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Bridges and barriers to developing visual literacy in UK undergraduates

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Dedication

Much of the writing of this thesis was completed during the COVID-19 pandemic in 2020/21 and I dedicate it to both the NHS staff who so tirelessly battled to save lives and to those who have communicated the incredibly important information needed to help keep people informed and safe—much of it visual.

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I would like to acknowledge all of those who have helped and supported me in carrying out this research and writing this thesis.

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Abstract

Today's communication is multimedia and visually-rich. However, there is a possibility that many students leave university without the visual literacy they need to understand the multifaceted role that visuals can play in such messages or to create such messages themselves. This study had three main aims: first, to find out if that possibility was real; second, to try to understand why; and third, to identify what could be done about it.

Within the UK education system generic and interdisciplinary skills are primarily developed within disciplinary frameworks. To obtain a general picture of where skills relating to working with visual materials may be developed within specific subject areas, an institutional case study was undertaken where the module specifications for all undergraduate academic programmes were analysed to audit the opportunities for students to develop aspects of visual literacy. This process also identified a suitable selection of academic staff who were interviewed to help identify potential barriers to widening those opportunities and bridges for overcoming many of these barriers.

The audit of module specifications found that students studying the majority of degrees at the institution do not appear to get the opportunities they need to be fully visually literate. For many, only critical skills or creative skills are developed rather than both. For some, the visuals used or created are highly technical and not particularly transferable to other situations which may be an issue when careers paths are increasingly unpredictable and society beyond employment is more visually oriented. Comparing the audit results with the requirements of subject benchmark statements (QAA, 2020b) and the *UK Quality Code for Higher Education* (QAA, 2014b) indicates that the ability to use visuals when communicating with different audiences, especially non-specialists, may be implied within these statements and therefore not given the prominence it deserves in many degree programmes.

Several barriers to developing visual literacy were identified. In line with the pragmatic research approach, these were classified by their level of surmountability. In addition, several bridges were identified, which can be used to overcome at least the more resolvable barriers. Two main recommendations were made: the provision of a range of assessment rubrics to facilitate the adoption of more visually-rich multimodal assignments and more specific wording in some subject benchmark statements to ensure programme designers also see the need to include these in order to develop the skills needed to communicate disciplinary knowledge and more in today's visual society.

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Abbreviations used in this thesis

ACRL	Association of College and Research Libraries
AfL	Assessment for Learning
ALDinHE	Association of Learning Development in Higher Education
AST	Academic Support Tutor
AVP	Association of Visual Pedagogies
BES	Biological and Environmental Sciences
CILIP	Chartered Institute of Library and Information Professionals
ECW	English and Creative Writing
FHEQ	Framework for Higher Education Qualifications of Degree-Awarding Bodies in England, Wales and Northern Ireland
FMDD	Film, Media and Digital Design
GEES	Geography, Earth and Environmental Sciences
HE	Higher Education
IRA	International Reading Association
L3, L4, L5, L6	Level 3, Level 4, Level 5, Level 6 of the UK frameworks for higher education qualifications. Explained further on page 84.
NCTE	National Council of Teachers of English
PSRB	Professional, Scholarly or Research Body
QAA	Quality Assurance Agency
SBS	Subject Benchmark Statement
SHES	Sports, Health and Exercise Science
STEM	Science, Technology, Engineering and Maths
UGC	User Generated Content
UK	United Kingdom of Great Britain and Northern Ireland
US	United States
VTS	Visual Thinking Strategies

Chapter 1: Introduction to the study

1.1 Introduction

This thesis aims to understand what may be preventing some students at a UK university from graduating without appropriate levels of visual literacy and what can be done to improve the situation. There is an acknowledged inherent assumption in that aim that some undergraduate students are not developing visually literacy and this assumption is also tested as part of this study.

1.1.1 The need for visual literacy in higher education

In his 1852 discourses *The Idea of University,* the influential scholar John Henry Newman wrote:

> If then a practical end must be assigned to a University course, I say it is that of training good members of society. Its art is the art of social life, and its end is *fitness for the world* [emphasis added] (Newman, 1931:177).

The textual nature of most university assessments, which ignores the need for students to be literate in visual communication, means that graduates are potentially leaving university less *fit* for a world that is increasingly dominated by visuals than they could be. In *Pedagogy of the Oppressed,* (Freire, 2000) argued that acquiring literacy, and hence empowerment, is not simply a matter of learning to read and write, but is about developing a critical approach to one's reading and the ability to communicate one's views persuasively to others. In a society where communication is increasingly visual, it seems realistic and important to extend this to visual media. A decade ago, The Association of College and Research Libraries (ACRL) in the United States summarised this need:

> The importance of images and visual media in contemporary culture is changing what it means to be literate in the 21st century. Today's society is highly visual, and visual imagery is no longer supplemental to other forms of information. New digital technologies have made it possible for almost anyone to create and share visual media. Yet the pervasiveness of images and visual media does not necessarily mean that individuals are able to critically view, use, and produce visual content. Individuals must develop these essential skills in order to engage capably in a visually-oriented society (ACRL, 2011).

Therefore, the ability to apply the same level of criticality to images and other visual media as to text and the ability to communicate effectively with visuals, that is to have *visual literacy,* is required if graduates are to be fully empowered in the world beyond higher education.

More recently, (Matusiak et al., