* (Dunkley & Smith, 2019: 91). This brings the focus back to schooling, where major opportunities to support these associations are presently missed.

Whilst schools often were unable to make these connections, as has been explored in Chapters 6 and 8, they did provide nature-based activities for children, such as planting. Dunkley suggests that, whilst these eco-experiences are important, they can often be too managed and framed by adults, and that it is children’s every day, mundane experiences that foster connections to nature. I would suggest here that children’s freedom in outdoor spaces as explored in Chapter 6, may have facilitated the rural student’s engagement with local environmental issues over the urban school. This, as seen in Chapter 8, meant that feelings of sadness were experienced when they had to take part in practices they knew were damaging to the environment (e.g., throwing household waste in the river). Nevertheless, much as Dunkley (2019) goes on to attest, connections with nature do not need to occur in grand rural landscapes, and children’s wonder for nature can be fostered even within urban environments in a non-managed way. This is not to say that those in the urban school do not care for their

environments, however their less frequent interactions with nature specifically, may make these linkages more challenging. Indeed, these concerns for nature did appear in the urban school, for example when Kallen described her house plants that had deteriorated in response to changing weather patterns, or when discussing litter in the streets. Nevertheless, with more frequent engagements with nature, and with lived experiences that relied upon stable weather patterns and engagement within the natural world (e.g. farming), those in the rural school appeared to have much more opportunity to this, and though they cited their own inconsistencies, this appeared to be a structural issue beyond the microsystem and their control, most significantly via a lack of infrastructure. The fact they considered burning the rubbish as more environmentally friendly as opposed to throwing it in the river however, also requires further exploration, particularly when this is the more damaging of the two in terms of CO₂ pollution and thus Climate Change (Wiedinmyer et al., 2014).

9.3.3 Flood Severity

Finally, increased flood risk is one of the major predicted consequences of Climate Change in the Mekong Delta (Balica et al., 2014; Huong & Pathirana, 2013; Long Phi Hoang et al., 2018; Minderhoud et al., 2019). Thus, understanding risk perceptions in relation to this, regardless of whether respondents accounted it to Climate Change or not, is also important. Whilst all participants had experienced water as a barrier to everyday activities, or as causing inconveniences by other means, deaths or extreme damages via flooding was assigned to other locations – often Central Vietnam (Chapter 8). For children in both cohorts, flooding only appeared a disaster when it triggered mass destruction and loss of life and accordingly, they concluded that an absence of major flood events in their lives at present, largely prevented such an occurrence in the future.

There is evidence to suggest that experience of flooding predicts and increases peoples risk perceptions of floods in the future, with Lujala et al. (2015) specifically linking the experience of extreme weather events to increased Climate Change risk perceptions. With this being one of the significant predicted impacts in the region, the fact that children's experiences with water did not appear to increase their risk perceptions, instead distancing the issue of both flooding and Climate Change irrespective of the cohort, is initially surprising. Though this may in part be a consequence of not understanding the term Climate Change, it may also be explained by the fact that they have only experienced what is to them, considered low level and generally usual, flooding (Chapter 6). Indeed, Lijala et al. (2011: 489) found that "merely living in a more exposed area but not having a personal experience of damage does not affect the respondents' concern towards Climate Change". As a community that has learned to *live*

with flooding, who's societal, cultural, political, and infrastructural routines and norms allow water to pervade their lives – slowly encroaching and then retreating, with comparatively little impact compared to other locations (such as Central Vietnam), the prospect of a flood occurring beyond this seems intangible. Perhaps magnifying this for the rural children, their daily lived experiences and interactions have taught them that flooding is a benefit for the livelihood and recreational purposes. Nevertheless, this cohort did cite economic losses from climate-intensified events, which might heighten their risk perceptions if embedded within localised EE and CCE. However, without adequate knowledge of Climate Change, they were unable to link the two together in a way that might enable the formation of more accurate risk perceptions. Further, in learning about Central Vietnam that experiences rapid onset flash flooding with subsequent high economic losses and human casualties, they appear to compare themselves to here. Despite acknowledging some economic impacts from flooding in their region, they consider themselves *lucky*. Gifford explains this as spatial optimism (2009), whereby one considers themselves as better off and more fortunate than other locations, thus reducing their own need to worry about the personal impacts of present and future hazards (explored in Chapter 8). This directly ties back to CLT (Trope & Liberman, 2010). Interestingly however, CLT, though a psychological process, appears to be impacted somewhat by culture (Wong & Wyer, 2016). This will be returned to in Section 9.5.

9.3.4 Cognitive Dissonance

Parents and caregivers are key socialisation figures within a child's development (Maccoby, 1992). In relation to Climate Change and environmental perceptions and behaviours, they act as role models, informing the values of their children based upon their own values, knowledge(s), perceptions and behaviours (Barraza, 2001). However, similar to Buldu (2020) this research found parents rarely discussed or engaged in activities specifically to enhance their children's learning about environmental issues (evidenced by parents' explicit admittance of this, and via the lack of reference to parents for children's climate knowledge – Chapter 7). Instead, practices at home appeared to run in opposition of the information children learned at school, causing a cognitive dissonance for children (Festinger, 1976). Cognitive Dissonance Theory suggests when people encounter a situation that is not consistent with their current belief, it causes psychological discomfort. In such a position, a person seeks equilibrium and adjusts their beliefs or behaviours to resolve the dissonance (Gruman et al., 2016). Thus, cognitive dissonance can both increase Climate Change adaptation and mitigation behaviours and reduce negative ones to become more in line with one's beliefs. On the contrary, in order to permit and rationalise their conflicting behaviours, people may instead adjust their beliefs

and minimise their overall risk perceptions and agency towards environmental problems (Gifford, 2011). Kallen for example, who demonstrated high agency, and who had great support at home to change not only her own but her entire families' behaviours, was able to retain her beliefs (Section 8.2). This family environment appeared intrinsic for her retention, and indeed development, of pro-environmental knowledge, perceptions and beliefs, that will likely support her Climate Change perceptions an agency into the future. For many other children however, they discussed having *no choice* but to take part in environmentally damaging activities. With little perceived agency, to resolve this, they may have lessened their risk perceptions towards such behaviours as a way of coping (explored further in Chapter 8).

In Buldu's (2020) research, she suggested that parents did not engage their children in environmental discussions or act as positive role models because they had insufficient knowledge of the problem themselves, a finding mirrored somewhat here, and largely evident via parents own citations of incorrect ideas and admittances of insufficient knowledge (Chapter 7). However, I suggest that this lack of climate engagement from within the home is due to several additional barriers, as even those parents that did demonstrate awareness of Climate Change, flood risk, and future predicted hazards, admitted that they did not discuss it with their children. This was likely entangled within their own psychological distancing that positioned Climate Change and as spatially, temporally and socially distant from themselves, socio-cultural factors such as a tendency to be hopeful, and socio-economic dynamics that prioritise some actions and discussions over others (returned to in Section 9.3.5 and 9.5).

Parents also appeared to demonstrate low agency themselves, seeing Climate Change and environmental issues as problems for the government to solve (Section 8.2). Vietnam is a one-party socialist state with high central control and governance (London & London, 2014), and Lin (2015) explains that the level of democracy at state level is an important predictor of community resilience to disasters. The more democratic a state is, the more likely an increase in disaster spending, as opposing parties incentivise their voters by offering to improve infrastructure and technology, for example (Lin, 2015). In the context of Vietnam, Garschagen explains,

On the one hand, the country has engaged in considerable decentralization efforts as part of the wider reform process (*doi moi*) and specifically its endeavor to reduce its significant disaster risk. On the other hand, the political power structure remains highly centralistic with a persistent one-party rule and a strong grounding in centralized planning and management paradigms. The tensions between devolution and a central grip on power tend to emerge around topics considered of relevance for national development. (Garschagen, 2016: 418)

This could explain why some participants perceived responsibility to be in the hands of the government despite apparent efforts to decentralise risk management, and thus why they minimised their own personal agency. Having said this, similar findings have been found in global studies with very different political structures (Lorenzoni et al., 2007; Quayle, 2020; van Valkengoed & Steg, 2019).

9.3.5 Intergenerational Knowledge Exchange

Some studies have highlighted intergenerational stories of past events as key to raising environmental knowledge and risk perceptions (Douglass & Cooper, 2020; Spiegel et al., 2020). However, only some students were aware of previous flood events from their parents. With large scale flooding being one of the predicted consequences of Climate Change in the region, knowledge of these events may increase risk perceptions (Rana et al., 2020), particularly as children's lived experiences with flooding appeared to largely be an inconvenience, as opposed to anything more sinister (Discussed in Chapter 6, and 9.3.2). Nevertheless, these were rarely highlighted by children, with most children saying they had not heard of these when mentioned by myself in the workshops. This appears despite major historical flood events, particularly the 2011 flood event, where the Delta experienced huge loss to life and the economy. In Can Tho City alone, the floods inundated approximately 27,800 houses, and over the period of around 5 months, caused an estimated USD 11.3 million worth of damage (Chinh et al., 2016). This suggests a lack of intergenerational knowledge exchange from parent to child as, whilst outside of children's lifetimes, this is within that of their parents and other significant adults. All interviewed parents confirmed that they had lived in the Delta all their lives, or moved over 20 years ago, and thus would have lived in Can Tho City during this historical event, however they did not cite this flood, even when prompted to discuss past flood events.

Collective memories passed down through generations can aid resilience of communities at risk of repeat events (Cretney, 2016; le Blanc, 2012; Tidball et al., 2010). Acting as informants of future problems, they keep risk in the forefront of people's minds, influencing decisions and actions. However, Fanta et al. (2019) found that historically, after extreme floods settlements were only built in safer locations for the duration of one generation, suggesting that flood memory depends on living witnesses. Parents here then, when asked about these events, had seemingly not been impacted. However, whilst not directly being told about historical events, some student's overhead family discussions in relation to water levels in the river, and the impact this was having on crops, for example. They participated in adult society by helping parents in rice farming, and these all brought children closer to the multiple issues that the

region faces. Though not always directly included in discussions, they knew about flooding and drought from these, and thus understood the risks involved with too much or not enough water. These will likely support children's risk perceptions of Climate Change if explicit links are made to these water resources that they evidently have a great deal of contextual knowledge about. More research that addresses flood histories and intergenerational knowledge exchange that might illuminate why these are not discussed is needed. There are many additional reasons as to why these narratives did not arise in conversations, however, not least because this was a study outside my own cultural context. Parents may, for example, have believed they were protecting their children from psychological harm by not sharing such histories with them, or may not feel comfortable talking to either their children or outsiders (such as myself) about negative events. A thorough exploration of this however, is beyond the scope of this project.

Where adults and children did discuss environmental issues, the child was the instigator of discussions. This shifts the typical adult-child dynamic and instead positions parents as the centre of development, from which the child is a part of their microsystem, encouraging their environmental consciousness. From a microsystem perspective, this conflicts with the typical Vietnamese family hierarchy, whereby children are expected to be subordinate to their parents and elders, absorbing, not transferring knowledge (Chen, 2014). As Confucian values combine with more western approaches to parenting in Vietnam (Graham et al., 2014; Mestechkina et al., 2013), particularly in cities, this may have facilitated Kallen in challenging her families' behaviours to ones which are deemed more environmentally friendly (Chapter 8). Her family were also relatively affluent, confirmed with discussions with her parents and a visit to their home. Thus, they had the financial capacity to take action and change their practices. This might in part then, explain why her attempt to modify her family's behaviour was successful, and why Chuot Nhac's were not (Section 8.2).

Nevertheless, looking at the connections between systems (mesosystem), this reverse knowledge exchange was supported by the school. Evidence in both cohorts highlighted how students are encouraged to discuss their environmental learning at home, in an attempt to change behaviours to those more environmentally beneficial.

The impact that children can make regarding household beliefs and behaviours has been researched in many western countries (Lawson et al., 2018; Lawson et al., 2019), however its applicability in other parts of the world is largely unexplored. Particularly where perceptions of children differ greatly, and where age-based hierarchies uphold the social structure of family,

community, and nation (see Section 2.3), Western findings are likely not applicable (Bode, 2020). Indeed, there only appeared to be one strong case of child-adult intergenerational knowledge exchange – Kallen. Though it is likely that this was somewhat supported by the fact that Kallen’s family were of relative wealth and able to invest their time and money into such activities, there was also evidence within interview transcripts that suggest Kallen’s parents identified as *Western* in their thinking – with her mother specifically explaining how other parents do not think like her. With traditional Vietnamese proverbs such as “*Cha me dat dau con ngoi do*” or “*Children must sit wherever their parents put them*”, gradually changing to “*parents must sit where their children want*” this represents a general shift that will likely leverage the ongoing school efforts to increase child-adult intergenerational exchanges (Chapter 8).

Nevertheless, such exchanges may also fail to achieve their desired impacts because, as alluded to by various adult participants in the study, many families are living with daily income insecurity, and thus do not have the time or financial capacity to think or act against Climate Change or other environmental issues (Baker, 2012). For some students, indeed their attempts to communicate mitigation methods to parents were met with “we just prepare when the storm comes” (Chuot Nhac). Though the reasons for this are not entirely known within this study, intersecting inequalities that reduce social, cultural, and economic capital could be to blame (Adger, 2003; Adger et al., 2012; Bourdieu, 1986; Lohmann, 2011). All of Bronfenbrenner’s systems play a part in determining a household’s capital and thus their vulnerability to Climate Change. Welfare policies, job availability, healthcare systems, educational (in)equalities, racial (in)equalities, gender (in)equalities and insurance costs amongst many other factors, govern household priorities, vulnerabilities, and resilience to present and future threats (Beer, 2014; Hathaway, 2019; Islam & Winkel, 2017; Malin & Ryder, 2018; Temper et al., 2018; Ylipaa et al., 2019). This is not a new phenomenon, and indeed is reaffirmed by a wealth of knowledge that explores multiple confounding and intersectional disadvantages in relation to climate vulnerability and resilience. This does, however, require a more detailed investigation in the context of the Mekong Delta, if interventions that encourage child-adult knowledge exchange are to be successful.

9.4 Media

Media, much like the aforementioned influences, spans all of Bronfenbrenner’s systems. Alongside education, it is often considered a main driver in public perception (Bakir, 2010; Frh, 2017; Kitzinger, 1999; Miles & Morse, 2007), reflecting the values and beliefs of a society

(McCombs, 2014). It is also used as a tool to modify societal beliefs, and thus increase/decreased risk perceptions (Frh, 2017; Miles & Morse, 2007). However, in this study it did not appear as a regularly cited source of information. When media was discussed, it sometimes included the television and weather forecast, however often, it was specifically sought out via the internet or purpose bought books. Interestingly, those that did discuss media as a source of information typically demonstrated higher levels of climate comprehension. Some adults specifically correlated an increased presence of climate information in the media to a governmental push to raise climate awareness. Indeed, several Governmental policies, in line with those discussed in section 9.2 relating to education, has led to a steady increase of Climate Change media reports. However, as Pham and Nash (2017: 109) conclude from their review of Climate Change media coverage in Vietnam across the four most popular media outlets:

“The media have not helped people to realise the extent of the problem [of Climate Change]. The four media agencies remain heavily dependent on government sources of information. Media coverage emphasises the international importance of Climate Change but does little to link the problem to the national context”

This appears to match efforts in education. The political will is apparently there – but with state control high and journalist autonomy low, this leads 59 percent of Pham and Nash’s analysed reports focusing on global Climate Change, and even more informed by government. Journalists themselves (much like teachers) appear to lack the essential knowledge needed to effectively communicate Climate Change, and thus, messages from media channels, though increasing, are not always fit-for-purpose, likely fuelling psychological distancing. Nevertheless, some respondents referred to media articles that claimed the Delta would be underwater in the future. This suggests that the media is publicising up to date science, however exploring the factual basis of these reports is beyond the scope of this thesis. The extent to which these were sought out, and the impact these had on local perceptions, is also a warranted line of inquiry worth following, particularly as media consumption changes globally, with people now less likely to watch TV and instead seek out media that already aligns with their values, commonly tagged under the term confirmation bias (Modgil et al., 2021; Newman et al., 2018; Zhou & Shen, 2021). Again, the extent to which this pertains in Vietnam and the Mekong Delta specifically is not within the remit of this thesis, however the outplayed governmental constraints above, it is likely an interesting and necessary line of inquiry.

Of further interest, is social media. Social media has become a new form of information and media, with Facebook and Instagram both increasing in popularity in Vietnam. In explaining this increase, Nguyen (2014) said:

“social media in Vietnam has seen a spectacular rise in the last few years, which made certain changes to the country's media landscape and to some extent helped facilitate various forms of citizen led initiatives. One of the key contributions of blogs and Facebook in the country is to promote grassroots reporting of “untouched” issues and to provide alternative viewpoints from state-controlled official media outlets. This new genre of media has progressively integrated itself into today's differentiated media ecology of the country, inspiring people to learn, debate and participate further in political discourse. Opening further opportunities for political discussion among citizen, the rise of citizen journalism in Vietnam has contributed to facilitating and sustaining a healthy democratization process. Thus, we see the capacity of social media to bolster critical discussions on public affairs among different groups of the public.”

However, none of the participants in this study cited social media as a source of their information. With the focus respondents being below the age of 11 (and the contextual participants ranging from 36-53) it could be that these age brackets are not using these platforms. It could also be because of wider network access. However, estimates suggest that around 70 percent of Vietnam are connected to the internet (Kemp, 2020), and indeed personal observations in both urban and rural cohorts saw many children with devices such as smart phones. This device and internet connectivity, it appears, enabled students in the urban school to take photographs from online internet searches when challenged with the task of photographing Climate Change. This might suggest it supported their globalised knowledge.

9.5 Cultural Opportunities and Barriers

Having looked at several specific sources of children's knowledge and perceptions, the following section will add an additional lens specific to Vietnamese culture. Though many elements of culture have been discussed thus far, this section takes this from a broader perspective. There are several opportunities within Vietnamese culture that might support the reduction of psychological distancing. First, several studies have identified collectivist and Long-Term-Oriented (L-T-O) cultures as better at mentally travelling spatial and temporal distances (Cousins, 1989; Wong & Wyer, 2016). When events pertain to others, collective cultures typically construe events more concretely, for example. Particularly when teamed with L-T-O cultures that characteristically consider longer term impacts of current actions, this presents many opportunities in the face of Climate Change.

Further, Collectivism and L-T-O in Vietnam appears to be strengthened by filial piety, and one's devotion to the family (See Section 2.3 and 3.3). Considering both ancestors and future generations as core members of the family, those not yet born are more likely considered in present decisions (Hofstede, 1984; Monkhouse & Birkin, Jun 6, 2019; Wong & Wyer, 2016). In terms of Climate Change then, it is likely that with heightened understanding and communication, these cultural facets would leverage action. Nevertheless, this runs counter to those children and adults that did recognise Climate Change as eventually affecting the Delta, but whose narrative appeared to be more egocentric and less considerate of future generations (*I'll be dead by the time it happens*). With these narratives mainly borne within the urban cohort, it could be that these values and beliefs are weakening as more individualistic, western thoughts permeate Vietnam's cities in particular (Nguyen, 2016; Rachel Burr, 2006). Alternatively, Spassova and Lee (2013) suggest the opposite: that collectivist cultures think more abstractly than individualist – in which case they would be more likely to psychologically distance Climate Change.

Another consideration is traditional Vietnamese sentiment that sees humans in a transactional relationship with nature – one of friendship and mutual care (Duong & van den Born, 2019). This relationship with nature is more prevalent in rural areas in particular, with urban studies finding perceptions to consider humans as masters over nature – either seeing nature as a limited resource for human exploitation, or as a resource that humans are guardians and stewards of (Vi & Rambo, 2003). This is likely a result of Western influence over the years, and a desire for economic gains that somewhat sacrifice the desire for harmony and balance with nature. Of particular interest, Duong and Born (2019) found that youth were more nature friendly than their elders, offering hope for the future and a finding mirrored here – in that children often saw the practices of adults as wrong – with children being the ones to change (Chapter 8).

There are many additional factors that may prevent the above opportunities from being leveraged. Current socio-political and economic factors for individuals, families, communities, and society – such as poverty – may prevent many from taking action (Bangalore et al., 2017; Hallegatte et al., 2015; Hathaway, 2019; Sheffield & Landrigan, 2011; Sietsma et al., 2021; UNICEF, 2018; UNICEF, 2021). As was explored in Chapter 8, teachers noted that many rural citizens do not have the financial capital to take measures against Climate Change and flooding. They do not have the time to discuss environmental issues, and narratives from parents such as *we just prepare when the storm comes*, suggests a more reactive approach to events beyond those from which they already have concrete experience.

Furthermore, Vietnamese culture is generally correlated with optimistic sentiment, with various cross-national studies consistently positioning Vietnam as one of the most optimistic countries globally (Hai, 2019; Nielsen, 2021). The reasons for this stem from cultural worldviews derived from Confucian thought (Sigurdsson, 2004), and from rapid economic progression whereby the lives of Vietnamese people have rapidly improved from wartime poverty to a comfortable position of relative wealth (Leung et al., 2010). Hope is often considered an important motivational tool to inspire action for Climate Change (Halstead et al., 2021; Jones et al., 2021). However, here it also appeared to reduce risk perceptions. Gifford (2011) describes this process as *optimism bias* and claims it to be a barrier to personal climate action. This optimism was evidenced amongst both adults and children and across both cohorts, and though individuals cited various specific reasoning for such optimism (i.e., technological advances, personal observations that concluded environmental improvements to the region, genuine belief that their location was not impacted), this optimism may be governed by socio-cultural influences from the broader systems that surround families and children.

With the parents and indeed other adults in this research project largely living through the *Doi Moi* policy era that prompted increased living standards (Kien & Heo, 2008), and the fact that many children and parents cited development as a reason why their area will not be impacted by Climate Change and flooding (Chapter 8), this may explain their specific optimism for the future. Indeed, the family environment has been found as influential to children's optimism bias (Bates, 2015), potentially explaining why this existed in children's responses that appear to both support, and be supported by, psychological distancing. With Chapter 8 exploring Ojala's (2015) categorisations of *Constructive Hope* and *Hope Based on Denial*, whilst both were present in adult and child voices, they both mean very different things in regard to action. In Ojala's research, the former was associated with engagement in climate issues and a solution focussed communication style, whilst the latter was characterised with less pro-environmental behaviours. In those instances where parents, teachers and children demonstrated the latter however, this appeared to largely be triggered by a lack of climate and/or risk information.

Conversely, those who demonstrated higher levels of knowledge appeared to embody more pessimistic assumptions about the future. As Ngo (2020: 440) discovered, "[i]ncreased knowledge reduces the more optimistic assumptions about adaptive capacity and creates a higher sense of urgency", which may explain why those who demonstrated higher climate knowledge, were less optimistic for the future.

Also of particular relevance here, is the Vietnamese cultural perception of natural disasters. As explored in Chapter 2, karma, whereby one's past deeds (including those in a previous life) predict one's future suffering or fortune, interacts with perceptions of natural disasters and thus, Climate Change (Chuang, 2002). This belief that events are thus predetermined can create a fatalistic outlook towards problems, increasing risky behaviours and decreasing mitigating actions (Dinh et al., 2020; Johnston et al., 2013; Ngueutsa & Kouabenan, 2017). This can further lead Vietnamese to take reactive, as opposed to proactive, action in the face of challenges (Avason, 2021), which appeared to be mirrored by some respondents (Chapter 8). Further, Taoism traditionally encourages people to avoid interfering with nature, which could have implications on people's willingness to act (Nguyen, 2016; Vuong et al., 2018). Here, it becomes clear how the wider socio-cultural influences that stem from very context specific factors, permeate through all Bronfenbrenner's systems before reaching the child.

9.6 Consequences and Final thoughts

The purpose of this Chapter was to analyse the findings of Chapters 6, 7, and 8 through an alternative lens – that of Bronfenbrenner's Ecological Systems Theory (1979). The aim was to provide a conscious and deeper exploration of the multiple, and intersecting, layers that surround children, and to answer the second research question of this thesis: *How do children's socio-cultural environment manage and mediate children's Climate Change knowledge(s) and perceptions?* Figure 45 presents this in diagrammatic form, however the reader is reminded of the many nuances discussed above, and the challenges of putting these into a two-dimensional concept.

In considering the multiple systems that ultimately create the environment in which these children reside, it is clear that there is not one specific influencer, facilitator or barrier to children's Climate Change knowledge and perceptions. Their knowledge(s), perceptions and lived experiences occur within a unique socio-cultural context that negotiates many factors, including the types of education and information they have access to, their voice, their spatial autonomy in nature, their general perception of nature, optimism, and overall worldview. This



Figure 45: Influencers of Children's Climate Change Knowledge and Perceptions in Can Tho Province Using Bronfenbrenner's Ecological Systems Theory

permeates through all of Bronfenbrenner's layers, with the systems intermeshed with one another. Culture in particular, much as Vélez-Agosto (2017) attests, does not exist solely as a distal and external macrosystem, and instead pervades all layers including children's interactions within the microsystem, influencing social and cognitive processes. School, for example, is very much dependent on Confucian thought. Parents' willingness to learn from their children is likely negotiated to some extent by culturally embedded hierarchical structures, and their positive outlook for the future is a socio-psychological function driven by culture that applies to a broad range of issues. Despite these commonalities however, very different strands of culture within the two research sites existed. Despite both being in the same district, socio-economic conditions varied significantly, meaning children's climate knowledge and perceptions were also different. However, a resounding majority in both schools continued to psychologically distance Climate Change – particularly across spatial and

temporal lines. On the one hand, those in the urban cohort appeared to have greater access to climate information both online and through schooling. However this almost always considered Climate Change from a globalised perspective. With infrequent interactions with nature, they were less able to see changes in their daily lives. Counter to this, those in the rural cohort who spent a great deal of time outside and within nature, saw changes in their environment daily. With children's movements been less reliant on their parents, adults are able to continue with economic activities even in the event of school closures, or beyond school hours. The conditions also allow children to make their own journey to school, again permitting parents to work in the rice fields during the cooler parts of the day. In turn, the rice fields and rivers that adults rely on for economic security, provide spaces nearby to home where children can congregate – spaces simply not accessible to those in the urban environment where much longer distances need to be travelled in order to access. Yet, it appeared they had less access to Climate Change information inside and out of school, and thus these experiential benefits were not maximised. In both instances, children were unable to “becom[e] conscious of everyday ecological landscapes, together with local environmental issues and their global connections” (Dunkley & Smith, 2019: 91), and thus their understandings were left incomplete, with Climate Change not considered an issue for them.

Whilst schooling appeared to offer the greatest opportunities for climate engagement, in its current system, it also presented many barriers. First, a lack of autonomy from teachers meant that a curriculum not designed for specific conditions and climate threats was applied to teaching. This curriculum was outdated, focussed on global processes, and did not appear to priorities Climate Change education. Teachers also demonstrated many gaps and misconceptions in their own climate knowledge, which appeared to transfer to children. Training provided to teachers was also insufficient. Embedded within broader educational issues such as a cultural system that favours didactic learning as opposed to more experiential learning, content-based testing, high teacher accountability based on academic results, low resource availability, equality and access issues and teacher quality, there are many obstacles to be overcome before quality Climate Change education can be achieved. Nevertheless, with a new GEC, and an apparent political will to both increase EE and CCE, and decentralise some of the education system, there is promise for the future. This localised teaching may allow teachers to rectify some of the major disconnects between children's lived experiences and curriculum learning, however this will rely on increased teacher training and communication within other areas of society to ensure that the messages children receive at school, align with those accessed outside.

Finally, with Vietnamese culture offering many advantages, for example collectivism, L-T-O, and a general perception of human and nature entwinement, these elements should be drawn upon in local Climate Change communication efforts. Though some of these traditional values are diluting in the age of globalisation, they are still prominent community features that if utilised effectively, could prove a great advantage. Of course, any initiative also needs to account for potential barriers, such as a disposition to be overly optimistic, karma, and a hierarchical structure that typically lessens the child's voice.

Chapter 10 Conclusions

This thesis set out with the aim to uncover children's knowledge and perceptions of Climate Change, and identifying the socio-cultural sources that led to these narratives in the Mekong Delta, Vietnam; one of the most vulnerable places globally to the impacts of Climate Change. In doing so, this thesis has shone a light on children's varied lived experiences in the Delta, and the interfaces this has with formal schooling and wider information networks such as family and media. It has applied a qualitative approach to the research; using participatory workshops with children aged 9-11 in two locations, one urban and one rural from across the Mekong Delta, Vietnam. This was contextualised with parental, teacher, and governmental interviews, ethnographic observations, and wider literature. This research has contributed to a gap in literature – namely socio-culturally situated studies that explore children's perceptions of Climate Change in Southeast Asia. In doing so, this research has contributed towards a knowledge base that will better enable researchers, NGOs, and policy makers to better provide targeted CCE to children that takes account of their existing knowledge, misconceptions and the barriers and facilitators that exist across socio-cultural, economic, and political scales. To summarise and conclude, this final chapter will address the two main research questions, before outlining the main contributions, recommendations, and reflections of this thesis.

10.1 Returning to the research questions

10.1.1 In the Mekong Delta, what are the knowledge(s) and perceptions of children in relation to Climate Change?

Children in both cohorts demonstrated varying knowledge(s) and perceptions in relation to Climate Change, though some common themes arose. These were intertwined with children's knowledge and perceptions of the environment in general, and flooding specifically. Many of the identified misconceptions appeared to stem from an overlap between Climate Change and a general awareness of environmental issues, with the causes, consequences, and solutions to both topics being considered as parallel (that is, general acts of Environmental Degradation were believed to cause Climate Change and general acts of Environmental Protection were believed to solve/prevent Climate Change). Though many of these indeed do overlap, children regularly overemphasise links, and in particular, this caused many children to assume that picking up litter would solve the climate crisis.

Particularly in the rural school, weather and seasonal changes were often misconstrued as Climate Change, and this made it hard for students to identify observed changes as driven by humans. Alternatively, though exhibiting slightly more depth to their Climate Change

understanding in the urban school, their lack of observational experiences meant that they were unable to see Climate Change impacts in their region. With their knowledge(s) across both schools largely incomplete, incorrect, yet relatively coherent, that is, their knowledge made sense to them, and they could generate explanations, there is a clear need for maintained and targeted intervention to rectify these misconceptions.

This knowledge appeared to directly inform their perceptions. With a lack of Climate Change knowledge specifically, risk perceptions were low. They psychologically distanced the issue most prominently across spatial and temporal lines, and thus did not consider Climate Change a major concern for themselves. They were generally hopeful for their futures, which reduced perceived agency as) where there is no problem to solve, there is no need to take action. However, children did exude agency in relation to Environmental Protection. Children regularly participated in litter picks at school and planted trees and discussed water conservation at home. This did however; create cognitive dissonance with practices external to school, such as littering. Children largely saw themselves as environmental stewards, criticising the actions of adults. This self-perception, and the perception of others, could prove useful in rallying action against Climate Change in the future.

10.1.2 How do children's socio-cultural environment manage and mediate these knowledge(s) and perceptions?

Children's socio-cultural environment manages and mediates children's Climate Change knowledge and perceptions significantly. Despite the two research sites both being within the same district, socio-cultural and economic conditions varied greatly and thus, so did their knowledge and perceptions. Children's lived experiences in particular, and their exposure to spatial freedom in nature appeared to support rural children in noticing changes to their environment. With their economic security and much of their recreation based on, in, or with water, the challenges that Climate Change made were visible to them. This appeared to be possible because of cultural differences in parenting that allowed children a great deal of freedom in the outdoors. This spatial freedom also acted as a resilience strategy for the region, allowing parents to continue work in the event of a school closure, or in allowing them to make their own way to and from school, again, allowing parents to work in the fields for longer hours. However, their broader knowledge of Climate Change appeared to be less developed than those in the urban school, which prevented them from making coherent connections between their observations and Climate Change science, particularly as the result of human action.

In the urban cohort, children had much less spatial freedom and thus fewer interactions with nature, however on odd occasions; they were able to notice changes in their environment – for example potted plants wilting, or river levels changing. With economic impacts appearing less governed by water in their urban environs, the value it played was largely dismissed and instead, was seen as an inconvenience. Schooling appeared to miss the opportunity to rectify this gap between lived experience and climate science. Teachers largely demonstrated many of the same misconceptions and were bound to textbooks mandated throughout the entire country via a rigid curriculum. These lacked detailed climate science and did not permit for localised teaching that might support these links to be made. Teacher training materials also lacked detailed context on Climate Change and any that did exist were overwhelmingly considered from a globalised perspective. Even where teachers did have local knowledge in relation to Climate Change, they cited a strict curriculum, large class sizes, and a focus on core subjects, as barriers to teaching them. Overall, formal education appeared to be the biggest barriers to effective Climate Change learning. However, it also presented the most opportunities.

In 2018, a new GEC was released, with the roll out projected to start in 2020 and run through to 2025. This new GEC provides some decentralisation of power, and permits 20% localised teaching. Though the aforementioned barriers remain, this may support the teaching of Climate Change in a context specific way that will support children in adapting and mitigating to future climate challenges in their region. By bringing Climate Change from the abstract to the concrete, action is more likely to be taken.

Nevertheless, both schools did encourage pro-environmental behaviours, such as planting trees and picking up litter. Children were encouraged to share these practices and their learned environmental knowledge(s) with parents; however, there appeared to be several structural and cultural barriers that prevented this intergenerational knowledge exchange, including infrastructural constraints in waste management, poverty, hierarchical structures that typically minimise children's voices, poverty, optimism bias, and karma. Intergenerational knowledge exchange from adult to child also appeared to be rare. This was a surprising finding as all adult respondents had either lived in the Delta all their lives, or moved over 20 years ago. This would mean they lived in the Delta at the time of the major 2011 flood disaster. Yet, this did not arise in children's conversations about past flood events, and only one adult farmer mentioned it. Whilst it could be that these participants were not personally impacted by this flood, it would seem surprising that they would have had no awareness at the time given the

mass destruction it caused. This raises questions in regard to flood memory in the Mekong Delta.

Finally, despite these many challenges, there exists many opportunities for children, youth, and wider society in the face of Climate Change, many of which are facilitated by culture. With youth voice being increasingly valued (though admittedly facing challenges underpinned by traditional beliefs derived from Confucianism), a typically high value of nature, Long-Term-Orientation, collectivism, and a slow but increasing turn towards decentralised state control, to name just a few, these serve as opportunities to be maximised in future community focussed mitigation and adaptation strategies, including communication and education.

10.2 Contributions

This study has contributed to the wider literature by offering a unique lens into the lifeworld's of children living in the Mekong Delta. One of only a few situated studies working with children in Vietnam, it has highlighted how socio-cultural conditions merge with formal education in Can Tho Province – a location at extremely high risk in the face of Climate Change. In outlining the socio-cultural and economic differences in two locations within the same district, this thesis has shone a light on the interconnected, nuanced, and messy nature of climate knowledge and perceptions, drawing attention to the specific role of one's socio-cultural environment that are often overlooked. In bringing lived experiences, knowledge, and perceptions together with social and cultural literature in a comprehensive way, a much broader perspective has been obtained.

Further, the fact that this research was conducted in one of the world's most vulnerable locations and outside of the Western world is significant. Whilst global trends are important, the fact that the majority of existing socio-climatic research is done within Western countries, means that the contributions of ones such as this, are ever more important. At much greater risk from the impacts of Climate Change, this thesis can better prepare NGO's, Government's other researchers and community groups to work effectively with those who will go on to face some of the gravest challenges of this century.

This thesis has also contributed in terms of applying relatively new methodological approaches. A reflexive methodology is still a relatively underutilised as a tool to underpin research. This project has demonstrated how strengths from various theoretical frameworks can be drawn upon at various points and for various uses. Further, by being transparent and reflexive about obstacles faced, those planning research with both children, and in Vietnam,

can gain some foresight and take inspiration in learning from the successes and challenges within this project. Most pertinent perhaps are the power dynamics encountered in undertaking research and are thus an essential consideration, along with bureaucratic constraints and the use of an interpreter.

Finally, in taking a qualitative social perspective, this research has also contributed towards Climate Change knowledge. Despite increasing recognition, this type of research is still lacking (Overland & Sovacool, 2020), however by providing a qualitative approach, the research reported herein has not only added to the field but has also shone a light on the many nuances that are detected through qualitative approaches, often not possible through more qualitative methods (Bercht, 2021). Specifically, this study listened to children's first-hand accounts) again, a growing, but still underdeveloped, area of research. In working with children and gathering their experiences from them directly, rich narratives that are not possible using many alternative methods, were obtained. It has proven the importance of building relationships with children that enable a much more detailed understanding of their lives, knowledge(s) and perceptions. Particularly with adults in this study suggesting they do not discuss Climate Change with their children, had only parents been consulted as opposed to direct conversations with children, it is unlikely such rich and accurate narratives would have been achieved. The use of photography as a research tool with children in particular, has proven very successful, uncovering hidden elements not acceptable via other discourses.

10.3 Recommendations

10.3.1 General Recommendations

There are many practical applications for CCE within this thesis, of which many can be further applied to EE and ESD. These will be useful for a broad range of personnel, including those designing Climate policies, curriculum developers, government agencies, Teachers, Teacher Educators, NGOs, and researchers. Some of these recommendations have been made in previous studies and therefore strengthen best practice.

- *Localise CCE and EE to the specific context where learning is occurring*

A globalised perspective is not sufficient in communicating Climate Change for action. This research evidenced psychological distancing of Climate Change across spatial and temporal scales with children believing Climate Change to be an issue elsewhere in space and time. By localising Climate Change to children's environments and lived experiences, the abstract becomes the concrete and action is more likely to be taken.

- *Provide Teacher Training specific to Global and Local Climate Change*
Teachers are a key figure in children’s education and socialisation. Responsible for providing the majority of children’s Climate Change knowledge, teachers need to be able to deliver context based CCE, with a deep understanding that can support the identification of misconceptions. This should be ongoing training.
- *Provide support to those living in poverty as a priority*
It was regularly cited in this research that some families, particularly in the rural area, lacked the financial capacity to adapt or mitigate against Climate Change. With other issues such as daily income and food security being priority, Climate Change efforts are likely to fail within these communities. Therefore, poverty needs to be addressed and considered in future adaptation and mitigation plans.
- *Optimise socio-cultural characteristics*
Many opportunities for Climate Change communication and action existed Vietnamese culture. Collectivism, Long Term Orientation, Filial Piety, and a partnership with nature, should be borne in mind when designing strategies and materials. This extends beyond Vietnam, and it is likely that all cultures throughout the world have elements within them that can support Climate Change adaptation.
- *Be mindful of socio-cultural barriers*
Many CCE recommendations are developed from Western-centric ideals and research. These are not always applicable in other locations. Barriers in Vietnam included typical rote learning styles, large class sizes, a focus on academic progress on core subjects and children’s low position in hierarchical chains. These need to be considered and adapted to in designing CCE.
- *Promote children’s engagement in EE and Climate Change issues*
The children in this study typically cared about their environment, seeing adults as bad stewards of the world. Children expressed wanting to help, yet were unsure how to do so. Children require support in order to turn these thoughts into positive action. Whilst schools can encourage activities, these appeared to contradict many activities outside school. Therefore, activities outside of the school grounds may be beneficial in allowing children to positively contribute and develop a sense of agency.

- *In urban settings in particular, increase children's access to nature in ways that have reduced adult input*

Those children in the rural school had a deeper connection to their environment. This is likely due to increased time in these spaces where they were able to roam at their own leisure and notice their own changes and fascinations. These opportunities were limited in the urban environment. This could be increased in the form of urban planning for more green spaces, or school/community trips to natural environments that rely more on children's exploration than explicit learning goals. Encouraging children to find nature within urban landscapes and modelling this may also prove beneficial.

- *Seek out and listen to children's perspectives on Climate Change and other local issues*

Children here demonstrated unique and varied opinions. Though a fully participatory approach was not possible in this project, it does demonstrate that when given the space to share their knowledge and perceptions. In seeking their voices, creative approaches such as photography and drawing can be beneficial.

- *Support Intergenerational Knowledge Exchange in both directions*

Though children are not typically the providers of information in Vietnam, this study has proved that children can change family perceptions and behaviours. Particularly in cities where cultural perceptions of children are changing, children should be supported in communicating their learned knowledge at home. Likewise, there was a lack of parent to child Intergenerational Knowledge Exchange. Parents should be supported in learning about these issues and encouraged to discuss with their children. Particularly where adults have experienced climate hazards from before children's lifetimes, activities that support community sharing may increase awareness and resilience.

10.3.2 Recommendations for Future Research

The following set of research questions naturally follow on from the work outlined in this thesis and are avenues for future research:

- Much as Nguyen (2019) recognises, there are limited studies that explore children and space in Vietnam. To the best of my knowledge, there exists none that truly uncover these spatial dynamics within a socio-cultural framework making links to environmental perceptions or behaviours. This area then requires further exploration.
- What are teachers' knowledge and perceptions of Climate Change in Vietnam?

- What are the sources of teachers' Climate Change knowledge and perceptions?
- How is the new GEC being applied in Vietnam, and does it offer more opportunities for local Climate Change and Environmental Education?
- Is perceived risk calculated differently based on the type of flooding?
- How can children and youth work with societies to strengthen local resilience to climate change in Vietnam?
- Do flood histories pass Transend generations in the Mekong Delta, and if so, how? This is particularly needed to illuminate why adults here did not discuss the 2011 flood event.
- Can intergenerational knowledge exchange increase societal knowledge and risk perceptions of flooding and Climate Change in the Mekong Delta and wider Vietnam?
- There is also a need to assess specific, locally based Climate Change initiatives with children and youth in Vietnam, and a need to increase children's voice within local and national decision making. This will require research to enable strengths and weaknesses to be identified.

References

- Aaron, A., Baidya, A., Wang, J., Chan, C., Wetzler, E., & Kang, Y. (2021). The Early Impacts of COVID-19 on Food Security and Livelihood in Vietnam. *Frontiers in Sustainable Food Systems*, 5(739140). 510.3389/fsufs.2021.739140
- Abram, N. J., McGregor, H. V., Tierney, J. E., Evans, M. N., McKay, N. P., & Kaufman, D. S. (2016). Early onset of industrial era warming across the oceans and continents. *Nature (London)*, 536(7617), 411-418. 10.1038/nature19082
- Adger, N. (1999). Social Vulnerability to Climate Change and Extremes in Coastal Vietnam. *World Development*, 27(2), 249-269. 10.1016/S0305-750X(98)00136-3
- Adger, W. N. (2003). Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography*, 79(4), 387-404. 10.1111/j.1944-8287.2003.tb00220.x
- Adger, W. N., Barnett, J., Brown, K., Marshall, N., & O'Brien, K. (2012). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change*, 3(2), 112-117. 10.1038/nclimate1666
- Adger, W. N., Kelly, P. M. & Ninh, N. H. (2001). *Living with Environmental Change*. Routledge. 10.4324/9780203995570
- Adger, W. N., Quinn, T., Lorenzoni, I., Murphy, C., & Sweeney, J. (2013). Changing social contracts in climate-change adaptation. *Nature Climate Change*, 3(4), 330-333. 10.1038/nclimate1751
- Adler, K., Salanterä, S., & Zumstein-Shaha, M. (2019). Focus Group Interviews in Child, Youth, and Parent Research: An Integrative Literature Review. *International Journal of Qualitative Methods*, 18. 160940691988727. 10.1177/1609406919887274
- Akerlof, K., Maibach, E. W., Fitzgerald, D., Cedeno, A. Y., & Neuman, A. (2013). Do people "personally experience" global warming, and if so how, and does it matter? *Global Environmental Change*, 23(1), 81-91. 10.1016/j.gloenvcha.2012.07.006

Aksit, O., McNeal, K. S., Gold, A. U., Libarkin, J. C., & Harris, S. (2018). The influence of instruction, prior knowledge, and values on climate change risk perception among undergraduates. *Journal of Research in Science Teaching*, 55(4), 550-572. 10.1002/tea.21430

Alexander, R. J. (2000). *Culture and Pedagogy: International Comparisons in Primary Education* (Repr. ed.). Blackwell.

Almazán-Casali, S., Puga, B. P., & Lemos, M. C. (2021). Who Governs at What Price? Technocratic Dominance, Ways of Knowing, and Long-Term Resilience of Brazil's Water System. *Frontiers in Water*, 310.3389/frwa.2021.735018

Alvesson, M., & Sköldberg, K. (2009). *Reflexive methodology* (2nd edn.). Sage.

Alvesson, M., & Sköldberg, K. (2018). *Reflexive methodology* (3rd edn.). Sage.

Aminpour, P., Gray, S. A., Singer, A., Scyphers, S. B., Jetter, A. J., Jordan, R., Murphy, J., Robert, & Grabowski, J. H. (2021). The diversity bonus in pooling local knowledge about complex problems. *Proceedings of the National Academy of Sciences - PNAS*, 118(5)10.1073/pnas.2016887118

Anderson, A. (2012). Climate Change Education for Mitigation and Adaptation. *Journal of Education for Sustainable Development*, 6(2), 191-206. 10.1177/0973408212475199

Anderson, D. (2002). *The Columbia Guide to the Vietnam War*. Columbia University Press. 10.7312/ande11492

Anderson, J. R. (2020). *Cognitive Psychology and Its Implications*. Macmillan Learning.

Andersson, B., & Wallin, A. (2000). Students' understanding of the greenhouse effect, the societal consequences of reducing CO2 emissions and the problem of ozone layer depletion. *Journal of Research in Science Teaching*, 37(10), 1096-1111. 10.1002/1098-2736(200012)37:103.0.CO;2-8

Ansell, N., Robson, E., Hajdu, F., & van Blerk, L. (2012). Learning from young people about their lives: using participatory methods to research the impacts of AIDS in southern Africa. *Children's Geographies*, 10(2), 169-186. 10.1080/14733285.2012.667918

- Anthony, E. J., Brunier, G., Besset, M., Goichot, M., Dussouillez, P., & Nguyen, V. L. (2015). Linking rapid erosion of the Mekong River delta to human activities. *Scientific Reports*, 5(1), 14745. 10.1038/srep14745
- Archer, L. (2002). 'It's Easier That You're a Girl and That You're Asian': Interactions of 'Race' and Gender between Researchers and Participants. *Feminist Review*, 72(72), 108-132. 10.1057/palgrave.fr.9400043
- Arnoldi, J. (2009). *Risk*. Policy Press.
- Attfield, I., & Vu, B. T. (2013). A rising tide of primary school standards—The role of data systems in improving equitable access for all to quality education in Vietnam. *International Journal of Educational Development*, 33(1), 74-87. 10.1016/j.ijedudev.2012.02.003
- Attia, M., & Edge, J. (2017). Be(com)ing a reflexive researcher: a developmental approach to research methodology. *Null*, 4(1), 33-45. 10.1080/23265507.2017.1300068
- Avason, N. (2021). *Vietnamese Culture*. The Cultural Atlas. <https://culturalatlas.sbs.com.au/vietnamese-culture/vietnamese-culture-core-concepts>
- Backett-Milburn, K., & McKie, L. (1999). A critical appraisal of the draw and write technique. *Health Education Research*, 14(3), 387-398. 10.1093/her/14.3.387
- Bagnoli, A. (2012). Beyond the Standard Interview: The Use of Graphic Elicitation and Arts-based Methods. *SAGE Biographical Research*. SAGE Publications. 10.1177/1468794109343625
- Baker, J. L. (2012). *Climate change, disaster risk, and the urban poor: cities building resilience for a changing world*. World Bank. 10.1596/978-0-8213-8845-7
- Bakir, V. (2010). Media and risk: old and new research directions. *Journal of Risk Research*, 13(1), 5-18. 10.1080/13669870903135953
- Balica, S., Dinh, Q., Popescu, I., Vo, T. Q., & Pham, D. Q. (2014). Flood impact in the Mekong Delta, Vietnam. *Journal of Maps*, 10(2), 257-268. 10.1080/17445647.2013.859636
- Bandura, A. (1997). *Self-efficacy*. Freeman Publishing.

- Bangalore, M., Smith, A., & Veldkamp, T. (2017). Exposure to Floods, Climate Change, and Poverty in Vietnam. *Natural Hazards and Earth System Sciences Discussions*, 1-28. 10.5194/nhess-2017-100
- Banks, M., & Zeitlyn, D. (2015). *Visual methods in social research* (2nd edn.). Sage.
- Baran, E., & Myschowoda, C. (2009). Dams and fisheries in the Mekong Basin. *Aquatic Ecosystem Health & Management*, 12(3), 227-234. 10.1080/14634980903149902
- Barraza, L. (2001). Environmental Attitudes Start at Home: Parents and Their Role in the Development of Values. *Environmental Education and Information*, 20(4)
- Bartlett, S., & Burton, D. (2016). *Introduction to education studies* (4th edn.). Sage.
- Bass, S., Annandale, D., Binh, P. V., Dong, T. P., Nam, H. A., Oanh, L. T. K., Parsons, M., Phuc, N. V., & Trieu, V. V. (2010). *Integrating environment and development in Viet Nam*. International Institute for Environment and Development. <https://www.istor.org/stable/resrep01645>
- Bastin, J., Finegold, Y., Garcia, C., Mollicone, D., Rezende, M., Routh, D., Zohner, C. M., & Crowther, T. W. (2019). The global tree restoration potential. *Science (American Association for the Advancement of Science)*, 365(6448), 76-79. 10.1126/science.aax0848
- Bates, T. C. (2015). The glass is half full and half empty: A population-representative twin study testing if optimism and pessimism are distinct systems. *The Journal of Positive Psychology*, 10(6), 533-542. 10.1080/17439760.2015.1015155
- Baum, C. M., & Bartkowski, B. (2020). It's not all about funding: Fostering interdisciplinary collaborations in sustainability research from a European perspective. *Energy Research & Social Science*, 70, 101723. 10.1016/j.erss.2020.101723
- Bayrak, M. M., Marks, D., & Hauser, L. T. (2022). Disentangling the concepts of global climate change, adaptation, and human mobility: a political-ecological exploration in Vietnam's Mekong Delta. *Climate and Development*, 1-10. 10.1080/17565529.2022.2028596
- BBC. (2021). *Vietnam country profile*. BBC. <https://www.bbc.co.uk/news/world-asia-pacific-16567315>
- Beaumont, L. A. (2021). *Defining childhood and youth*. Routledge.

- Beer, C. T. (2014). Climate Justice, the Global South, and Policy Preferences of Kenyan Environmental NGOs. *The Global South*, 8(2), 84-100. 10.2979/globalsouth.8.2.84
- Bell, K. (2016). *Agency*. Open Education Sociology Dictionary.
<https://sociologydictionary.org/agency/>
- Benadusi, M. (2014). Pedagogies of the Unknown: Unpacking 'Culture' in Disaster Risk Reduction Education. *Journal of Contingencies and Crisis Management*, 22(3), 174-183. 10.1111/1468-5973.12050
- Bercht, A. L. (2021). How qualitative approaches matter in climate and ocean change research: Uncovering contradictions about climate concern. *Global Environmental Change*, 70. 10.1016/j.gloenvcha.2021.102326
- Bergen, N. (2018). Narrative Depictions of Working With Language Interpreters in Cross-Language Qualitative Research. *International Journal of Qualitative Methods*, 17(1), 160940691881230. 10.1177/1609406918812301
- Berman, R. C., & Tyyskä, V. (2011). A Critical Reflection on the Use of Translators/Interpreters in a Qualitative Cross-Language Research Project. *International Journal of Qualitative Methods*, 10(2), 178-190. 10.1177/160940691101000206
- Berns, G. N., & Simpson, S. (2009). Outdoor Recreation Participation and Environmental Concern: A Research Summary. *The Journal of Experiential Education*, 32(1), 79-91. 10.1177/105382590903200107
- Bhabha, H. K. (1989). *The commitment to theory*. In Ed. J. Pines and P. Willemen (Eds.) Questions of third cinema. BFI Publishing.
- Bialostok, S., & Albert, M. (2012). *Education and the risk society*. Sense Publishing.
- Bich, T. H., Quang, L. N., Ha, L. T. T., Hanh, T. T. D., & Guha-Sapir, D. (2011). Impacts of flood on health: epidemiologic evidence from Hanoi, Vietnam. *Global Health Action*, 4(1), 6356-8. 10.3402/gha.v4i0.6356
- Biggs, D., Miller, F., & Molle, F. (2009). *The delta machine: water management in the Vietnamese Mekong Delta in historical and contemporary perspectives*. Earthscan.

- Birch, M. (2006). *Researching children's experience. Approaches and methods*. Blackwell Publishing Ltd. 10.1111/j.1469-7610.2006.01589.x
- Birks, M. J., Chapman, Y., & Francis, K. (2007). Breaching the Wall: Interviewing People From Other Cultures. *Journal of Transcultural Nursing, 18*(2), 150-156. 10.1177/1043659606298617
- Blaisdell, C., Arnott, L., Wall, K., & Robinson, C. (2019). Look Who's Talking: Using creative, playful arts-based methods in research with young children. *Journal of Early Childhood Research, 17*(1), 14-31. 10.1177/1476718X18808816
- Bode, C. (2020). *East-West Dialogues: The Transferability of Concepts in the Humanities*. Peter Lang.
- Bodzin, A. M., Anastasio, D., Sahagian, D., Peffer, T., Dempsey, C., & Steelman, R. (2014). Investigating Climate Change Understandings of Urban Middle-Level Students. *Journal of Geoscience Education, 62*(3), 417-430. 10.5408/13-042.1
- Boggiano, V. L., Harris, L. M., & Nguyen, D. T. (2015). Building Connections While Conducting Qualitative Health Fieldwork in Vietnam. *International Journal of Qualitative Methods, 14*(4), 160940691561924. 10.1177/1609406915619249
- Boon, H. (2010). Climate change? Who knows? A comparison of secondary students and pre-service teachers. *The Australian Journal of Teacher Education, 35*(1), 104-120. 10.14221/ajte.2010v35n1.9
- Boon, H. (2016). Rationale for the use of Bronfenbrenner's bioecological systems theory to examine resilience. *Disasters and Social Resilience* (pp. 28-48). Routledge. 10.4324/9781315678726-8
- Borton, L., & Ryder, P. R. (2000). Working in a Vietnamese Voice. *The Academy of Management Executive, 14*(4), 20-31. 10.5465/ame.2000.3979813
- Bourdieu, P. (1986). Forms of capital. In J. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education* (pp. 241-58). Greenwood.
- Bourgois, P. (2002). *In Search of Respect*. Cambridge University Press. 10.1017/CBO9780511808562

Bowen, N. K., & Bowen, G. L. (1998). The Effects of Home Microsystem Risk Factors and School Microsystem Protective Factors on Student Academic Performance and Affective Investment in Schooling. *Children & Schools, 20*(4), 219-231. 10.1093/cs/20.4.219

Boyden, J. (2012). *Childhood Poverty: Multidisciplinary Approaches*. Palgrave Macmillan. 10.1057/9780230362796

Brannen, M. Y., Gómez, C., Peterson, M. F., Romani, L., Sagiv, L., & Wu, P. (2017). People in Global Organizations: Culture, Personality, and Social Dynamics. *The Blackwell Handbook of Global Management* (pp. 26-54). Blackwell Publishing Ltd. 10.1002/9781405166355.ch2

Briend, A., Khara, T., & Dolan, C. (2015). Wasting and Stunting—Similarities and Differences: Policy and Programmatic Implications. *Food and Nutrition Bulletin, 36*, S15-S23. 10.1177/15648265150361S103

Brindley, E. F. (2015). *Ancient China and the Yue*. Cambridge University Press.

Brinkmann, S., & Kvale, S. (2018). *Doing interviews* (2nd edn.). SAGE.

Britannica. (2022a). *Communism*. Britannica. <https://www.britannica.com/topic/communism>

Britannica. (2022b). *Vietnam*. Britannica. <https://www.britannica.com/place/Vietnam#ref52689>

Broesch, T., Crittenden, A. N., Beheim, B. A., Blackwell, A. D., Bunce, J. A., Colleran, H., Hagel, K., Kline, M., McElreath, R., Nelson, R. G., Pisor, A. C., Prall, S., Pretelli, I., Purzycki, B., Quinn, E. A., Ross, C., Scelza, B., Starkweather, K., Stieglitz, J., & Mulder, M. B. (2020). Navigating cross-cultural research: methodological and ethical considerations. *Proceedings of the Royal Society. B, Biological Sciences, 287*(1935), 20201245. 10.1098/rspb.2020.1245

Bronfenbrenner, U. (1979). *Ecology of Human Development: Experiments by Nature and Design*. Harvard University Press.

Brown, J. R. (2021). *Philosophy of science* (2nd edn.). Bloomsbury Academic.

Brown, P., & Lauder, H. (1997). Education, globalization and economic development. In A. H. Hasley, H. Lauder, P. Brown & A. S. Wells (Eds.), *Education: Culture, Economy, Society* (pp. 172-192). Oxford University Press.

- Brügger, A. (2020). Understanding the psychological distance of climate change: The limitations of construal level theory and suggestions for alternative theoretical perspectives. *Global Environmental Change*, 60, 102023. 10.1016/j.gloenvcha.2019.102023
- Bruner, J. S. (1978). *The process of education*. Harvard University Press.
- Bryant, A., & Charmaz, K. (2007). *The SAGE Handbook of Grounded Theory*. SAGE Publications.
- Buldu, E. (2020). Investigating parents' perspective on environmental issues: What do they do and know to be a model for their children? *Baskent University Journal of Education*, 7(2), 355-362.
- Burbano, M., Shin, S., Nguyen, K., & Pokhrel, Y. (2020). Hydrologic changes, dam construction, and the shift in dietary protein in the Lower Mekong River Basin. *Journal of Hydrology (Amsterdam)*, 581, 124454. 10.1016/j.jhydrol.2019.124454
- Burgess-Allen, J., & Owen-Smith, V. (2010). Using mind mapping techniques for rapid qualitative data analysis in public participation processes. *Health Expectations: An International Journal of Public Participation in Health Care and Health Policy*, 13(4), 406-415. 10.1111/j.1369-7625.2010.00594.x
- Burke, A., Peros, M. C., Wren, C. D., Pausata, F. S. R., Riel-Salvatore, J., Moine, O., de Vernal, A., Kageyama, M., & Boisard, S. (2021). The archaeology of climate change: The case for cultural diversity. *Proceedings of the National Academy of Sciences*, 118(30), 1. 10.1073/pnas.2108537118
- Burr R. (2006). *Vietnam's Children in a Changing World*. Rutgers University Press.
- Busher, H., & Fox, A. (2019). *Implementing ethics in educational ethnography*. Routledge.
- Bussi, G., Darby, S. E., Whitehead, P. G., Jin, L., Dadson, S. J., Voepel, H. E., Vasilopoulos, G., Hackney, C. R., Hutton, C., Berchoux, T., Parsons, D. R., & Nicholas, A. (2021). Impact of dams and climate change on suspended sediment flux to the Mekong delta. *The Science of the Total Environment*, 755(1), 142468. 10.1016/j.scitotenv.2020.142468
- Callaghan, M., Minx, J. C., & Forster, P. M. (2020). A topography of climate change research. *Nature Climate Change*, 10(2), 118-123. 10.1038/s41558-019-0684-5

Callaghan, M., Schleussner, C., Nath, S., Lejeune, Q., Knutson, T. R., Reichstein, M., Hansen, G., Theokritoff, E., Andrijevic, M., Brecha, R. J., Hegarty, M., Jones, C., Lee, K., Lucas, A., van Maanen, N., Menke, I., Pfliederer, P., Yesil, B., & Minx, J. C. (2021). Machine-learning-based evidence and attribution mapping of 100,000 climate impact studies. *Nature Climate Change*, 11(11), 966-972. 10.1038/s41558-021-01168-6

Campbell, F. A., Pungello, E. P., & Miller-Johnson, S. (2002). The Development of Perceived Scholastic Competence and Global Self-Worth in African American Adolescents from Low-Income Families. *Journal of Adolescent Research*, 17(3), 277-302. 10.1177/0743558402173004

Can Tho CFSC (Committee for Flood and Storm Control). (2011). *Annual Disaster Report*. Can Tho: Can Tho CFSC.

Carew-Reid, J., & Taylor, L. (2018). Natural systems and climate change resilience in the Lower Mekong Basin. In S. Morland, C. Lajaunie & R. Satrawaha (Eds) *Biodiversity Conservation in Southeast Asia*, pp. 175-206. Routledge. 10.4324/9781315313573-10

Carson, K. (2018). *Youth climate change activists in Western Australia: A locally-based theory of their journey to activism* <https://trove.nla.gov.au/work/235525975>

Cartwright, T. J., Hemler, D., & Magee, P., A. (2021). Investigating Weather, Climate, and Climate Change Understanding of Appalachian Middle-Level Students. *Electronic Journal for Research in Science and Mathematics Education*, 25(2), 6-29. 10.5408/13-042.1

Carvalho, A., & Burgess, J. (2005). Cultural Circuits of Climate Change in U.K. Broadsheet Newspapers, 1985–2003. *Risk Analysis*, 25(6), 1457-1469. 10.1111/j.1539-6924.2005.00692.x

Chakraborty, S. (2017). Using Narratives in Creativity Research: Handling the Subjective Nature of Creative Process. *Qualitative Report*, 22(11), 2959-2973. <https://search.proquest.com/docview/1968399819>

Chambers, R. (1997). *Whose reality counts?*. Intermediate Technology Publications.

Chang, C., & Pascua, L. (2016). Singapore students' misconceptions of climate change. *International Research in Geographical and Environmental Education*, 25(1), 84-96. 10.1080/10382046.2015.1106206

- Chapman, A., Darby, S., Tompkins, E., Hackney, C., Leyland, J., Van, P. D. T., Pham, T. V., Parsons, D., Aalto, R., & Nicholas, A. (2017). Sustainable rice cultivation in the deep flooded zones of the Vietnamese Mekong Delta. *Vietnam Journal of Science, Technology and Engineering*, 59(2), 34-38. 10.31276/VJSTE.59(2).34
- Chawla, L., & Gould, R. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, 2(3), 619-642. 10.1002/pan3.10128
- Chen, D., Peng, D., Rieger, M. O., & Wang, M. (2021). Institutional and cultural determinants of speed of government responses during COVID-19 pandemic. *Humanities & Social Sciences Communications*, 8(1), 1-9. 10.1057/s41599-021-00844-4
- Chen, W. (2014). The Relationship Between Perceived Parenting Style, Filial Piety, and Life Satisfaction in Hong Kong. *Journal of Family Psychology*, 28(3), 308-314. 10.1037/a0036819
- Chen, X., Zaikauskaitė, L., Georgantzis, N., & Tsvirikos, D. (2020). The effects of idealism and relativism on the moral judgement of social vs. environmental issues, and their relation to self-reported pro-environmental behaviours. *PLoS One*, 15(10), e0239707. 10.1371/journal.pone.0239707
- Chesneaux, J. (1969). The Historical Background of Vietnamese Communism. *Government and Opposition (London)*, 4(1), 118-140. 10.1111/j.1477-7053.1969.tb00800.x
- Chi, M., & Roscoe, R. (2002). The processes and challenges of conceptual change. In M. Limón, & L. Mason (Eds.), *Reconsidering Conceptual Change. Issues in Theory and Practice*. Kluwer Academic Publishers. 10.1007/0-306-47637-1_1
- Chinh, D. T., Bubeck, P., Dung, N. V., & Kreibich, H. (2016). The 2011 flood event in the Mekong Delta: preparedness, response, damage and recovery of private households and small businesses. *Disasters*, 40(4), 753-778. 10.1111/disa.12171
- Choi, J., Kushner, K. E., Mill, J., & Lai, D. W. L. (2012). Understanding the Language, the Culture, and the Experience: Translation in Cross-Cultural Research. *International Journal of Qualitative Methods*, 11(5), 652-665. 10.1177/160940691201100508
- Christensen, P., & James, A. (2017). *Research with Children*. Routledge. 10.4324/9781315657349

Cleland, J. A. (2017). The qualitative orientation in medical education research. *Korean Journal of Medical Education*, 29(2), 61-71. 10.3946/kjme.2017.53

Clemens, V., von Hirschhausen, E., & Fegert, J. M. (2020). Report of the intergovernmental panel on climate change: implications for the mental health policy of children and adolescents in Europe—a scoping review. *European Child & Adolescent Psychiatry*, 10.1007/s00787-020-01615-3

Climate Watch. (2018). *Top 10 Greenhouse Gas Emitters: 2018*.
<https://www.climatewatchdata.org/key-visualizations?visualization=8>.

Cocanour, C. S. (2017). Informed consent—It's more than a signature on a piece of paper. *The American Journal of Surgery*, 214(6), 993-997. 10.1016/j.amjsurg.2017.09.015

Collado, S., & Corraliza, J. A. (2015). Children's Restorative Experiences and Self-Reported Environmental Behaviors. *Environment and Behavior*, 47(1), 38-56.
10.1177/0013916513492417

Collier, J. (1957). Photography in Anthropology: A Report on Two Experiments. *American Anthropologist*, 59(5), 843-859. 10.1525/aa.1957.59.5.02a00100

Communicaid. (2021). *Vietnam Cross-cultural and Language Training | Communicaid*.
<https://www.communicaid.com/country/vietnam/>.

Connor, M., de Guia, A. H., Quillo, R., Van Nguyen, H., Gummert, M., & Sander, B. O. (2020). When climate change is not psychologically distant – Factors influencing the acceptance of sustainable farming practices in the Mekong river Delta of Vietnam. *World Development Perspectives*, 18, 100204. 10.1016/j.wdp.2020.100204

Copsey, T., Nguyen, Y., & Pham, P. H. (2013). *VIETNAM: How the people of Vietnam live with climate change and what communication can do*. London: BBC Media Action.

Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th edn.). SAGE.

Corsaro, W. A. (2018). *The sociology of childhood* (5th edn.). SAGE.

- Corsaro, W. A., & Molinari, L. (2018). Entering and observing in children's worlds: A reflection on a longitudinal ethnography of early education in Italy. P. Christensen & A. James (Eds.) *Research with Children* (pp. 23-42). Routledge. 10.4324/9781315657349-7
- Cousins, S. D. (1989). Culture and Self-Perception in Japan and the United States. *Journal of Personality and Social Psychology*, 56(1), 124-131. 10.1037/0022-3514.56.1.124
- Cox, C. O. (2022). *Decision making in risk management*. CRC Press, Taylor & Francis Group. 10.1201/9781003168409
- Crate, S. A., & Nuttall, M. (2016). *Anthropology and climate change: from encounters to actions*. Routledge.
- Cretney, R. M. (2016). Local responses to disaster: the value of community led post disaster response action in a resilience framework. *Disaster Prevention and Management*, 25(1), 27-40. 10.1108/dpm-02-2015-0043
- Crivello, G., Camfield, L., & Woodhead, M. (2009). How Can Children Tell Us about Their Wellbeing? Exploring the Potential of Participatory Research Approaches within Young Lives. *Social Indicators Research*, 90(1), 51-72. 10.1007/s11205-008-9312-x
- Crona, B., Wutich, A., Brewis, A., & Gartin, M. (2013). Perceptions of climate change: Linking local and global perceptions through a cultural knowledge approach. *Climatic Change*, 119(2), 519-531. 10.1007/s10584-013-0708-5
- Cross, I. D., & Congreve, A. (2021). Teaching (super) wicked problems: authentic learning about climate change. *Journal of Geography in Higher Education*, 45(2), 1-26. 10.1080/03098265.2020.1849066
- Crow, D. A., & Boykoff, M. T. (2014). *Culture, Politics and Climate Change*. Routledge. 10.4324/9780203073407
- Cutter-Mackenzie, A., & Rousell, D. (2018). Education for what? Shaping the field of climate change education with children and young people as co-researchers. *Children's Geographies*, 1-15. 10.1080/14733285.2018.1467556

Dang, A. T. N., Kumar, L., Reid, M., & Mutanga, O. (2021). Fire danger assessment using geospatial modelling in Mekong Delta, Vietnam: Effects on wetland resources. *Remote Sensing Applications*, 21, 100456. 10.1016/j.rsase.2020.100456

Dang, H. H. (2021). *What explains Vietnam's exceptional performance in education relative to other countries?*. IZA - Institute of Labour Economics.

Danker, J., Strnadová, I., & Cumming, T. M. (2017). Engaging Students With Autism Spectrum Disorder in Research Through Participant-Driven Photo-Elicitation Research Technique. *Australasian Journal of Special Education*, 41(1), 35-50. 10.1017/jse.2016.7

Darby, S. E., Hackney, C. R., Leyland, J., Kumm, M., Lauri, H., Parsons, D. R., Best, J. L., Nicholas, A. P., & Aalto, R. (2016). Fluvial sediment supply to a mega-delta reduced by shifting tropical-cyclone activity. *Nature*, 539(7628), 276-279. 10.1038/nature19809

Davidson, E. (2017). Saying It Like It Is? Power, Participation and Research Involving Young People. *Social Inclusion*, 5(3), 228-239. 10.17645/si.v5i3.967

de Groot, J., & Steg, L. (2008). Value orientations to explain beliefs related to environmental significant behavior: How to measure egoistic, altruistic, and biospheric value orientations. *Environment and Behavior*, 40(3), 330-354. 10.1177/0013916506297831

Degroot, D., Anchukaitis, K., Bauch, M., Burnham, J., Carnegy, F., Cui, J., de Luna, K., Guzowski, P., Hambrecht, G., Huhtamaa, H., Izdebski, A., Kleemann, K., Moesswilde, E., Neupane, N., Newfield, T., Pei, Q., Xoplaki, E., & Zappia, N. (2021). Towards a rigorous understanding of societal responses to climate change. *Nature (London)*, 591(7851), 539-550. 10.1038/s41586-021-03190-2

Deleuze, G. (2002). *Nietzsche and Philosophy, translated by H Tomlinson*. Continuum.

DeLyser, D. (2001). "Do You Really Live Here?" Thoughts on Insider Research. *Geographical Review*, 91(1/2), 441-453. 10.2307/3250847

Denzin, N. K. (2009). *The research act*. Aldine Transaction.

Derr, V., & Chawla, L. (2012). The Development of Conservation Behaviors in Childhood and Youth. *The Oxford Handbook of Environmental and Conservation Psychology*. Oxford University Press. 10.1093/oxfordhb/9780199733026.013.0028

- Dinh, D. D., Vu, N. H., McIlroy, R. C., Plant, K. A., & Stanton, N. A. (2020). Examining the roles of multidimensional fatalism on traffic safety attitudes and pedestrian behaviour. *Safety Science*, 124, 104587. 10.1016/j.ssci.2019.104587
- Do, L. H. (2021). Religious security in Vietnam today. *E3S Web of Conferences*, 258(5007). 10.1051/e3sconf/202125805007
- Douglas, M., & Wildavsky, A. B. (1985). *Risk and culture*. University of California Press.
- Douglass, K., & Cooper, J. (2020). Archaeology, environmental justice, and climate change on islands of the Caribbean and southwestern Indian Ocean. *Proceedings of the National Academy of Sciences*, 117(15), 8254-8262. 10.1073/pnas.1914211117
- Dufty, N. (2014). Opportunities for disaster resilience learning in the Australian curriculum. *Australian Journal of Emergency Management, The*, 29(1), 12-16. <http://search.informit.com.au/fullText;res=AGISPT;dn=20140865>
- Duhn, I. (2012). Making 'place' for ecological sustainability in early childhood education. *Environmental Education Research*, 18(1), 19-29. 10.1080/13504622.2011.572162
- Duiker, W. J. (1990). Postwar Vietnam: Dilemmas in Socialist Development. *The Journal of Asian Studies*, 49(1), 215-216. <https://www.jstor.org/stable/2058526>
- Dun, O. (2011). Migration and Displacement Triggered by Floods in the Mekong Delta. *International Migration*, 49, e200-e223. 10.1111/j.1468-2435.2010.00646.x
- Dung, L. T. D. (2008). *International NGOs (INGOs) – State Relations in Vietnam: Who Leads Development?*
- Dunkley, R. A., & Smith, T. A. (2019). By-standing memories of curious observations: children's storied landscapes of ecological encounter. *Cultural Geographies*, 26(1), 89-107. 10.1177/1474474018792652
- Dunn, F. E., & Minderhoud, P. S. J. (2022). Sedimentation strategies provide effective but limited mitigation of relative sea-level rise in the Mekong delta. *Communications Earth & Environment*, 3(1), 1-12. 10.1038/s43247-021-00331-3

- Duong, N. T., & van den Born, R. (2019). Thinking About Nature in the East: An Empirical Investigation of Visions of Nature in Vietnam. *Ecopsychology*, 11(1), 9-21. 10.1089/eco.2018.0051
- Eagleton, T. (2016). *Culture*. Yale University Press.
- Ehlert, J. (2012a). *Beautiful floods: Environmental knowledge and agrarian change in the Mekong Delta, Vietnam*. Lit Verlag.
- Ehlert, J. (2012b). We Observe the Weather because we are Farmers. *Environmental Uncertainty and Local Knowledge* (pp. 119-144). transcript Verlag. 10.14361/transcript.9783839419595.119
- Elkind, J. (2014). "The Virgin Mary is Going South": Refugee Resettlement in South Vietnam, 1954–1956. *Diplomatic History*, 38(5), 987-1016. 10.1093/dh/dht119
- Eller, J. D. (2020). *Cultural anthropology* (4th edn.). Routledge.
- Emmel, N. (2013). *Sampling and Choosing Cases in Qualitative Research*. SAGE Publications. 10.4135/9781473913882
- Engesser, S., & Brüggemann, M. (2016). Mapping the minds of the mediators: The cognitive frames of climate journalists from five countries. *Public Understanding of Science*, 25(7), 825-841. 10.1177/0963662515583621
- Erdem, A. (2017). Mind Maps as a Lifelong Learning Tool. *Universal Journal of Educational Research*, 5(12A), 1-7. 10.13189/ujer.2017.051301
- Errasti, J. M., Amigo Vázquez, I., Villadangos, M., & Morís, J. (2018). Differences between individualist and collectivist cultures in emotional Facebook usage: relationship with empathy, self-esteem, and narcissism. *Psicothema*, 30(4), 376-381. 10.7334/psicothema2018.101
- Espinoza, P., Benny, L., Duc, L., Thuc, L., & Hang, T. T. (2018). *Education and Learning: Preliminary Findings from the 2016 Young Lives Survey (Round 5): Viet Nam*. Oxford: Young Lives.
- Etherington, K. (2004). Research methods: Reflexivities-roots, meanings, dilemmas. *Counselling and Psychotherapy Research*, 4(2), 46-47. 10.1080/14733140412331383963

- Etikan, I. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1. 10.11648/j.ajtas.20160501.11
- Evers, J., & Pathirana, A. (2018). Adaptation to climate change in the Mekong River Basin: introduction to the special issue. *Climatic Change*, 149(1), 1-11. 10.1007/s10584-018-2242-y
- Fanta, V., Šálek, M., & Sklenicka, P. (2019). How long do floods throughout the millennium remain in the collective memory? *Nature Communications*, 10(1), 1105. 10.1038/s41467-019-09102-3
- Farrant, B., Armstrong, F., & Albrecht, G. (2012). Future under threat: climate change and children's health. <https://researchrepository.murdoch.edu.au/id/eprint/29950/>
- Farrell, J., McConnell, K., & Brulle, R. (2019). Evidence-based strategies to combat scientific misinformation. *Nature Climate Change*, 9(3), 191-195. 10.1038/s41558-018-0368-6
- Farrelly, T., Stewart-Withers, R. R., & Dombrowski, K. (2014). 'Being there': mothering and absence/presence in the field. *Sites*, 11(2), 25-56. 10.11157/sites-vol11iss2id281
- Fass, P. S. (2007). *Children of a new world*. New York University Press.
- Feeny, S., Trinh, T., & Zhu, A. (2021). Temperature shocks and energy poverty: Findings from Vietnam. *Energy Economics*, 99, 105310. 10.1016/j.eneco.2021.105310
- Feldman, L., & Hart, P. S. (2016). Using Political Efficacy Messages to Increase Climate Activism. *Science Communication*, 38(1), 99-127. 10.1177/1075547015617941
- Festinger, L. (1976). *A theory of cognitive dissonance*. Stanford Univ. Press.
- Finlay, L. (1998). Reflexivity: an Essential Component for All Research? *The British Journal of Occupational Therapy*, 61(10), 453-456. 10.1177/030802269806101005
- Fleming, W., Hayes, A. L., Crosman, K. M., & Bostrom, A. (2021). Indiscriminate, Irrelevant, and Sometimes Wrong: Causal Misconceptions about Climate Change. *Risk Analysis*, 41(1), 157-178. 10.1111/risa.13587
- Flick, U. (2021). *Doing interview research: the essential how to guide*. Sage Publications.

Ford, H. V., Jones, N. H., Davies, A. J., Godley, B. J., Jambeck, J. R., Napper, I. E., Suckling, C. C., Williams, G. J., Woodall, L. C., & Koldewey, H. J. (2022). The fundamental links between climate change and marine plastic pollution. *The Science of the Total Environment*, *806*, 150392. 10.1016/j.scitotenv.2021.150392

Ford, J. D., King, N., Galappaththi, E. K., Pearce, T., McDowell, G., & Harper, S. L. (2020). The Resilience of Indigenous Peoples to Environmental Change. *One Earth*, *2*(6), 532-543. <https://doi.org/10.1016/j.oneear.2020.05.014>

Frank, D., Reichstein, M., Bahn, M., Thonicke, K., Frank, D., Mahecha, M. D., Smith, P., van der Velde, M., Vicca, S., Babst, F., Beer, C., Buchmann, N., Canadell, J. G., Ciais, P., Cramer, W., Ibrom, A., Miglietta, F., Poulter, B., Rammig, A., Zscheischler, J. (2015). Effects of climate extremes on the terrestrial carbon cycle: concepts, processes and potential future impacts. *Global Change Biology*, *21*(8), 2861-2880. 10.1111/gcb.12916

Frazier, T. G., Thompson, C. M., Dezzani, R. J., & Butsick, D. (2013). Spatial and temporal quantification of resilience at the community scale. *Applied Geography*, *42*, 95-107. 10.1016/j.apgeog.2013.05.004

Freeman, C., Stein, A., Hand, K., & van Heezik, Y. (2018). City Children's Nature Knowledge and Contact: It Is Not Just About Biodiversity Provision. *Environment and Behavior*, *50*(10), 1145-1171. 10.1177/0013916517732108

Freire, P., & Ramos, M. B. (1970). *Pedagogy of the oppressed*. Herder and herder.

Frh, H. (2017). Risk Perception as Media Effect. *The International Encyclopaedia of Media Effects*. John Wiley & Sons, Inc. 10.1002/9781118783764.wbieme0139

Garland, D. (2003). The Rise of Risk. In R. V. Ericson, & A. Doyle (Eds.), *Risk and Mortality* (pp. 48-83). University of Toronto Press.

Garner, S. (2008). *Writing on Drawing: Essays on Drawing Practice and Research*. University of Chicago Press.

Garschagen, M. (2016). Decentralizing urban disaster risk management in a centralized system? Agendas, actors and contentions in Vietnam. *Habitat International*, *52*, 43-49. 10.1016/j.habitatint.2015.08.030

Gbetibouo, G. A. (2009). *Understanding farmers' perceptions and adaptations to climate change and variability: The case of the Limpopo Basin, South Africa*. International Food Policy Research Institute.

General Secretary. (2013). *Resolution No. 29/2013-NQ/TW on "Fundamental and comprehensive innovation in education, serving industrialization and modernization in a socialist-oriented market economy during international integration*. General Secretary.

General Statistics Office of Vietnam. (2021). *Area, population and population density by province*. General Statistics Office of Vietnam. <https://www.gso.gov.vn/en/px-web/>

Giang, P. Q., & Vy, T. T. (2021). Will Climate Change Exacerbate the Economic Damage of Flood to Agricultural Production? A Case Study of Rice in Ha Tinh Province, Vietnam. *Frontiers in Environmental Science*, 910.3389/fenvs.2021.643947

Gibbs, B. (2014). Reconfiguring Bruner: Compressing the spiral curriculum. *Phi Delta Kappan*, 95(7), 41-44. 10.1177/003172171409500710

Giboreau, A., Schwartz, C., Morizet, D., & Meiselman, H. L. (2019). Measuring Food Waste and Consumption by Children Using Photography. *Nutrients*, 11(10), 2410. 10.3390/nu11102410

Giddens, A. (1993). *Social theory and modern sociology* (1. publ. 1987, repr. 1993 ed.). Policy Press.

Gifford, R. (2011). The Dragons of Inaction. *The American Psychologist*, 66(4), 290-302. 10.1037/a0023566

Gifford, R., Scannell, L., Kormos, C., Smolova, L., Biel, A., Boncu, S., Corral, V., Güntherf, H., Hanyu, K., Hine, D., Kaiser, F. G., Korpela, K., Lima, L. M., Mertig, A. G., Mira, R. G., Moser, G., Passafaro, P., Pinheiro, J. Q., Saini, S. & Uzzell, D. (2009). Temporal pessimism and spatial optimism in environmental assessments: An 18-nation study. *Journal of Environmental Psychology*, 29(1), 1-12. 10.1016/j.jenvp.2008.06.001

Glaser, B. G., & Strauss, A. L. (1974). *The discovery of grounded theory*. Aldine.

Glew, R. H. (2008). Promoting Collaborations Between Biomedical Scholars in the U.S. and Sub-Saharan Africa. *Experimental Biology and Medicine*, 233(3), 277-285. 10.3181/0707-MR-204

Global Center on Adaptation. (2021). *Living with water: climate adaptation in the world's deltas*. Rotterdam: Global Center on Adaptation.

Global Facility for Disaster Reduction and Recovery. (2017). *Toward Integrated Disaster Risk Management in Vietnam: Recommendations Based on the Drought and Saltwater Intrusion Crisis and the Case for Investing in Longer-Term Resilience*. World Bank, Washington, DC. <http://hdl.handle.net/10986/28871>

Goscha, C. (2016). *The Penguin history of modern Vietnam*. Penguin.

Graham, A. P., Phelps, R. A., Nhung, H. T. T., & Geeves, R. (2014). Researching with children in Vietnam: cultural, methodological and ethical considerations. *Qualitative Research*, 14(1), 37-60. 10.1177/1468794112455038

Graham, A., Powell, M. A., Taylor, N., Anderson, D., & Fitzgerald, R. (2013). *Ethical research involving children*. United Nations Children's Fund (UNICEF).

Gray, A. J. (2011). Worldviews. *International Psychiatry*, 8(3), 58-60.

Green, D. (2013). *What Can Vietnam's excellent schools teach us about education quality and equality?* Oxfam. <https://oxfamapps.org/fp2p/what-can-vietnams-excellent-schools-teach-us-about-education-quality-and-equality/>

Green, S. (1999). Child development: old themes, new directions. *Making Sense of Social Development* (pp. 258-276). Routledge. 10.4324/9781315006338-25

Grieshaber, S. (2001). *Embracing identities in early childhood education*. Teachers College Press.

Grimm, S. R. (2014). Understanding as Knowledge of Causes. *Virtue Epistemology Naturalized* (pp. 329-345). Springer International Publishing. 10.1007/978-3-319-04672-3_19

Groh, A. (2020). *Theories of culture*. Routledge, Taylor & Francis Group. 10.4324/9781315618562

Grosse, I. (2015). Gender Values in Vietnam—Between Confucianism, Communism, and Modernization. *Asian Journal of Peacebuilding*, 3(2), 253-272. 10.18588/201511.000045

- Gruman, J. A., Schneider, F. W., & Coutts, L. M. (2016). *Applied Social Psychology: Understanding and Addressing Social and Practical Problems* (3rd edn.). SAGE Publications. 10.4135/9781071800591
- Guillemin, M., & Drew, S. (2010). Questions of process in participant-generated visual methodologies. *Visual Studies*, 25(2), 175-188. 10.1080/1472586X.2010.502676
- Guillemin, M., & Gillam, L. (2004). Ethics, Reflexivity, and "Ethically Important Moments" in Research. *Qualitative Inquiry*, 10(2), 261-280. 10.1177/1077800403262360
- Guong, V., & Hoa, N. (2012). Aquaculture and Agricultural Production in the Mekong Delta and its Effects on Nutrient Pollution of Soil and Water. *The Mekong Delta System* (pp. 363-393). Springer Netherlands. 10.1007/978-94-007-3962-8_14
- Hackney, C. R., Darby, S. E., Parsons, D. R., Leyland, J., Best, J. L., Aalto, R., Nicholas, A. P., & Houseago, R. C. (2020). River bank instability from unsustainable sand mining in the lower Mekong River. *Nature Sustainability*, 10.1038/s41893-019-0455-3
- Hai, N. C. (2019). Traditional Cultural Values of the Vietnamese Nation. *European Journal of Humanities and Social Sciences*, 6, 70-73.
<https://journals.indexcopernicus.com/api/file/viewByFileId/919231.pdf>
- Hak, D., Nadaoka, K., & Le Phu, V. (2016). Socioeconomic Conditions and Perceptions of Environmental Risks in the Mekong Delta, Vietnam. *Coastal Management*, 44(6), 585-605. 10.1080/08920753.2016.1233796
- Hallegatte, S., Hallegatte, S., Bangalore, M., Bonzanigo, L., Fay, M., Kane, T., Narloch, U., Rozenberg, J., Treguer, D., & Vogt-Schilb, A. (2015). *Shock waves: managing the impacts of climate change on poverty*. THE WORLD BANK.
- Hallegatte, S., Rentschler, J., & Rozenberg, J. (2020). *Adaptation Principles: A Guide for Designing Strategies for Climate Change Adaptation and Resilience*. ().World Bank, Washington, DC. <http://hdl.handle.net/10986/34780>
- Halstead, F., Parsons, L. R., Dunhill, A., & Parsons, K. (2021). A journey of emotions from a young environmental activist. *Area*, 53(4), 708-717. 10.1111/area.12745

- Hammersley, M. (2018). What is ethnography? Can it survive? Should it? *Ethnography and Education*, 13(1), 1-17. 10.1080/17457823.2017.1298458
- Hampson, G., & Rich-Tolsma, M. (2015). Transformative Learning for Climate Change Engagement: Regenerating Perspectives, Principles, and Practice. *Integral review*, 11(3), 171-190. Retrieved from <https://doi.org/article/e8f2563d374e49c7827fb34e82bdfaf6>
- Hardman, C. (2016). Can there be an Anthropology of Children? *Childhood*, 8(4), 501-517. 10.1177/0907568201008004006
- Harman, K., & Bich, N. T. N. (2010). Reforming teaching and learning in Vietnam's higher education system. In G. Harman, M. Hayden & P. T. Nghi (Eds.) *Reforming higher education in Vietnam: reform, challenges and priorities*, (pp. 65-86), Springer.
- Harris, L. M., Boggiano, V., Nguyen, D. T., & Pham, L. H. L. (2013). Working in Partnership With Interpreters: Studies on Individuals Affected by HIV/AIDS in Vietnam. *Qualitative Health Research*, 23(10), 1408-1418. 10.1177/1049732313506964
- Harrison, A. K. (2018). *Ethnography*. Oxford University Press. 10.1093/oso/9780199371785.001.0001
- Harvey, P. (2013). *Anæ introduction to Buddhism* (2nd edn.). Cambridge University Press.
- Hassol, S., Torok, S., Lewis, S., & Luganda, P. (2016). (Un)Natural Disasters: Communicating Linkages Between Extreme Events and Climate Change. *World Meteorological Organization*, 65(2) <https://public.wmo.int/en/resources/bulletin/unnatural-disasters-communicating-linkages-between-extreme-events-and-climate>
- Hathaway, J. R. (2019). Climate Change, the Intersectional Imperative, and the Opportunity of the Green New Deal. *Environmental Communication*, 14(1), 13-22. 10.1080/17524032.2019.1629977
- Haviland, W. A., Prins, H. E. L., McBride, B., & Walrath, D. (2017). *Anthropology: The Human Challenge* (14th edn ed.). Cengage Learning.
- Hayhoe, K., Wuebbles, D. J., Easterling, D. R., Fahey, D. W., Doherty, S., Kossin, J. P., Sweet, W. V., Vose, R. S., & Wehner, M. F. (2018). Chapter 2 : Our Changing Climate. Impacts, Risks, and

Adaptation in the United States: The Fourth National Climate Assessment, Volume II.

<https://escholarship.org/uc/item/5dk8m3fz>

Hayton, B. (2010). *Vietnam*. Yale Univ. Press.

Heath, S., Charles, V., Crow, G., & Wiles, R. (2007). Informed consent, gatekeepers and go-betweeners: negotiating consent in child- and youth-orientated institutions. *British Educational Research Journal*, 33(3), 403-417. 10.1080/01411920701243651

Heck, H. E. (2015). *Environmental Education in Vietnam: A Case Study at Le Loi Elementary School*

Hellden, D., Andersson, C., Ebi, K., Nilsson, M., Friberg, P., & Alfven, T. (2021). Climate change and child health: a scoping review and an expanded conceptual framework. Paper presented at the , 26 9. <http://kipublications.ki.se/Default.aspx?queryparsed=id:147701628>

Helve, H. (2015). A longitudinal perspective on worldviews, values and identities. *Journal of Religious Education*, 63(2), 95-115. 10.1007/s40839-016-0021-5

Hendrickson, S. G., Harrison, T. C., Lopez, N. A., Zegarra-Coronado, A. G., & Ricks, T. (2013). Translation Cost, Quality, and Adequacy. *Journal of Nursing Scholarship*, 45(2), 185-191. 10.1111/jnu.12021

Hensengerth, O. (2018). *Working with communities to manage Mekong Delta floods*. The British Academy. <https://www.thebritishacademy.ac.uk/blog/working-with-communities-manage-mekong-delta-floods/>

Henshilwood, C. S., d'Errico, F., van Niekerk, K. L., Dayet, L., Queffelec, A., & Pollarolo, L. (2018). An abstract drawing from the 73,000-year-old levels at Blombos cave, South Africa. *Nature*, 562(7725), 115-118. 10.1038/s41586-018-0514-3

Herington, C., Scott, D., & Johnson, L. W. (2005). Focus group exploration of firm-employee relationship strength. *Qualitative Market Research*, 8(3), 256-276. 10.1108/13522750510603334

Herman, B. C., Feldman, A., & Vernaza-Hernandez, V. (2015). Florida and Puerto Rico Secondary Science Teachers' Knowledge and Teaching of Climate Change Science.

International Journal of Science and Mathematics Education, 15(3), 451-471. 10.1007/s10763-015-9706-6

Hien, B. N. (2021). The Issues In Educational Development In The Mekong Delta Of Vietnam. *Multicultural Education*, 7(8), 185-193. 10.5281/zenodo.5177159

Hoang, A., Pham, H., Nguyen, Y., Nguyen, L., Vuong, Q., Dam, M. Q., Tran, T., & Nguyen, T. (2020). Introducing a tool to gauge curriculum quality under Sustainable Development Goal 4: The case of primary schools in Vietnam. *International Review of Education*, 66(4), 457-485. 10.1007/s11159-020-09850-1

Hoang, C. V. (2017). *New Religions and State's Response to Religious Diversification in Contemporary Vietnam: Tensions from the Reinvention of the Sacred*. Springer International Publishing. 10.1007/978-3-319-58500-0

Hoang, L., Biesbroek, R., Tri, V. P. D., Kummu, M., Vliet, M., Leemans, R., Kabat, P. & Ludwig, F. (2018). Managing flood risks in the Mekong Delta: How to address emerging challenges under climate change and socioeconomic developments. *Ambio*, 1-15. 10.1007/s13280-017-1009-4

Hoang, P. V. L. (2010). Education for Sustainable Development in the Mekong Delta, Vietnam. *Capstone Collection*, 2344 <https://digitalcollections.sit.edu/capstones/2344>

Hofstede Insights. (2022). *Vietnam*. <https://www.hofstede-insights.com/country/vietnam/>

Hofstede, G. (1984). *Culture's consequences: International differences in work related values*. Sage.

Hofstede, G. (1991). *Cultures and organizations: Software of the Mind*. McGraw-Hill.

Hofstede, G. (2003). *Culture's consequences: comparing values, behaviors, institutions, and organizations across nations*. Sage Publications.

Hong Van, V. (2020). Origin of Worshipping the Mother Goddess in Vietnam. *Asian Research Journal of Arts & Social Sciences*, 19-29. 10.9734/arjass/2020/v10i230142

Horgan, D. (2017). Child participatory research methods: Attempts to go 'deeper'. *Childhood*, 24(2), 245-259. 10.1177/0907568216647787

Horne, M., Masley, S., & Allison-Love, J. (2017). *Drawing as a research tool: what does it add?* Paper presented at the RCN International Research Conference, Royal College of Nursing. <http://eprints.whiterose.ac.uk/118506>

Hornsey, M. J. (2021). The role of worldviews in shaping how people appraise climate change. *Current Opinion in Behavioral Sciences*, 42, 36-41. 10.1016/j.cobeha.2021.02.021

Hsiung, P. (2008). Treading A Different Path?: Thoughts on Childhood Studies in Chinese History. *Journal of the History of Childhood and Youth*, 1(1), 77-85. 10.1353/hcy.2008.0006

Human Rights Watch. (2019). *World Report 2020: Rights Trends in Vietnam*. Human Rights Watch. <https://www.hrw.org/world-report/2020/country-chapters/vietnam>

Huong, H. T. L., & Pathirana, A. (2013). Urbanization and climate change impacts on future urban flooding in Can Tho city, Vietnam. *Hydrology and Earth System Sciences*, 17(1), 379-394. 10.5194/hess-17-379-2013

Hwang, K. (1999). Filial piety and loyalty: Two types of social identification in Confucianism. *Asian Journal of Social Psychology*, 2, 163-183.

IPCC. (2021). *Climate Change 2021: The Physical Science Basis. Working Group I contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. (). Cambridge: Cambridge University Press. <https://publicinformationonline.com/download/229192>

Irvine, F. E., Lloyd, D., Jones, P. R., Allsup, D. M., Kakehashi, C., Ogi, A., & Okuyama, M. (2007). Lost in translation? Undertaking transcultural qualitative research. *Nurse Researcher*, 14(3), 46-59. 10.7748/nr2007.04.14.3.46.c6032

Islam, N., & Winkel, J. (2017). *Climate Change and Social Inequality*. New York: United Nations. 10.18356/2c62335d-en <http://dx.doi.org/10.18356/2c62335d-en>

Jackson, A. Y. (2017). Thinking Without Method. *Qualitative Inquiry*, 23(9), 666-674. 10.1177/1077800417725355

Jafarey, A. (2002). Conflict of interest issues in informed consent for research on human subjects: A South Asian perspective. *Science and Engineering Ethics*, 8(3), 353-362. 10.1007/s11948-002-0055-9

James, A., Jenks, C., & Prout, A. (1998). *Theorizing childhood*. Teacher's College Press.

Jeffrey, B., & Troman, G. (2004). Time for Ethnography. *British Educational Research Association, 30*(4), 535-548.

Johnston, D., Becker, J., McClure, J., Paton, D., McBride, S., Wright, K., Leonard, G., & Hughes, M. (2013). Community Understanding of, and Preparedness for, Earthquake and Tsunami Risk in Wellington, New Zealand. *Cities at Risk* (pp. 131-148). Springer Netherlands. 10.1007/978-94-007-6184-1_8

Jones, C. (2021). Western Centric Research Methods? *Journal of Asean Studies, 9*(1)10.21512/jas.v9i1.7380

Jones, L., Halstead, F., Parsons, K., Parsons, D., Le, H., Ha Bui, L. T., & Hackney, C. (2021). 2020-Vision: understanding climate (in)action through the emotional lens of loss. *Journal of the British Academy, 9*(s5), 29-68. 10.5871/jba/009s5.029

Joseph, F. I., Earland, J., & Ahmed, M. A. (2021). Experience of Conducting Sensitive Qualitative Research as a Cultural Outsider: Formulation of a Guide for Reflexivity. *International Journal of Qualitative Methods, 20*, 160940692110586. 10.1177/16094069211058616

Joseph, P. B. (2012). *Cultures of Curriculum*. Taylor and Francis. 10.4324/9780203826164

Kabir, M. I., Rahman, M. B., Smith, W., Lusha, M. A. F., Azim, S., & Milton, A. H. (2016). Knowledge and perception about climate change and human health: findings from a baseline survey among vulnerable communities in Bangladesh. *BMC Public Health, 16*(1), 266. 10.1186/s12889-016-2930-3

Käkönen, M. (2008). Mekong Delta at the Crossroads: More Control or Adaptation? *Ambio, 37*(3), 205-212. 10.1579/0044-7447(2008)37[205:MDATCM]2.0.CO;2

Kane, C. (2008). The Development of Participatory Techniques: Facilitating Children's Views about Decisions Which Affect Them. *Research With Children* (pp. 141-171). Routledge. 10.4324/9780203964576-13

Kara, H. (2015). *Creative research methods in the social sciences*. Policy Press. 10.2307/j.ctt1t88xn4

Karen O'Brien, Bronwyn Hayward, & Fikret Berkes. (2009). Rethinking Social Contracts. *Ecology and Society*, 14(2), 12. 10.5751/ES-03027-140212

Karnow, S. (1988). *Vietnam: A History*. Penguin Books.

Kelley, L. C. (2006). "Confucianism" in Vietnam: A State of the Field Essay. *Journal of Vietnamese Studies*, 1(1-2), 314-370. 10.1525/vs.2006.1.1-2.314

Kemp, S. (2020). *DIGITAL 2020: VIETNAM*. <https://datareportal.com/reports/digital-2020-vietnam>

Kesteren, M. (2013). *Schemas in the brain: Influences of prior knowledge on learning, memory, and education*, Radboud University, <https://www.narcis.nl/publication/RecordID/oai:repository.ubn.ru.nl:2066%2F105839>

Kiem, A. (2017). *Analysis of historical trends, variability and changes in hydroclimatic conditions for the Lower Mekong Basin*. Callaghan: Mekong River Commission.

Kien, T. N., & Heo, Y. (2008). Doi Moi Policy and Socio-Economic Development in Vietnam, 1986–2005. *International Area Studies Review*, 11(1), 205-232. 10.1177/223386590801100112

Kieu, T. K., Singer, J., & Gannon, T. J. (2016). Education for sustainable development in Vietnam: lessons learned from teacher education. *International Journal of Sustainability in Higher Education*, 17(6), 853-874. 10.1108/IJSHE-05-2015-0098

Kim, K. H., & Hua, Y. (2020). Creativity and Confucianism (Asian Culture). *Encyclopaedia of Creativity, Invention, Innovation and Entrepreneurship* (pp. 546-551). Springer International Publishing. 10.1007/978-3-319-15347-6_18

Kim, N. C. (2015). *The origins of ancient Vietnam*. Oxford University Press.

Kim, S. H. (2020). Science as an Ethical Mode of Life: On the Centenary of Max Weber's Wissenschaft als Beruf. *Social Epistemology*, 34(2), 142-150. 10.1080/02691728.2019.1705936

Kirk, S. (2007). Methodological and ethical issues in conducting qualitative research with children and young people: A literature review. *International Journal of Nursing Studies*, 44(7), 1250-1260. 10.1016/j.ijnurstu.2006.08.015

- Kitzinger, J. (1999). Researching risk and the media. *Health, Risk & Society*, 1(1), 55-69. 10.1080/13698579908407007
- Kılınc, A., Boyes, E., & Stanisstreet, M. (2011). Turkish School Students and Global Warming: Beliefs and Willingness to Act. *Eurasia Journal of Mathematics, Science and Technology Education*, 7(2)10.12973/ejmste/75187
- Kleinhans, M. G., Buskes, C. J. J., & De Regt, H. W. (2010). Philosophy of Earth Science. In F. Allhoff (Ed.), *Philosophies of the Sciences: A Guide* (pp. 213-236). Blackwell.
- Klingelhöfer, D., Müller, R., Braun, M., Brüggmann, D., & Groneberg, D. A. (2020). Climate change: Does international research fulfill global demands and necessities? *Environmental Sciences Europe*, 32(1), 137. 10.1186/s12302-020-00419-1
- Knight, H. (2019). Centering the problem child: Temporality, colonialism, and theories of the child. *Global Studies of Childhood*, 9(1), 72-83. 10.1177/2043610618825005
- Kondolf, G. M., Schmitt, R. J. P., Carling, P., Darby, S., Arias, M., Bizzi, S., Castelletti, A., Cochrane, T. A., Gibson, S., Kumm, M., Oeurng, C., Rubin, Z., & Wild, T. (2018). Changing sediment budget of the Mekong: Cumulative threats and management strategies for a large river basin. *Science of the Total Environment*, 625, 114-134. 10.1016/j.scitotenv.2017.11.361
- Konisky, D. M., Hughes, L., & Kaylor, C. H. (2015). Extreme weather events and climate change concern. *Climatic Change*, 134(4), 533-547. 10.1007/s10584-015-1555-3
- Kousky, C. (2016). Impacts of Natural Disasters on Children. *The Future of Children*, 26(1), 73-92. 10.1353/foc.2016.0004
- Krammer, M., & Adams, T. (2018). Ethnography. In M. Allen (Ed.), *The SAGE Encyclopedia of Communication Research Methods* (pp. 458-461). Sage Publications Ltd.
- Krogstad, D. J., Diop, S., Diallo, A., Mzayek, F., Keating, J., Koita, O. A., & Touré, Y. T. (2010). Informed Consent in International Research: The Rationale for Different Approaches. *The American Journal of Tropical Medicine and Hygiene*, 83(4), 743-747. 10.4269/ajtmh.2010.10-0014

- Lan, P. T., & Jones, N. (2007). *Education for All in Vietnam: high enrolment, but problems of quality remain*. Oxford: Young Lives.
- Lane, H. W., Maznevski, M. L., Mendenhall, M. E., & McNett, J. (2009). *The Blackwell handbook of global management*. Wiley.
- Lawson, D. F., Stevenson, K. T., Peterson, M. N., Carrier, S. J., Strnad, R., & Seekamp, E. (2018). Intergenerational learning: Are children key in spurring climate action? *Global Environmental Change*, 53, 204-208. 10.1016/j.gloenvcha.2018.10.002
- Le Blanc, A. (2012). Remembering Disasters: the Resilience Approach. *The Journal of Art Theory & Practice*, 14(14), 217-245.
http://click.ndsl.kr/servlet/LinkingDetailView?cn=JAKO201216837990975&dbt=JAKO&org_code=O481&site_code=SS1481&service_code=01
- Le Coq, J., Trébuil, G., & Dufumier, M. (2001). *History of rice production in the Mekong Delta*. s.n.
- Le Dang, H., Li, E., Nuberg, I., & Bruwer, J. (2014). *Farmers' Perceived Risks of Climate Change and Influencing Factors: A Study in the Mekong Delta, Vietnam*. Springer Science and Business Media LLC. 10.1007/s00267-014-0299-6
- Le Thi Lan (2016). Common Root of Three Religions in History of Vietnamese Thoughts. *유학연구*, 36, 535-561. <http://www.earticle.net/Article.aspx?sn=290869>
- Leavy, P. (2020). *Method meets art* (3rd edn.). The Guilford Press.
- LeCompte, M. D., & Schensul, J. J. (2015). *Ethics in ethnography*. Altamira Press.
- Lee, J. C., & Gough, N. (2021). *Transnational education and curriculum studies*. Routledge. 10.4324/9781351061629
- Lee, K., & Barnett, J. (2020). 'Will polar bears melt?' A qualitative analysis of children's questions about climate change. *Public Understanding of Science*, 29(8), 868-880. 10.1177/0963662520952999

- Lee, K., Gjersoe, N., O'Neill, S., & Barnett, J. (2020). Youth perceptions of climate change: A narrative synthesis. *Wiley Interdisciplinary Reviews. Climate Change*, 11(3), n/a. 10.1002/wcc.641
- Lee, M., & Roberts, R. (2009). *Cross-cultural selling for dummies*. Wiley.
- Legare, C. H. (2019). The Development of Cumulative Cultural Learning. *Annual Review of Developmental Psychology*, 1(1), 119-147. 10.1146/annurev-devpsych-121318-084848
- Leitold, R., Garschagen, M., Tran, V., & Revilla Diez, J. (2021). Flood risk reduction and climate change adaptation of manufacturing firms: Global knowledge gaps and lessons from Ho Chi Minh City. *International Journal of Disaster Risk Reduction*, 61, 102351. 10.1016/j.ijdr.2021.102351
- Leung, S., Bingham, B., & Davies, M. (2010). *Globalization and Development in the Mekong Economies*. Edward Elgar Publishing. 10.4337/9781849806954
- Levey, H. (2009). "Which One Is Yours?": Children and Ethnography. *Qualitative Sociology*, 32(3), 311-331. 10.1007/s11133-009-9130-8
- Levinson, D. (2002). *Encyclopedia of modern Asia*. Scribner's Sons.
- Li, H., Bui, V. Q., & Cao, Y. (2018). One country, two cultures: Implicit space–time mappings in Southern and Northern Vietnamese. *European Journal of Social Psychology*, 48(4), 560-565. 10.1002/ejsp.2356
- Lieberman, N., & Förster, J. (2009). Distancing from experienced self: how global versus local perception affects estimation of psychological distance. *Journal of Personality and Social Psychology*, 97(1), 203-216.
<https://www.narcis.nl/publication/RecordID/oai:dare.uva.nl:publications%2F755fa61b-e2c0-4e97-b9ff-bacfd3cfe6e>
- Lin, T. (2015). Governing Natural Disasters: State Capacity, Democracy, and Human Vulnerability. *Social Forces*, 93(3), 1267-1300. 10.1093/sf/sou104
- Lindon, J., & Brodie, K. (2016). *Understanding child development* (4th edn.). Hodder Education.

Ling, F. H., Tamura, M., Yasuhara, K., Ajima, K., & Trinh, C. V. (2015). Reducing flood risks in rural households: survey of perception and adaptation in the Mekong delta. *Climatic Change*, 132(2), 209-222. 10.1007/s10584-015-1416-0

Lippard, C. N., La Paro, K. M., Rouse, H. L., & Crosby, D. A. (2017). A Closer Look at Teacher–Child Relationships and Classroom Emotional Context in Preschool. *Child & Youth Care Forum*, 47(1), 1-21. 10.1007/s10566-017-9414-1

Literat, I. (2013). “A Pencil for your Thoughts”: Participatory Drawing as a Visual Research Method with Children and Youth. *International Journal of Qualitative Methods*, 12(1), 84-98. 10.1177/160940691301200143

Littlejohn, M., Coleman, M., Bos, S. & Fisher, J. (2019). *From Townsville to Tuvalu: health and climate change in Australia and the Asia Pacific region*. Global Health Alliance (Australia).

Retrieved from Informit Analysis and Policy Observatory (APO)

<https://search.informit.org/documentSummary;res=APO;dn=250786>

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Littlejohn, M., Coleman, M., Bos, S. & Fisher, J. (2019). *From Townsville to Tuvalu: health and climate change in Australia and the Asia Pacific region*. Global Health Alliance (Australia).

Retrieved from Informit Analysis and Policy Observatory (APO)

<https://search.informit.org/documentSummary;res=APO;dn=250786>

Liu, C. (2014). Chinese, Why Don't You Show Your Anger? — A Comparative Study between Chinese and Americans in Expressing Anger. *International Journal of Social Science and Humanity*, 4(3), 206-209. 10.7763/IJSSH.2014.V4.347

Liu, S., Roehrig, G., Bhattacharya, D. & Varma, K. (2015). In-service Teachers' Attitudes, Knowledge and Classroom Teaching of Global Climate Change. *Science Educator*, 24(1), 12.

<https://search.proquest.com/docview/1698103036>

Lohmann, L. (2011). Capital and Climate Change. *Development and Change*, 42(2), 649-668.

10.1111/j.1467-7660.2011.01700.x

Lombardi, D., & Sinatra, G. M. (2010). College Students' Perceptions About the Plausibility of Human-Induced Climate Change. *Research in Science Education (Australasian Science Education Research Association)*, 42(2), 201-217. 10.1007/s11165-010-9196-z

- London, J., & London, J. D. (2014). *Politics in Contemporary Vietnam*. Palgrave Macmillan. 10.1057/9781137347534
- Longhurst, R. (2016). Semi-Structured Interviews and Focus Groups. In N. Clifford, M. Cope, T. Gillespie & S. French (Eds.), *Key Methods in Geography* (3rd edn.) Sage.
- Lorenzoni, I., Nicholson-Cole, S., & Whitmarsh, L. (2007). Barriers perceived to engaging with climate change among the UK public and their policy implications. *Global Environmental Change*, 17(3), 445-459. 10.1016/j.gloenvcha.2007.01.004
- Lujala, P., Lein, H., & Rød, J. K. (2015). Climate change, natural hazards, and risk perception: the role of proximity and personal experience. *Local Environment*, 20(4), 489-509. 10.1080/13549839.2014.887666
- Lundy, L. (2007). 'Voice' is not enough: conceptualising Article 12 of the United Nations Convention on the Rights of the Child. *British Educational Research Journal*, 33(6), 927-942. 10.1080/01411920701657033
- Lundy, L., & McEvoy, L. (2012). Children's rights and research processes: Assisting children to (in)formed views. *Childhood*, 19(1), 129-144. 10.1177/0907568211409078
- Lundy, L., McEvoy, L., & Byrne, B. (2011). Working With Young Children as Co-Researchers: An Approach Informed by the United Nations Convention on the Rights of the Child. *Early Education & Development*, 22(5), 714-736. 10.1080/10409289.2011.596463
- Luong, H. V. (2003). *Postwar Vietnam: dynamics of a transforming society*. Rowman & Littlefield Publishing.
- Luong, H. V. (2006). Structure, Practice, and History: Contemporary Anthropological Research on Vietnam. *Journal of Vietnamese Studies (Berkeley, Calif.)*, 1(1-2), 371-409. 10.1525/vs.2006.1.1-2.371
- Luu, C., Von Meding, J., & Kanjanabootra, S. (2017). Analysing flood fatalities in Vietnam using national disaster database and tree-based methods. *Natural Hazards and Earth System Sciences Discussions*, 1-32. 10.5194/nhess-2017-155
- Lyall, C. (2019). *Being an Interdisciplinary Academic: How Institutions Shape University Careers*. Springer International Publishing. 10.1007/978-3-030-18659-3

Lyon, P. (2019). *Using drawing in visual research: materializing the invisible*. Sage Publications Ltd.

Maccoby, E. (1992). The role of parents in the socialization of children: an historical overview. *Developmental Psychology*, 28(6), 1006-1017. 10.1037//0012-1649.28.6.1006

MacDonald, K. (2006). Sustaining the Environmental Rights of Children: An Exploratory Critique. <http://hdl.handle.net/10044/1/65581>

Maglio, F., & Pherali, T. (2020). Ethical reflections on children's participation in educational research during humanitarian crises. *Research Ethics Review*, 16(1-2), 1-19. 10.1177/1747016119898409

Maher, C., Hadfield, M., Hutchings, M., & de Eyto, A. (2018). Ensuring Rigor in Qualitative Data Analysis: A Design Research Approach to Coding Combining NVivo with Traditional Material Methods. *International Journal of Qualitative Methods*, 17(1), 160940691878636. 10.1177/1609406918786362

Maiella, R., La Malva, P., Marchetti, D., Pomarico, E., Di Crosta, A., Palumbo, R., Cetara, L., Di Domenico, A., & Verrocchio, M. C. (2020). The Psychological Distance and Climate Change: A Systematic Review on the Mitigation and Adaptation Behaviors. *Frontiers in Psychology*, 11, 568899. 10.3389/fpsyg.2020.568899

Mair, M., & Kierans, C. (2007). Descriptions as data: developing techniques to elicit descriptive materials in social research. *Visual Studies*, 22(2), 120-136. 10.1080/14725860701507057

Malin, S. A., & Ryder, S. S. (2018). Developing deeply intersectional environmental justice scholarship. *Environmental Sociology*, 4(1), 1-7. 10.1080/23251042.2018.1446711

Malone, K. (2007). The bubble-wrap generation: children growing up in walled gardens. *Environmental Education Research*, 13(4), 513-527.

Mannay, D. (2013). 'Who put that on there ... why why why?' Power games and participatory techniques of visual data production. *Visual Studies*, 28(2), 136-146. 10.1080/1472586X.2013.801635

Mannay, D. (2016). *Visual, Narrative and Creative Research Methods* (First edn). Routledge. 10.4324/9781315775760

- Manohar, N., Liamputtong, P., Bhole, S., & Arora, A. (2019). Researcher Positionality in Cross-Cultural and Sensitive Research. *Handbook of Research Methods in Health Social Sciences* (pp. 1601-1616). Springer Singapore. 10.1007/978-981-10-5251-4_35
- Marchezini, V., & Londe, L. R. (2020). Looking to future perceptions about climate change in Brazil: What children's teachers think, learn and teach about? *Natural Hazards*, 104(3), 2325-2337. 10.1007/s11069-020-04274-4
- Marshall, C., Byrne, B., & Lundy, L. (2015). *Face to face: children and young people's right to participate in public decision-making*. Oxford University Press.
- Martiskainen, M., Axon, S., Sovacool, B. K., Sareen, S., Furszyfer Del Rio, D., & Axon, K. (2020). Contextualizing climate justice activism: Knowledge, emotions, motivations, and actions among climate strikers in six cities. *Global Environmental Change*, 65, 102180. <https://doi.org/10.1016/j.gloenvcha.2020.102180>
- Mason, J., & Watson, E. (2014). Researching Children: Research on, with, and by Children. *Handbook of Child Well-Being* (pp. 2757-2796). Springer Netherlands. 10.1007/978-90-481-9063-8_109
- Masseman, V. L. (2007). Culture and Education. In R. F. Arnove, & C. A. Torres (Eds.), *Comparative Education: The Dialectic of the Global and the Local (3rd edn.)* (pp. 101-116). Rowman and Littlefield Publishers Inc.
- Masuda, J. R., & Garvin, T. (2006). Place, Culture, and the Social Amplification of Risk. *Risk Analysis*, 26(2), 437-454. 10.1111/j.1539-6924.2006.00749.x
- Matsumoto, D. (1996). *Culture and Psychology*. Brooks/Cole Publishing Company.
- Matthew d'Ancona. (2017). *Post truth: the new war on truth and how to fight back*. Ebury Press.
- Mavin, S., & Corlett, S. (2018). *Reflexivity and Researcher Positionality*. SAGE Publications Ltd. 10.4135/9781526430212.n23
- Mayer, R. E. (2002). Understanding Conceptual Change: A Commentary. *Reconsidering Conceptual Change: Issues in Theory and Practice* (pp. 101-111). Springer Netherlands. 10.1007/0-306-47637-1_5

McCombs, M. (2014). *Setting the Agenda: Mass Media and Public Opinion* (2nd ed.). Polity Press.

Mckinley, J., Adaro, C., Setiyono, T., Thang, T. C., Huong, D. L., Quicho, E., Sheinkman, M., & Wassmann, R. (2016). *Gender differences in climate change perception and adaptation strategies: A case study on three provinces in Vietnam's Mekong River Delta*. CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS). 10.13140/rg.2.2.32558.31045

Mekong River Commission. (1995). *Mekong Agreement and procedural Rules*. Mekong River Commission.

Mekong River Commission. (2015). *Annual Mekong Flood Report 2011*. Mekong River Commission.

Mekong River Commission. (2021). *Social Impact Monitoring and Vulnerability Assessment 2018: Report on 2018 Baseline Survey of the Lower Mekong Mainstream and Floodplain Areas*. Vientiane: Mekong River Commission.

Mekong River Commission. (2022a). *Climate Change*. <https://www.mrcmekong.org/our-work/topics/climate-change/>

Mekong River Commission. (2022b). *Mekong River Commission Time-Series Inventory*. Mekong River Commission. <https://portal.mrcmekong.org/time-series/water-level>

Meo, A. I. (2010). Picturing Students' Habitus: The Advantages and Limitations of Photo-Elicitation Interviewing in a Qualitative Study in the City of Buenos Aires. *International Journal of Qualitative Methods*, 9(2), 149-171. 10.1177/160940691000900203

Merriam, S. B., Johnson-Bailey, J., Lee, M., Kee, Y., Ntseane, G., & Muhamad, M. (2001). Power and positionality: negotiating insider/outsider status within and across cultures. *International Journal of Lifelong Education*, 20(5), 405-416. 10.1080/02601370110059537

Mestechkina, T., Son, N. D., & Shin, J. Y. (2013). Parenting in Vietnam. *Parenting Across Cultures* (pp. 47-57). Springer Netherlands. 10.1007/978-94-007-7503-9_5

Metcalfe, J., & Riedlinger, M. (2020). Public understanding of science. *The Routledge Handbook of Language and Science* (1st ed., pp. 32-46). Routledge. 10.4324/9781351207836-4

- Meyer, H., & Delft, R. P. (2016). *A plea for putting the issue of Urbanizing Deltas on the New Urban Agenda*. TU Delft / Delta Alliance. 10.13140/RG.2.2.18249.54887
<https://search.datacite.org/works/10.13140/RG.2.2.18249.54887>
- Meyer, J. W. (1977). The effects of education as an institution. *The American journal of sociology*, 83(1), 55-77. Retrieved from <http://www.econis.eu/PPNSET?PPN=476614589>
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.
- Michaud, A. (2017). *Tone in Yongning Na: Lexical tones and morphotonology*. Language Science Press. 10.5281/zenodo.439004
- Milěř, T., Hollan, J., Válek, J., & Sládek, P. (2012). Teachers' Understanding of Climate Change. *Procedia, Social and Behavioral Sciences*, 69, 1437-1442. 10.1016/j.sbspro.2012.12.083
- Miles, B., & Morse, S. (2007). The role of news media in natural disaster risk and recovery. *Ecological Economics*, 63(2), 365-373. 10.1016/j.ecolecon.2006.08.007
- Miles, S., & Howes, A. (2015). *Photography in Educational Research*. Routledge. 10.4324/9780203740316
- Mill, J. E., & Ogilvie, L. D. (2003). Establishing methodological rigour in international qualitative nursing research: a case study from Ghana. *Journal of Advanced Nursing*, 41(1), 80-87. 10.1046/j.1365-2648.2003.02509.x
- Miller, T. E., & Shahriari, A. (2015). Southeast Asia: Vietnam, Thailand, Laos and Northeast Thailand, Indonesia (Java). *World Music* (1st ed., pp. 90-119). Routledge. 10.4324/9781315871066-6
- Minderhoud, P. S. J., Coumou, L., Erkens, G., Middelkoop, H., & Stouthamer, E. (2019). Mekong delta much lower than previously assumed in sea-level rise impact assessments. *Nature Communications*, 10(1), 3847-13. 10.1038/s41467-019-11602-1
- Minderhoud, P. S. J., Erkens, G., Pham, V. H., Bui, V. T., Erban, L., Kooi, H., & Stouthamer, E. (2017). Impacts of 25 years of groundwater extraction on subsidence in the Mekong delta, Vietnam. *Environmental Research Letters*, 12(6), 064006. 10.1088/1748-9326/aa7146

- Minh Quang, N., & de Wit, J. (2020). Transformative learning and grassroots climate adaptation: case studies in Vietnam's Mekong delta. *Nature Conservation*, 39(6), 19-43. 10.3897/natureconservation.39.29551
- Ministry of Natural Resources and Environment. (2019). *The Third National Communication of Vietnam to the United Nations Framework Convention on Climate Change*. Hanoi: Ministry of Natural Resources and Environment.
- Minkov, M., & Hofstede, G. (2013). *Cross-cultural analysis: The science and art of comparing the world's modern societies and their cultures*. Sage Publications.
- Mishra, A. K., & Pede, V. O. (2017). Perception of climate change and adaptation strategies in Vietnam. *International Journal of Climate Change Strategies and Management*, 9(4), 501-516. 10.1108/IJCCSM-01-2017-0014
- Mitchell, C., Theron, L., Stuart, J., Smith, A., & Campbell, Z. (2011). Drawings as Research Method. *Picturing Research* (pp. 19-36). Sense Publishers. 10.1007/978-94-6091-596-3_2
- Modgil, S., Singh, R. K., Gupta, S., & Dennehy, D. (2021). A Confirmation Bias View on Social Media Induced Polarisation During Covid-19. *Information Systems Frontiers*, 1-25. 10.1007/s10796-021-10222-9
- MOET. (2015). *Education for All 2015 National Review Report: Viet Nam*. Hanoi: MOET. https://data.opendevelopmentmekong.net/library_record/bao-cao-qu-c-gia-giao-d-c-cho-m-i-ngu-i-c-a-vi-t-nam
- MOET. (2018). *Chương trình giáo dục phổ thông mới [New general education curriculum]*. Ha Noi: Ministry of Education and Training. Hanoi: MOET. <https://moet.gov.vn/tintuc/Pages/tin-hoat-dong-cua-bo.aspx?ItemID=5755>
- MOET. (2021). *MOET Functions and Tasks*. <https://en.moet.gov.vn/about/Pages/index.aspx?ItemID=3931>
- Moghaddam, A. (2006). Coding issues in grounded theory. *Issues in Educational Research*, 16(1), 52-66. <https://search.informit.org/documentSummary;res=AEIPT;dn=150835>
- Molony, T., & Hammett, D. (2007). The Friendly Financier: Talking Money with the Silenced Assistant. *Human Organization*, 66(3), 292-300. 10.17730/humo.66.3.74n7x53x7r40332h

Monkhouse, L., & Birkin, F. (2019). Traditional cultures for multiple values and enhanced sustainability: a case study of Vietnam. Paper presented at the 25th International Sustainable Development Research Conference. International Sustainable Development Research Society. <http://eprints.whiterose.ac.uk/151387>

Moore, R. (2000). *Teaching and Learning: Pedagogy, Curriculum and Culture*. Routledge Falmer.

Morgan, M., Gibbs, S., Maxwell, K., & Britten, N. (2002). Hearing children's voices: methodological issues in conducting focus groups with children aged 7-11 years. *Qualitative Research*, 2(1), 5-20. 10.1177/1468794102002001636

Morrison, H. (2012). *The Global History of Childhood Reader*. Routledge. 10.4324/9780203723753

Morrow, V. (2013). Practical Ethics in Social Research with Children and Families in Young Lives: A Longitudinal Study of Childhood Poverty in Ethiopia, Andhra Pradesh (India), Peru and Vietnam. *Methodological Innovations*, 8(2), 21-35. 10.4256/mio.2013.011

Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification Strategies for Establishing Reliability and Validity in Qualitative Research. *International Journal of Qualitative Methods*, 1(2), 13-22. 10.1177/160940690200100202

Mort, M., Walker, M., Lloyd, W., Bingley, A., & Howells, V. (2016). *Children, Young People and Flooding: Recovery and Resilience*. Lancaster: Lancaster University.

Moss, G. (2021). *Vietnam* (7th edn.). Routledge. 10.4324/9781003111955

Mukeredzi, T. G. (2012). Qualitative Data Gathering Challenges in a Politically Unstable Rural Environment: A Zimbabwean Experience. *International Journal of Qualitative Methods*, 11(1), 1-11. 10.1177/160940691201100101

Mukuna, T. E., & Manyasi, B. N. (2015). Mainstreaming Disaster Risk Reduction into Millennium Development Goals: A Proposed Framework for Post 2015. *Educational Research*, 6(3), 55-73. <http://dx.doi.org/10.14303/er.2015.024>

Murray, G. (2021). *Vietnam - The essential guide to customs and culture*. Kuperard.

Murray, L., & Nash, M. (2017). The Challenges of Participant Photography: A Critical Reflection on Methodology and Ethics in Two Cultural Contexts. *Qualitative Health Research*, 27(6), 923-937. 10.1177/1049732316668819

Muttarak, R., & Lutz, W. (2014). Is Education a Key to Reducing Vulnerability to Natural Disasters and hence Unavoidable Climate Change? *Ecology and Society*, 19(1), 42. 10.5751/ES-06476-190142

Nacol, E. C. (2016). *An age of risk*. Princeton University Press.

Napier, N. K. (2003). Bridging Vietnam and America: Cooperation between the National Economics University and Boise State University. Paper presented at the *Business Education Systems and Emerging Market Economies: Trends and Prospects Conference*,

Napier, N., Hosley, S., & Nguyen, T. V. (2004). Conducting Qualitative Research in Vietnam: Ethnography, Grounded Theory and Case Study Research. *Handbook of Qualitative Research Methods for International Business*. Edward Elgar Publishing. 10.4337/9781781954331.00039

NASA. (2005). *What's the Difference Between Weather and Climate?* NASA.
https://www.nasa.gov/mission_pages/noaa-n/climate/climate_weather.html

NASA. (2019a). *A Degree of Concern: Why Global Temperatures Matter*.
<https://climate.nasa.gov/news/2865/a-degree-of-concern-why-global-temperatures-matter/>.

NASA. (2019b). *Can Climate Affect Earthquakes, Or Are the Connections Shaky?* NASA.
<https://climate.nasa.gov/news/2926/can-climate-affect-earthquakes-or-are-the-connections-shaky/>

NASA. (2021). *2020 Tied for Warmest Year on Record, NASA Analysis Shows*.
<https://www.nasa.gov/press-release/2020-tied-for-warmest-year-on-record-nasa-analysis-shows>.

National Geographic. (2021). *Confucianism* .
<https://www.nationalgeographic.org/encyclopedia/confucianism/>.

Neenan, E. E., Roche, J., & Bell, L. (2021). Time to Listen: Children's Voice in Geoscience Education Research. *Frontiers in Environmental Science*, 910.3389/fenvs.2021.669430

- Neuman, W. L. (2016). *Social research methods* (8th edn). Pearson.
- Neumayer, E., & Plümpner, T. (2007). The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981-2002. *Annals of the Association of American Geographers*, 97(3), 551-566. 10.1111/j.1467-8306.2007.00563.x
- Newman, T. P., Nisbet, E. C., & Nisbet, M. C. (2018). Climate change, cultural cognition, and media effects: Worldviews drive news selectivity, biased processing, and polarized attitudes. *Public Understanding of Science (Bristol, England)*, 27(8), 985-1002. 10.1177/0963662518801170
- Ngo, C. C., Poortvliet, P. M., & Feindt, P. H. (2019). Drivers of flood and climate change risk perceptions and intention to adapt: an explorative survey in coastal and delta Vietnam. *Journal of Risk Research*, 23(4), 424-446. 10.1080/13669877.2019.1591484
- Ngo, C. C., Poortvliet, P. M., & Feindt, P. H. (2020). Examining the effectiveness of climate change communication with adolescents in Vietnam: The role of message congruency. *Water*, 12(11), 3016. 10.3390/w12113016
- Ngueutsa, R., & Kouabenan, D. R. (2017). Fatalistic beliefs, risk perception and traffic safe behaviors. *Revue Européenne De Psychologie Appliquée*, 67(6), 307-316. 10.1016/j.erap.2017.10.001
- Nguyen, D. T. (2014). From Blog to Facebook Your Voice Matter? An Insight into the Surge of Citizen Media in Vietnam. *SSRN Electronic Journal*, 10.2139/ssrn.2526109
- Nguyen, D., K., Ancev, T., & Randall, A. (2019). Evidence of climatic change in Vietnam: Some implications for agricultural production. *Journal of Environmental Management*, 231, 524-545. <https://doi.org/10.1016/j.jenvman.2018.10.011>
- Nguyen, L. A., Truong, M. H., Verreth, J. A. J., Leemans, R., Bosma, R. H., & Silva, D., S.S. (2015). Exploring the climate change concerns of striped catfish producers in the Mekong Delta, Vietnam. *SpringerPlus*, 4(1), 1-8. 10.1186/s40064-015-0822-0
- Nguyen, M. N., Nguyen, P. T. B., Van, T. P. D., Phan, V. H., Nguyen, B. T., Pham, V. T., & Nguyen, T. H. (2020a). An understanding of water governance systems in responding to extreme droughts in the Vietnamese Mekong Delta. *International Journal of Water Resources Development, ahead-of-print(ahead-of-print)*, 1-22. 10.1080/07900627.2020.1753500

Nguyen, Q. (2016). The Vietnamese Values System: A Blend of Oriental, Western and Socialist Values. *International Education Studies*, 9(12), 32. 10.5539/ies.v9n12p32

Nguyen, Q., Hens, L., MacAlister, C., Johnson, L., Lebel, B., Bach Tan, S., Manh Nguyen, H., Nguyen, T., & Lebel, L. (2018). Theory of Reasoned Action as a Framework for Communicating Climate Risk: A Case Study of Schoolchildren in the Mekong Delta in Vietnam. *Sustainability (Basel, Switzerland)*, 10(6), 2019. 10.3390/su10062019

Nguyen, T. L. H. (2012). The challenges of developing research resources for leading Vietnamese universities. *Higher Education Management and Policy*, 24(2), 115-130. 10.1787/hemp-24-5k3w5pdwd7g4

Nguyen, T. M. P. (2011). *Confucianism and moral reasoning in Vietnamese intellectually gifted adolescents* <https://trove.nla.gov.au/work/162001503>

Nguyen, T. P. (2018). Education for Sustainable Development in Vietnam: exploring the geography teachers' perspectives. *International Research in Geographical and Environmental Education*, 27(4), 341-356. 10.1080/10382046.2017.1366204

Nguyen, T. P. (2019). Searching for education for sustainable development in Vietnam. *Environmental Education Research*, 25(7), 991-1003. 10.1080/13504622.2019.1569202

Nguyen, T. Q. T. (2015). Conducting semi-structured interviews with the Vietnamese. *Qualitative Research Journal*, 15(1), 35-46. 10.1108/QRJ-04-2014-0012

Nguyen, T. Q. T. (2017). Maintaining teachers' face in the context of change: results from a study of Vietnamese college lecturers' perceptions of face. *Teachers and Teaching, Theory and Practice*, 23(1), 78-90. 10.1080/13540602.2016.1203779

Nguyen, T. Q. T., & Simkin, K. (2017). Gender discrimination in Vietnam: the role of personal face. *Journal of Gender Studies*, 26(6), 609-617. 10.1080/09589236.2015.1095083

Nguyen, V. H., Nguyen, V. B. H., Vu, T. M. H., Hoang, T. K. H., & Nguyen, T. M. N. (2020b). Vietnamese Education System and Teacher Training: Focusing on Science Education. *Asia-Pacific Science Education*, 6(1), 179-206. 10.1163/23641177-BJA10001

Nguyen, V. K., Tran, A. T., Tran, V. H., Vo, D. T., Le, T. P., Tran, X. L., & Nguyen, V. T. (2012). Climate change: Local perception, impacts and adaptation of agrarian communities in the

coastal provinces of the Mekong River Delta, Vietnam. Paper presented at the practical responses to climate change national conference, Canberra.

Nguyen, V., Han, N. H., & Cramb, R. (2020c). Trends in Rice-Based Farming Systems in the Mekong Delta. Palgrave Macmillan.

Nielsen. (2021). *Despite Covid-19, Vietnam remains in the top 4 most optimistic countries in the world*. New York: Nielsen. <https://www.nielsen.com/wp-content/uploads/sites/3/2020/06/PR-DESPITE-COVID-19-VIETNAM-REMAINS-IN-THE-TOP-4-MOST-OPTIMISTIC-COUNTRIES-IN-THE-WORLD.pdf?cid=socSprinklr-Nielsen+Vietnam>

Nisbet, M. C., & Feldman, L. (2011). The Social Psychology of Political Communication. In D. Hook, B. Franks & M. Bauer (Eds.), *The social psychology of communication* (pp. 284–299). Palgrave Macmillan.

Njogu, K. (2017). *Critical Perspectives on Culture and Globalisation*. Twaweza Communications.

O'Brien, K., Selboe, E., & Hayward, B. M. (2018). Exploring youth activism on climate change: dutiful, disruptive, and dangerous dissent. *Ecology and Society*, 23(3), 42. 10.5751/ES-10287-230342

O'Reilly, K. (2019). *Ethnographic Methods* (3rd edn.) Taylor and Francis.

Oakley, A. (2018). *Women, Peace and Welfare: A suppressed history of social reform*. Policy Press.

OECD. (2018). *Vietnam - PISA*. <https://www.oecd.org/pisa/aboutpisa/vietnam-pisa.htm>

Ojala, M. (2012). Hope and climate change: the importance of hope for environmental engagement among young people. *Environmental Education Research*, 18(5), 625-642. 10.1080/13504622.2011.637157

Ojala, M. (2015). Hope in the Face of Climate Change: Associations With Environmental Engagement and Student Perceptions of Teachers' Emotion Communication Style and Future Orientation. *The Journal of Environmental Education*, 46(3), 133-148. 10.1080/00958964.2015.1021662

Olson, K. R., & Morton, L. W. (2018). Polders, dikes, canals, rice, and aquaculture in the Mekong Delta. *Journal of Soil and Water Conservation*, 73(4), 83-89A. 10.2489/jswc.73.4.83A

Onwuegbuzie, A. J., Collins, K. M., & Frels, R. K. (2013). Using Bronfenbrenner's ecological systems theory to frame quantitative, qualitative, and mixed research. *International Journal of Multiple Research Approaches*, 7(1), 2-8.

<https://search.informit.org/documentSummary;dn=466907549802851;res=IELHSS>

Orr, S., Pittock, J., Chapagain, A., & Dumaresq, D. (2012). Dams on the Mekong River: Lost fish protein and the implications for land and water resources. *Global Environmental Change*, 22(4), 925-932. 10.1016/j.gloenvcha.2012.06.002

Overland, I., & Sovacool, B. K. (2020). The misallocation of climate research funding. *Energy Research & Social Science*, 62, 101349. <https://doi.org/10.1016/j.erss.2019.101349>

Overseas Development Institute. (2011). *Viet Nam's progress on economic growth and poverty reduction: Impressive improvements*. London: Overseas Development Institute.

Papadimitriou, V. (2004). Prospective Primary Teachers' Understanding of Climate Change, Greenhouse Effect, and Ozone Layer Depletion. *Journal of Science Education and Technology*, 13(2), 299-307. 10.1023/B:JOST.0000031268.72848.6d

Pasgaard, M., & Strange, N. (2013). A quantitative analysis of the causes of the global climate change research distribution. *Global Environmental Change*, 23(6), 1684-1693. 10.1016/j.gloenvcha.2013.08.013

Patton, M. Q. (2002). Two Decades of Developments in Qualitative Inquiry. *Qualitative Social Work : QSW : Research and Practice*, 1(3), 261-283. 10.1177/1473325002001003636

Patton, M. Q. (2014). *Qualitative research & evaluation methods: integrating theory and practice*. Sage Publications.

Pham, B. D., & Nash, C. (2017). Climate change in Vietnam: Relations between government and media in the period 2000-2013. *Pacific Journalism Review: PJR*, 23(1), 96-111. 10.24135/pjr.v23i1.213

Pham, L. T., & Hayden, M. (2019). Research In Vietnam: The Experience Of The Humanities And Social Sciences. *Journal of International and Comparative Education*, 8(1), 27-40.
10.14425/jice.2019.8.1.27

Pham, M. (2003). Dialectics of national value and the world values: The case of Vietnam. *Review of Human Research*, 5.

Pham, T. L. (2013). Case study: The effectiveness of research and innovation management at policy and institutional levels in Vietnam. In A. Olsson, & L. Meek (Eds.), *Effectiveness of Research and Innovation Management at Policy and Institutional Levels in Cambodia, Malaysia, Thailand and Vietnam* (pp. 140-162). OECD.

Phelps, R., Graham, A., Ha Thi Tuyet, N., & Geeves, R. (2014). Exploring Vietnamese children's experiences of, and views on, learning at primary school in rural and remote communities. *International Journal of Educational Development*, 36, 33-43. 10.1016/j.ijedudev.2013.12.004

Phu, P. X., De, N., N, & Tran, N. T. B. (2019). Use of Indigenous Knowledge to Adapt with Climate Change: A Case Study in a Giang Province, in the Mekong Delta, Vietnam. *Biomedical Journal of Scientific & Technical Research*, 12(4)10.26717/BJSTR.2019.12.002292

Phung, D., Huang, C., Rutherford, S., Chu, C., Wang, X., & Nguyen, M. (2014). Association between annual river flood pulse and paediatric hospital admissions in the Mekong Delta area. *Environmental Research*, 135, 212-220. 10.1016/j.envres.2014.08.035

Phung, D., Rutherford, S., Chu, C., Wang, X., Nguyen, M., Nguyen, N. H., Manh Do, C., Nguyen, T. H., & Huang, C. (2015). Temperature as a risk factor for hospitalisations among young children in the Mekong Delta area, Vietnam. *Occupational and Environmental Medicine (London, England)*, 72(7), 529-535. 10.1136/oemed-2014-102629

Piaget, J. (1972). Intellectual evolution from adolescence to adulthood. *Human Development*, 15(1), 1-12.

Pidgeon, N. (2012). Public understanding of, and attitudes to, climate change: UK and international perspectives and policy. *Climate Policy*, 12(1), S85-S106.
10.1080/14693062.2012.702982

- Pimlott-Wilson, H. (2012). Visualising children's participation in research: Lego Duplo, rainbows and clouds and moodboards. *International Journal of Social Research Methodology*, 15(2), 135-148. 10.1080/13645579.2012.649410
- Pink, S. (2021). *Doing visual ethnography* (4th edn.). SAGE.
- Pitts, M. J., & Miller-Day, M. (2007). Upward turning points and positive rapport-development across time in researcher—participant relationships. *Qualitative Research*, 7(2), 177-201. 10.1177/1468794107071409
- Plan International. (2020). *Climate Change Activism*. <https://plan-international.org/youth-activism/climate-change-activists>. <https://plan-international.org/youth-activism/climate-change-activists>
- Plankey-Videla, N. (2012). Informed Consent as Process: Problematizing Informed Consent in Organizational Ethnographies. *Qualitative Sociology*, 35(1), 1-21. 10.1007/s11133-011-9212-2
- Pollock, K. (2012). Procedure versus process: ethical paradigms and the conduct of qualitative research. *BMC Medical Ethics*, 13(1), 25. 10.1186/1472-6939-13-25
- Poortinga, W., Whitmarsh, L., Steg, L., Böhm, G., & Fisher, S. (2019). Climate change perceptions and their individual-level determinants: A cross-European analysis. *Global Environmental Change*, 55, 25-35. 10.1016/j.gloenvcha.2019.01.007
- Poveda, D. (2009). Parent and ethnographer of other children. *Anthropology Matters*, 11(1)10.22582/am.v11i1.26
- Power, N. G., Norman, M. E., & Dupré, K. (2014). Rural youth and emotional geographies: how photovoice and words-alone methods tell different stories of place. *Journal of Youth Studies*, 17(8), 1114-1129. 10.1080/13676261.2014.881983
- Pring, R. (2013). *Philosophy of educational research* (3rd edn.). Bloomsbury Academic.
- Prout, A. (2002). Researching children as social actors: an introduction to the children 5-16 programme. *Children & Society*, 16(2), 67-76. 10.1002/chi.710
- Prout, A., & James, A. (2014). A new paradigm for the sociology of childhood? *Constructing and Reconstructing Childhood* (1st ed., pp. 6-28). Routledge. 10.4324/9781315745008-2

Punch, S. (2002). Research with Children. *Childhood (Copenhagen, Denmark)*, 9(3), 321-341. 10.1177/0907568202009003005

Pyle. (2013). *The Thunder Tree: Lessons from an Urban Wildland*. Houghton Mifflin.

Quan, N. H., Toan, T. Q., Dang, P. D., Phuong, N. L., Anh, T. T. H., Quang, N. X., Quoc, D. P., Quoi, L. P., Hanington, P., & Sea, W. B. (2017). Conservation of the Mekong Delta wetlands through hydrological management. *Ecological Research*, 33(1), 87-103. 10.1007/s11284-017-1545-1

Quang, M. N. (2019). Examining the Cross-subject Coherence in Environmental Education in Vietnamese High School Curricula. *Journal of Educational and Human Research Development*, 7, 78-99.

Quayle, B. (2020). *Accountable to who, to whom, for what and how?*. University of Wollongong. 10.14453/aabfj.v14i3.5

Qvortrup, J. (2010). Are children human beings or human becomings? *Rivista Internazionale Di Scienze Sociali*, 117(3/4), 631-653.

Raby, R., Lehmann, W., Helleiner, J., & Easterbrook, R. (2018). Reflections on Using Participant-Generated, Digital Photo-Elicitation in Research With Young Canadians About Their First Part-Time Jobs. *International Journal of Qualitative Methods*, 17(1).

Ramanathan, H. Lei, J., Li, G., Okano, K., Megahed, N., Gamage, D., He, M. F., & Zhao, Y. (2010). *Handbook of Asian Education*. Taylor and Francis. 10.4324/9780203816318

Rana, I. A., Jamshed, A., Younas, Z. I., & Bhatti, S. S. (2020). Characterizing flood risk perception in urban communities of Pakistan. *International Journal of Disaster Risk Reduction*, 46, 101624. 10.1016/j.ijdrr.2020.101624

Raymond, C. (2008). "No Responsibility and No Rice": The Rise and Fall of Agricultural Collectivization in Vietnam. *Agricultural History*, 82(1), 43-61. 10.3098/ah.2008.82.1.43

Rebich, S., & Gautier, C. (2005). Concept Mapping to Reveal Prior Knowledge and Conceptual Change in a Mock Summit Course on Global Climate Change. *Journal of Geoscience Education*, 53(4), 355-365. 10.5408/1089-9995-53.4.355

Regmi, K., Naidoo, J., & Pilkington, P. (2010). Understanding the Processes of Translation and Transliteration in Qualitative Research. *International Journal of Qualitative Methods*, 9(1), 16-26. 10.1177/160940691000900103

Renaud, F. G., & Kuenzer, C. (2011). *The Mekong Delta System* (1. Aufl. ed.). Springer Netherlands.

Reyes-García, V., Kightley, E., Ruiz-Mallén, I., Fuentes-Peláez, N., Demps, K., Huanca, T., & Martínez-Rodríguez, M. R. (2010). Schooling and local environmental knowledge: Do they complement or substitute each other? *International Journal of Educational Development*, 30(3), 305-313. 10.1016/j.ijedudev.2009.11.007

Ribot, J. (2013). Vulnerability does not just fall from the sky: toward multi-scale pro-poor climate policy. *Handbook on Climate Change and Human Security* (pp. 164-199). Edward Elgar Publishing. 10.4337/9780857939111.00016

Richler, J. (2020). Beyond Western views. *Nature Climate Change*, 10(3), 184. 10.1038/s41558-020-0725-0

Riley, S. Schouten, W. & Cahill, S. (2003). Exploring the Dynamics of Subjectivity and Power Between Researcher and Researched. *Forum, Qualitative Social Research*, 4(2).

Rivas, A. (2005). *Postcolonial analysis of educational research discourse: Creating (Mexican) American children as the "other"*. Texas A&M University.

Robbins, R. H., & Dowty, R. A. (2021). *Cultural anthropology* (8th edn.). SAGE.

Rodríguez-Cruz, L. A., & Niles, M. T. (2021). Awareness of climate change's impacts and motivation to adapt are not enough to drive action: A look of Puerto Rican farmers after Hurricane Maria. *PLoS One*, 16(1), e0244512. 10.1371/journal.pone.0244512

Ronzi, S., Pope, D., Orton, L., & Bruce, N. (2016). Using photovoice methods to explore older people's perceptions of respect and social inclusion in cities: Opportunities, challenges and solutions. *SSM - Population Health*, 2, 732-745. 10.1016/j.ssmph.2016.09.004

Rosa, C. D., & Collado, S. (2019). Experiences in Nature and Environmental Attitudes and Behaviors: Setting the Ground for Future Research. *Frontiers in Psychology*, 10, 763. 10.3389/fpsyg.2019.00763

- Rose, G. (2016). *Visual methodologies: an introduction to researching with visual materials*. Sage Publications.
- Rosen, R., & Twamley, K. (2018). *Feminism and the Politics of Childhood – Friends or Foes?*. UCL Press. 10.14324/111.9781787350632
- Rosenthal, S., Kotcher, J., Neyens, L., Marlon, J., Carman, J., Mecroix, K., & Goldberg, M. (2022). *Global Warming's Six Americas September 2021*. New Haven, CT: Yale University and George Mason University.
- Rousell, D., & Cutter-Mackenzie-Knowles, A. (2019). A systematic review of climate change education: giving children and young people a 'voice' and a 'hand' in redressing climate change. *Children's Geographies*, 18(2), 1-18. 10.1080/14733285.2019.1614532
- Rousell, D., Cutter-Mackenzie, A., & Foster, J. (2017). Children of an Earth to Come: Speculative Fiction, Geophilosophy and Climate Change Education Research. *Educational Studies*, 53(6), 654-669. 10.1080/00131946.2017.1369086
- Ruane, K. (1998). *War and revolution in Vietnam, 1930-75*. UCL Press.
- Rus, A. V., Parris, S., Cross, D., & Purvis, K. (2010). *Romanian Institutionalized Children's Privation and Bronfenbrenner's Ecological System Theory*. Education and Development Symposium, Dimitrie Cantemir University.
- Sahlberg, P., & Brown, J. (2017). Schooling and Globalization. In N. Aloni, & L. Weintrob (Eds.), *Beyond Bystanders: Educational Leadership for a Humane Culture in a Globalizing Reality (Vol. 11)* (pp. 33-45). Sense Publishers. 10.1007/978-94-6351-026-4_3
- Salick, J., Ghimire, S. K., Fang, Z., Dema, S., & Konchar, K. M. (2014). Himalayan Alpine Vegetation, Climate Change and Mitigation. *Journal of Ethnobiology*, 34(3), 276-293. 10.2993/0278-0771-34.3.276
- Sanson, A. V., Burke, S. E. L., & Van Hoorn, J. (2018). Climate Change: Implications for Parents and Parenting. *Parenting*, 18(3), 200-217. 10.1080/15295192.2018.1465307
- Sapiains, R., Ibarra, C., Jiménez, G., O'Ryan, R., Blanco, G., Moraga, P., & Rojas, M. (2021). Exploring the contours of climate governance: An interdisciplinary systematic literature review

from a southern perspective. *Environmental Policy and Governance*, 31(1), 46-59.
10.1002/eet.1912

Sasaki, N. (2021). Timber production and carbon emission reductions through improved forest management and substitution of fossil fuels with wood biomass. *Resources, Conservation and Recycling*, 173, 105737. 10.1016/j.resconrec.2021.105737

Schad, I., Schmitter, P., Saint-Macary, C., Neef, A., Lamers, M., Nguyen, L., Hilger, T., & Hoffmann, V. (2011). Why do people not learn from flood disasters? Evidence from Vietnam's northwestern mountains. *Natural Hazards (Dordrecht)*, 62(2), 221-241. 10.1007/s11069-011-9992-4

Scheper-Hughes, N. (1993). *Death Without Weeping: The Violence of Everyday Life in Brazil*

Schlosberg, D., & Collins, L. B. (2014). From environmental to climate justice: climate change and the discourse of environmental justice. *Wiley Interdisciplinary Reviews. Climate Change*, 5(3), 359-374. 10.1002/wcc.275

Schmitt, R. J. P., Rubin, Z., & Kondolf, G. M. (2017). Losing ground - scenarios of land loss as consequence of shifting sediment budgets in the Mekong Delta. *Geomorphology (Amsterdam, Netherlands)*, 294, 58-69. 10.1016/j.geomorph.2017.04.029

Schon, D. A. (1991). *The reflective practitioner: how professionals think in action*. Academic Publishing Group. 10.4324/9781315237473

Schwandt, T. A. (2001). *Dictionary of qualitative inquiry* (2nd edn.) Sage Publications.

Scimago. (2018). *Country Rankings*. <http://www.scimagojr.com/countryrank.ph>

Scott, S., Miller, F., & Lloyd, K. (2006). Doing Fieldwork in Development Geography: Research Culture and Research Spaces in Vietnam. *Geographical Research*, 44(1), 28-40. 10.1111/j.1745-5871.2006.00358.x

Semenza, J. C., Hall, D. E., Wilson, D. J., Bontempo, B. D., Sailor, D. J., & George, L. A. (2008). Public perception of climate change voluntary mitigation and barriers to behavior change. *American Journal of Preventive Medicine*, 35(5), 479-487. 10.1016/j.amepre.2008.08.020

- Sen, L. T. H., Bond, J., Dung, N. T., Hung, H. G., Mai, N. T. H., & Phuong, H. T. A. (2021). Farmers' barriers to the access and use of climate information in the mountainous regions of Thừa Thiên Huế province, Vietnam. *Climate Services*, 24, 100267. 10.1016/j.cliser.2021.100267
- Seroussi, D., Rothschild, N., Kurzbaum, E., Yaffe, Y., & Hemo, T. (2019). Teachers' Knowledge, Beliefs, and Attitudes about Climate Change. *International Education Studies*, 12(8), 33. 10.5539/ies.v12n8p33
- Shaw, D. (2013). A New Look at an Old Research Method: Photo-Elicitation. *TESOL Journal*, 4(4), 785-799. 10.1002/tesj.108
- Sheffield, P. E., & Landrigan, P. J. (2011). Global Climate Change and Children's Health: Threats and Strategies for Prevention. *Environmental Health Perspectives*, 119(3), 291-298. 10.1289/ehp.1002233
- Shepardson, D. P., Niyogi, D., Choi, S., & Charusombat, U. (2009). Seventh grade students' conceptions of global warming and climate change. *Environmental Education Research*, 15(5), 549-570. 10.1080/13504620903114592
- Shibuya, S. (2015). *Living with Uncertainty: Social Change and the Vietnamese Family in the Rural Mekong Delta*. ISEAS–Yusof Ishak Institute.
- Shibuya, S. (2018). Introduction: Family and Society in Vietnam. *Living with Uncertainty* (pp. 1-21). ISEAS–Yusof Ishak Institute Singapore. 10.1355/9789814620277-002
- Shimpuku, Y., & Norr, K. F. (2012). Working with interpreters in cross-cultural qualitative research in the context of a developing country: systematic literature review. *Journal of Advanced Nursing*, 68(8), 1692-1706. 10.1111/j.1365-2648.2012.05951.x
- Sietsma, A. J., Ford, J. D., Callaghan, M. W., & Minx, J. C. (2021). Progress in climate change adaptation research. *Environmental Research Letters*, 16(5), 54038. 10.1088/1748-9326/abf7f3
- Sigurdsson, G. (2004). Optimism and Activism: Establishing the Confucian Way Through Renxing. *Acta Orientalia Vilnensia*, 510.15388/AOV.2004.18238
- Silfver, E., Sjöberg, G., & Bagger, A. (2013). Changing our Methods and Disrupting the Power Dynamics: National Tests in Third-Grade Classrooms. *International Journal of Qualitative Methods*, 12(1), 39-51. 10.1177/160940691301200119

- Simmons, N. (2018). Axial Coding. In M. Allen (Ed.), *The SAGE Encyclopedia of Communication Research Methods* (pp. 80-82). Sage Publications.
- Sivertsen, S. S. (2019). On the practical impossibility of being both well-informed and impartial. *Erasmus Journal for Philosophy and Economics*, 12(1), 52–72.
<https://doi.org/10.23941/ejpe.v12i1.377>
- Slote, W. H., & De Vos, G. A. (1998). *Confucianism and the Family: A Study of Indo-Tibetan Scholasticism*. University of New York Press.
- Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as Analysis and Risk as Feelings: Some Thoughts about Affect, Reason, Risk, and Rationality. *Risk Analysis*, 24(2), 311-322.
- Slovic, P., Fischhoff, B., & Lichtenstein, S. (1982). Why Study Risk Perception? *Risk Analysis*, 2(2), 83-93.
- Smajgl, A., Toan, T. Q., Nhan, D. K., Ward, J., Trung, N. H., Tri, L. Q., Tri, V. P. D., & Vu, P. T. (2015). Responding to rising sea levels in the Mekong Delta. *Nature Climate Change*, 5(2), 167-174.
- Smette, I. (2019). Ethics and access when consent must come first. *Implementing Ethics in Educational Ethnography* (1st ed., pp. 51-63). Routledge.
- Smith, L. T. (2021). *Decolonizing methodologies* (3rd edn. ed.). Zed Books.
- Soga, M., & Gaston, K. J. (2016). Extinction of experience: the loss of human — nature interactions. *Frontiers in Ecology and the Environment*, 14(2), 94-101. 10.1002/fee.1225
- Solarin, S. A., Bello, M. O., & Bekun, F. V. (2021). Sustainable electricity generation: the possibility of substituting fossil fuels for hydropower and solar energy in Italy. *International Journal of Sustainable Development and World Ecology*, 28(5), 429-439.
 10.1080/13504509.2020.1860152
- Son, H. N., Kingsbury, A., & Hoa, H. T. (2021). Indigenous knowledge and the enhancement of community resilience to climate change in the Northern Mountainous Region of Vietnam. *Agroecology and Sustainable Food Systems*, 45(4), 499-522. 10.1080/21683565.2020.1829777

Sou, G. (2015). *The relationship between risk perceptions and responses in disaster-prone cities of the Global South*. The University of Manchester.

[https://www.research.manchester.ac.uk/portal/en/theses/the-relationship-between-risk-perceptions-and-responses-in-disaster-prone-cities-of-the-global-south\(cdf3aeb4-f450-478b-a0a3-462ca9e3d590\).html](https://www.research.manchester.ac.uk/portal/en/theses/the-relationship-between-risk-perceptions-and-responses-in-disaster-prone-cities-of-the-global-south(cdf3aeb4-f450-478b-a0a3-462ca9e3d590).html)

Spasova, G., & Lee, A. Y. (2013). Looking into the Future: A Match between Self-View and Temporal Distance. *The Journal of Consumer Research*, 40(1), 159-171. 10.1086/669145

Spiegel, S. J., Thomas, S., O'Neill, K., Brondgeest, C., Thomas, J., Beltran, J., Hunt, T., & Yassi, A. (2020). Visual Storytelling, Intergenerational Environmental Justice and Indigenous Sovereignty: Exploring Images and Stories amid a Contested Oil Pipeline Project. *International Journal of Environmental Research and Public Health*, 17(7), 2362. 10.3390/ijerph17072362

Squires, A. (2008). Language barriers and qualitative nursing research: methodological considerations. *International Nursing Review*, 55(3), 265-273. 10.1111/j.1466-7657.2008.00652.x

Stearns, P. N. (2021). *Childhood in world history* (4th edn. ed.). Routledge. 10.4324/9781003161752

Steg, L., Bolderdijk, J. W., Keizer, K., & Perlaviciute, G. (2014). An Integrated Framework for Encouraging Pro-environmental Behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology*, 38, 104-115. 10.1016/j.jenvp.2014.01.002

Steg, L., Farsang, A., Watt, A., Keizer, M., & De Groot, J. (2012). Environmental Values in Post-socialist Hungary: Is It Useful to Distinguish Egoistic, Altruistic and Biospheric Values? *Sociologický Časopis*, 48(3), 421-440. 10.13060/00380288.2012.48.3.02

Stephens, D. (2018). *International Education and Development: Culture, Context and Narrative*. Routledge.

Sternberg, R. J., Nokes, C., Geissler, P. W., Prince, R., Okatcha, F., Bundy, D. A., & Grigorenko, E. L. (2001). The relationship between academic and practical intelligence: a case study in Kenya. *Intelligence*, 29(5), 401-418. 10.1016/S0160-2896(01)00065-4

Stoutenborough, J. W., & Vedlitz, A. (2014). The effect of perceived and assessed knowledge of climate change on public policy concerns: An empirical comparison. *Environmental Science & Policy*, 37, 23-33. 10.1016/j.envsci.2013.08.002

Stoutenborough, J. W., & Vedlitz, A. (2016). The role of scientific knowledge in the public's perceptions of energy technology risks. *Energy Policy*, 96, 206-216. 10.1016/j.enpol.2016.05.031

Sugiyama, M., Asayama, S., & Kosugi, T. (2020). The North-South Divide on Public Perceptions of Stratospheric Aerosol Geoengineering?: A Survey in Six Asia-Pacific Countries. *Environmental Communication*, 14(5), 641-656. 10.1080/17524032.2019.1699137

Suldovsky, B. (2017). *The Information Deficit Model and Climate Change Communication*. Oxford University Press. 10.1093/acrefore/9780190228620.013.301

Sun, L. (1991). Contemporary Chinese Culture: Structure and Emotionality. *The Australian Journal of Chinese Affairs*, 26(26), 1-41. 10.2307/2949867

Super, C. M., Barry, O., Sara, H., Zeitlin, M., & Mavridis, C. J. (2013). Culture and Early Childhood Development. *Handbook of Early Childhood Development Research and Its Impact on Global Policy*. Oxford University Press. 10.1093/acprof:oso/9780199922994.003.0007

Suri, H. (2011). Purposeful Sampling in Qualitative Research Synthesis. *Qualitative Research Journal*, 11(2), 63-75. 10.3316/QRJ1102063

Syvitski, J. P. M., Kettner, A. J., Overeem, I., Hutton, E. W. H., Hannon, M. T., Brakenridge, G. R., Day, J., Vörösmarty, C., Saito, Y., Giosan, L., & Nicholls, R. J. (2009). Sinking deltas due to human activities. *Nature Geoscience*, 2(10), 681-686. 10.1038/ngeo629

Szabo, S., Brondizio, E., Renaud, F. G., Hetrick, S., Nicholls, R. J., Matthews, Z., Tessler, Z., Tejedor, A., Sebesvari, Z., Fofoula-Georgiou, E., Da Costa, S., & Dearing, J. A. (2016). Population dynamics, delta vulnerability and environmental change: comparison of the Mekong, Ganges–Brahmaputra and Amazon delta regions. *Sustainability Science*, 11(4), 539-554. 10.1007/s11625-016-0372-6

Taddicken, M., Reif, A., & Hoppe, I. (2018). What do people know about climate change — and how confident are they? On measurements and analyses of science related knowledge. *Journal of Science Communication*, 17(3), 1. 10.22323/2.17030201

Taga, H., & Igarashi, S. (2019). *The New International Relations of Sub-Regionalism*. Routledge. 10.4324/9781315106953

Takagi, H., Thao, N., & Anh, L. (2016). Sea-Level Rise and Land Subsidence: Impacts on Flood Projections for the Mekong Delta's Largest City. *Sustainability*, 8(9), 959. 10.3390/su8090959

Tanner, T. (2010). Shifting the Narrative: Child-led Responses to Climate Change and Disasters in El Salvador and the Philippines. *Children & Society*, 24(4), 339-351. 10.1111/j.1099-0860.2010.00316.x

Taylor, H. (2011). *Children's experiences of flooding in Surakarta, Indonesia*. Massey University.

Tehreem, H. S., Anser, M. K., Nassani, A. A., Abro, M. M. Q., & Zaman, K. (2020). Impact of average temperature, energy demand, sectoral value added, and population growth on water resource quality and mortality rate: it is time to stop waiting around. *Environmental Science and Pollution Research International*, 27(30), 37626-37644. 10.1007/s11356-020-09822-w

Temmerman, N. (2015). *Let's have specialist teachers in primary schools right from the start*. <https://www.linkedin.com/pulse/lets-have-specialist-teachers-primary-schools-right-temmerman-phd/>.

Temper, L., Walter, M., Rodriguez, I., Kothari, A., & Turhan, E. (2018). A perspective on radical transformations to sustainability: resistances, movements and alternatives. *Sustainability Science*, 13(3), 747-764. 10.1007/s11625-018-0543-8

Temple, B., & Edwards, R. (2002). Interpreters/Translators and Cross-Language Research: Reflexivity and Border Crossings. *International Journal of Qualitative Methods*, 1(2), 1-12. 10.1177/160940690200100201

Tessler, Z. D., Vorosmarty, C. J., Grossberg, M., Gladkova, I., Aizenman, H., Syvitski, J. P. M., & Foufoula-Georgiou, E. (2015). Profiling risk and sustainability in coastal deltas of the world. *Science*, 349(6248), 638-643. 10.1126/science.aab3574

Thang, N., Thi, N., & Hang, T. (2018). *Country Report Leaving no one behind in a growing Vietnam: The story from Young Lives*. Young Lives.

Theron, L., Stuart, J., Smith, A., & Mitchell, C. (2011). *Picturing Research: Drawing as Visual Methodology*. Sense Publishers. 10.1007/978-94-6091-596-3

- Tho, N. (2016). Confucianism and humane education in contemporary Vietnam. *International Communication of Chinese Culture*, 3(4), 645-671. 10.1007/s40636-016-0076-8
- Thomas, C., & Sharp, V. (2013). Understanding the normalisation of recycling behaviour and its implications for other pro-environmental behaviours: A review of social norms and recycling. *Resources, Conservation and Recycling*, 79, 11-20. 10.1016/j.resconrec.2013.04.010
- Thomson, F. (2007). Are Methodologies for Children keeping them in their Place? *Children's Geographies*, 5(3), 207-218. 10.1080/14733280701445762
- Thomson, P. (2008). *Doing Visual Research with Children and Young People*. Routledge. 10.4324/9780203870525
- Thorne, B. (1987). Re-Visioning Women and Social Change: Where are the Children? *Gender & Society*, 1(1), 85-109. 10.1177/089124387001001005
- Thorne, B. (2010). Learning from kids. In W. Luttrell (Ed.), *Qualitative Educational Research* (pp. 407-420). Routledge.
- Tidball, K. G., Krasny, M. E., Svendsen, E., Campbell, L., & Helphand, K. (2010). Stewardship, learning, and memory in disaster resilience. *Environmental Education Research*, 16(5-6), 591-609. 10.1080/13504622.2010.505437
- Tikly, L., & Bond, T. (2013). Towards a postcolonial research ethics in comparative and international education. *Compare*, 43(4), 422-442. 10.1080/03057925.2013.797721
- Timmons Roberts, J., & Parks, B. C. (2007). Fueling Injustice: Globalization, Ecologically Unequal Exchange and Climate Change. *Globalization*, 4(2), 193-210. 10.1080/14747730701345218
- Tinh, D. Q. (2003). *Flood Kindergarten: Community Need to Community Solution*. New York: United Nations.
- Toan, D. T. T., Kien, V. D., Giang, K. B., Minh, H. V., & Wright, P. (2014). Perceptions of climate change and its impact on human health: an integrated quantitative and qualitative approach. *Null*, 7(1), 23025. 10.3402/gha.v7.23025
- Tracy, S. J. (2020). *Qualitative research methods* (2nd edn.). Wiley Blackwell.

- Trajber, R., Walker, C., Marchezini, V., Kraftl, P., Olivato, D., Hadfield-Hill, S., Zara, C., & Fernandes Monteiro, S. (2019). Promoting climate change transformation with young people in Brazil: participatory action research through a looping approach. *Action Research*, 17(1), 87-107. 10.1177/1476750319829202
- Tran, D. D., Quang, C., Tien, P., Tran, P., Long, P., Hoa, H., Giang, N. N. H., & Ha, L. T. T. (2020). Livelihood Vulnerability and Adaptation Capacity of Rice Farmers under Climate Change and Environmental Pressure on the Vietnam Mekong Delta Floodplains. *Water (Basel)*, 12(3282), 3282. 10.3390/w12113282
- Tran, P. B., Hensing, G., Wingfield, T., Atkins, S., Sidney Annerstedt, K., Kazibwe, J., Tomeny, E., Biermann, O., Thorpe, J., Forse, R., & Lönnroth, K. (2020). Income security during public health emergencies: the COVID-19 poverty trap in Vietnam. *BMJ Global Health*, 5(6), e002504. 10.1136/bmjgh-2020-002504
- Tran, P. G., & Few, R. (2006). Coping with Floods in the Mekong Delta, Viet Nam. In R. Few, & F. Matthies (Eds.), *Flood Hazards and Health* (pp. 140-156). Routledge. 10.4324/9781849771351-14
- Triandis, H. C. (1994). *Culture and social behavior*. McGraw-Hill.
- Trope, Y., & Liberman, N. (2010). Construal-Level Theory of Psychological Distance. *Psychological Review*, 117(2), 440-463. 10.1037/a0018963
- Truong, T. D., Hallinger, P., & Sanga, K. (2017). Confucian values and school leadership in Vietnam: Exploring the influence of culture on principal decision making. *Educational Management Administration & Leadership*, 45(1), 77-100. 10.1177/1741143215607877
- Twigger-Ross, C., Brooks, K., Papadopoulou, L., Orr, P., Sadauskis, R., Coke, A., Simcock, N., Stirling, A., & Walker, G. (2015). *Community resilience to climate change: An evidence review*. Joseph Rowntree Foundation.
- UN General Assembly. (1992). *United Nations Framework Convention on Climate Change*. Geneva: UN General Assembly.
https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

UNCC:Learn. (2013). *Resource Guide for Advanced Learning on: Integrating Climate Change in Education at Primary and Secondary Level*. Bern, Switzerland: United Nations Institute for Training and Research.

UNESCO. (2014). *National Journeys Towards Education for Sustainable Development*. UNESCO.

UNICEF. (2009). *A brighter tomorrow: climate change, child rights and intergenerational justice*. UNICEF.

UNICEF. (2015). *Unless we act now: The impact of climate change on children*. (). New York: UNICEF.

UNICEF. (2018). *Viet Nam's Sustainable Development Goals with a Child Focus*. (). Hanoi: UNICEF.

UNICEF. (2021). *The Climate Crisis is a Child Rights Crisis: Introducing the Children's Climate Risk Index*. New York: UNICEF.

United Nations Development Programme. (2003). *Summing-up report on disaster situations in recent years and preparedness and mitigation measures in Vietnam*. Geneva: United Nations. <https://reliefweb.int/report/viet-nam/summing-report-disaster-situations-recent-years-and-preparedness-and-mitigation>

United Nations Development Programme. (2021). *Youth for Climate action in Vietnam Report*. Hanoi: United Nations Development Programme.

United Nations Environment Programme. (2021). *Adaptation Gap Report 2021*. Nairobi: United Nations.

United Nations. (1989). *The United Nations Convention on the rights of the child*. (). New York: United Nations.

Unluer, S. (2012). Being an insider researcher while conducting case study research. *Qualitative Report*, 17(29), 1.

Vakil, S., McKinney de Royston, M., Suad Nasir, N., & Kirshner, B. (2016). Rethinking Race and Power in Design-Based Research: Reflections from the Field. *Cognition and Instruction*, 34(3), 194-209. 10.1080/07370008.2016.1169817

- Valentine, G. (2005). Tell me about . . . : using interviews as a research methodology. In R. Flowerdew & D. M. Martin (Eds.) *Methods in Human Geography* (pp. 134-151). Routledge.
- Valk, J. (2021). *Worldviews: A Comprehensive Approach to Knowing Self and Others*. Springer International Publishing. 10.1007/978-3-030-82491-4
- Van Der Werf, Guido R, Randerson, J. T., Giglio, L., Van Leeuwen, T. T., Chen, Y., Rogers, B. M., Mu, M., Van Marle, Margreet J. E, Morton, D. C., Collatz, G. J., Yokelson, R. J., & Kasibhatla, P. S. (2017). Global fire emissions estimates during 1997-2016. *Earth System Science Data*, 9(2), 697-720. 10.5194/essd-9-697-2017
- Van Nuil, J. I., Nguyen, T. T. T., Le Nguyen, T. N., Nguyen, V. V. C., Chambers, M., Ta, T. D. N., Merson, L., Nguyen, T. P. D., Hoang, M. T. V., Parker, M., Bull, S., & Kestelyn, E. (2020). Researcher and study participants' perspectives of consent in clinical studies in four referral hospitals in Vietnam. *BMC Medical Ethics*, 21(1), 4. 10.1186/s12910-020-0445-z
- Van Ta, C., & Zyngier, S. (2018). Knowledge Sharing Barriers in Vietnamese Higher Education Institutions (HEIS). *International Journal of Knowledge Management*, 14(1), 51-70. 10.4018/IJKM.2018010104
- Van Valkengoed, A. M., & Steg, L. (2019). Meta-analyses of factors motivating climate change adaptation behaviour. *Nature Climate Change*, 9(2), 158-163. 10.1038/s41558-018-0371-y
- Van, S., Boyd, W., Slavich, P., & Van, T. (2015). Agriculture and Climate Change: Perceptions of Provincial Officials in Vietnam. *Journal of Basic & Applied Sciences*, 11, 487-500. 10.6000/1927-5129.2015.11.66
- Vélez-Agosto, N. M., Soto-Crespo, J. G., Vizcarrondo-Opppenheimer, M., Vega-Molina, S., & García Coll, C. (2017). Bronfenbrenner's Bioecological Theory Revision: Moving Culture From the Macro Into the Micro. *Perspectives on Psychological Science*, 12(5), 900-910. 10.1177/1745691617704397
- Verga, C., Vai, B., Cazzetta, S., Ghiglino, D., Toti, M., Parenti, L., & Saibene, G. (2020). Risk Perception and Media in Shaping Protective Behaviors: Insights From the Early Phase of COVID-19 Italian Outbreak. *Frontiers in Psychology*, 11, 563426. 10.3389/fpsyg.2020.563426
- Vi, P. T. T., & Rambo, A. T. (2003). Environmental Consciousness in Vietnam. *Tōnan Ajia Kenkyu*, 41(1), 76-100. 10.20495/tak.41.1_76

- Victor, D. G. (2015). Climate change: Embed the social sciences in climate policy. *Nature (London)*, 520(7545), 27-29. 10.1038/520027a
- Vietnam Net. (2015, 19 Aug). Farmer catches crocodile in Ca Mau. <http://english.vietnamnet.vn/fms/society/139205/farmer-catches-crocodile-in-ca-mau.html>
- Villanueva, K., Giles-Corti, B., Bulsara, M., McCormack, G. R., Timperio, A., Middleton, N., Beesley, B., & Trapp, G. (2012). How far do children travel from their homes? Exploring children's activity spaces in their neighborhood. *Health & Place*, 18(2), 263-273. 10.1016/j.healthplace.2011.09.019
- Virginia Morrow. (2012). The Ethics of Social Research with Children and Families in Young Lives: Practical Experiences. *PanPacific Management Review*, 15(2), 131-167. http://www.hyread.com.tw/hypage.cgi?HYPAGE=search/search_detail_new.hpg&dtd_id=3&ysid=00207643
- Vu, T. (2017). *Vietnam's communist revolution*. Cambridge University Press.
- Vuong, Q., Bui, Q., La, V., Vuong, T., Nguyen, V. T., Ho, M., Nguyen, H. T., & Ho, M. (2018). Cultural additivity: behavioural insights from the interaction of Confucianism, Buddhism and Taoism in folktales. *Palgrave Communications*, 4(1), 1-15. 10.1057/s41599-018-0189-2
- Vuong, Q., Ho, M., La, V., Van Nhue, D., Khiem, B. Q., Cuong, N. P. K., Vuong, T., Ho, M., Nguyen, H. T., Nguyen, V., Pham, H., & Napier, N. K. (2018). "Cultural additivity" and how the values and norms of Confucianism, Buddhism, and Taoism co-exist, interact, and influence Vietnamese society: A Bayesian analysis of long-standing folktales, using R and Stan. <https://arxiv.org/abs/1803.06304>
- Vygotsky, L. S. (1978). *Mind in society*. Harvard College.
- Waibel, G., & Ehlert, J. (2012). *Fuzzy reality*. Development and Cooperation. <https://www.dandc.eu/en/article/social-science-research-challenging-important-vietnam>
- Warren, D. M. (1991). *Using indigenous knowledge in agricultural development*. The World Bank.

- Webb, G., Manolis, C., & Brien, M. (2010). Saltwater Crocodile *Crocodylus porosus*. In C. Manolis, & C. Stevenson (Eds.), *Crocodiles. Status Survey and Conservation Action Plan* (pp. 99-113). Crocodile Specialist Group.
- Weber, E. U. (2010). What shapes perceptions of climate change? *Wiley Interdisciplinary Reviews. Climate Change*, 1(3), 332-342. 10.1002/wcc.41
- Webster, P. J., & Jian, J. (2011). Environmental prediction, risk assessment and extreme events: adaptation strategies for the developing world. *Philosophical Transactions: Mathematical, Physical and Engineering Sciences*, 369(1956), 4768-4797.
- Weekes-Shackelford, V. A., & Shackelford, T. K. (2021). *Theæ Oxford handbook of evolutionary psychology and parenting* (1st ed.). Oxford University Press.
10.1093/oxfordhb/9780190674687.001.0001
- Weller, S., & Bruegel, I. (2009). Children's 'Place' in the Development of Neighbourhood Social Capital. *Urban Studies (Edinburgh, Scotland)*, 46(3), 629-643. 10.1177/0042098008100998
- WENR. (2017). *Education in Vietnam*. WENR. <https://wenr.wes.org/2017/11/education-in-vietnam>
- Were, G. (2018). Representing Doi Moi: history, memory and shifting national narratives in late-socialist Vietnam. *International Journal of Heritage Studies : IJHS*, 24(6), 672-686.
10.1080/13527258.2017.1413677
- Wesch, M. (2018). *The Art of Being Human: A Textbook for Cultural Anthropology*. New Prairie Press.
- Wesselink, A., Warner, J. F., Syed, M. A., Chan, F., Tran, D. D., Huq, H., Huthoff, F., Thuy, L., N, Pinter, N., Staveren, v., M.F, Wester, P., & Zegwaard, A. (2015). Trends in flood risk management in deltas around the world: Are we going 'soft'? *International Journal of Water Governance*, 3(4), 25-46.
- Wheeldon, J., & Ahlberg, M. (2019). Mind Maps in Qualitative Research. *Handbook of Research Methods in Health Social Sciences* (pp. 1113-1129). Springer Singapore. 10.1007/978-981-10-5251-4_7

- Whitehead, P. G., Jin, L., Bussi, G., Voepel, H. E., Darby, S. E., Vasilopoulos, G., Manley, R., Rodda, H., Hutton, C., Hackney, C., Tri, V. P. D., & Hung, N. N. (2019). Water quality modelling of the Mekong River basin: Climate change and socioeconomics drive flow and nutrient flux changes to the Mekong Delta. *Science of the Total Environment*, 673, 218-229. 10.1016/j.scitotenv.2019.03.315
- Wiedinmyer, C., Yokelson, R. J., & Gullett, B. K. (2014). Global Emissions of Trace Gases, Particulate Matter, and Hazardous Air Pollutants from Open Burning of Domestic Waste. *Environmental Science & Technology*, 48(16), 9523-9530. 10.1021/es502250z
- Wiles, R., Prosser, J., Bagnoli, A., Clark, A., Davies, K., Holland, S., & Renold, E. (2008). *Visual Ethics: Ethical Issues in Visual Research*. Swindon: Economic and Social Research Council.
- Williams, A. P., Abatzoglou, J. T., Gershunov, A., Guzman-Morales, J., Bishop, D. A., Balch, J. K., & Lettenmaier, D. P. (2019). Observed Impacts of Anthropogenic Climate Change on Wildfire in California. *Earth's Future*, 7(8), 892-910. 10.1029/2019EF001210
- Williams, R. (1976). *A vocabulary of culture and society*. Oxford University Press.
- Wilson, R. (2017). How climate change is already disrupting lives in Vietnam's Mekong Delta. <https://theecologist.org/2017/aug/18/how-climate-change-already-disrupting-lives-vietnams-mekong-delta>
- Windrow, M., & Chappell, M. (1998). *The French Indochina War*. Osprey.
- Winterbottom, C., Nicholson, J. S., & Richard, F. D. (2020). *Community-Based Transformational Learning*. Bloomsbury Publishing Plc.
- Witze, A. (2020). The Arctic is burning like never before - and that's bad news for climate change. *Nature (London)*, 585(7825), 336-337.
- Wong, V. C., & Wyer, R. S. (2016). Mental traveling along psychological distances: The effects of cultural syndromes, perspective flexibility, and construal level. *Journal of Personality and Social Psychology*, 111(1), 17-33. <https://doi.org/10.1037/pspa0000048>
- Woodhead, M., & Faulkner, D. (2008). Subjects, Objects or Participants? Dilemmas of Psychological Research with Children. *Research With Children* (pp. 26-55). Routledge. 10.4324/9780203964576-8

- World Bank. (2014). *Keeping the floods at bay and building resiliency in Can Tho, Vietnam*. Washington: World Bank.
- World Bank. (2020a). *Land Area (Sq.M) - Vietnam*. World Bank.
<https://data.worldbank.org/indicator/AG.LND.TOTL.K2?end=2020&locations=VN&start=1961&view=chart>
- World Bank. (2020b). *The World Bank in Vietnam: Overview*. World Bank.
<https://www.worldbank.org/en/country/vietnam/overview>
- World Bank. (2022). *Current Climate: Vietnam*. World Bank.
<https://climateknowledgeportal.worldbank.org/country/vietnam/climate-data-historical>
- World Data. (2020). *Average income around the world*. World Data.
<https://www.worlddata.info/average-income.php>
- World Health Organisation. (2018). *Climate Change and Health*. World Health Organisation.
<https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>.
- Wynn, L. L., & Israel, M. (2018). The Fetishes of Consent: Signatures, Paper, and Writing in Research Ethics Review. *American Anthropologist*, 120(4), 795-806. 10.1111/aman.13148
- Xiang, Zhang, Geng, Zhou, & Wu. (2019). Individualist-Collectivist Differences in Climate Change Inaction: The Role of Perceived Intractability. *Frontiers in Psychology*, 10, 187. 10.3389/fpsyg.2019.00187
- Yamada-Rice, D., & Stirling, E. (2015). *Visual Methods with Children and Young People*. Palgrave Macmillan. 10.1057/9781137402295
- Yildiz, A., Teeuw, R., Dickinson, J., & Roberts, J. (2021). Children's perceptions of flood risk and preparedness: A study after the May 2018 flooding in Golcuk, Turkey. *Progress in Disaster Science*, 9, 100143. 10.1016/j.pdisas.2021.100143
- Ylipaa, J., Gabrielsson, S., & Jerneck, A. (2019). Climate Change Adaptation and Gender Inequality: Insights from Rural Vietnam. *Sustainability*, 11(10), 2805. 10.3390/su11102805
- Yuill, C. (2018). Is Anthropology Legal? *Anthropology in Action*, 25(2), 36-41.

Zampas, G. (2013). *Educating children to educate their families: information, knowledge and experience diffusion within the family for sustainable lifestyles*. University of Leeds.

Zeglin, R. J., Niemela, D. R. M., Rosenblatt, K., & Hernandez-Garcia, J. (2019). Using Photovoice as a Counselor Education Pedagogical Tool: A Pilot. *Journal of Creativity in Mental Health*, 14(2), 258-268. 10.1080/15401383.2019.1581116

Zent, S. (2001). Acculturation and ethnobotanical knowledge loss among the Piaroa of Venezuela: demonstration of a quantitative method for the empirical study of traditional ecological knowledge change. In L. Maffi (Ed.), *On Biocultural Diversity: Linking Language, Knowledge, and the Environment* (pp. 190–211). Smithsonian Institution Press.

Zhang, Q., & Li, D. (2019). *Confucianism* (English edn). Design Media Publishing.

Zhao, G., Ma, G., Bo, Y., & Liu, Y. (2014). The effect of mind mapping on teaching and learning: a meta-analysis. *Standard Journal of Education and Essay*, 2(1), 17-31.

Zhao, Y., Lei, J., Li, G., He, M. F., Okano, K., Megahed, N., Gamage, D., & Ramanathan, H. (2011). *Handbook of Asian Education*. Routledge.

Zhou, Y., & Shen, L. (2021). Confirmation Bias and the Persistence of Misinformation on Climate Change. *Communication Research*, 9365022110280. 10.1177/00936502211028049

Appendices

Various resources are here provided for the reader – and are available via the following link <https://universityofhull.box.com/s/f5up1cxztitr1demr52uyhkou1pc86>.

Appendix A: Ethics

- A1) Ethics Approval Document
- A2) Ethics Application
- A3) Participant Information Sheets in English
- A4) Participant Information Sheets in Vietnamese
- A5) Participant Consent Forms in English
- A6) Participant Consent Forms in Vietnamese
- A7) Risk Assessment

Appendix B – Data Collection Tools

- B1) Workshop Plans
- B2) Semi-structured interview prompts for teachers
- B2) Semi-structured interview prompts for parents
- B2) Semi-structured interview prompts for Department of Education

Appendix C – Supplementary Data

- C1) Workbook Photos
- C2) DOE Environmental Education Training PowerPoint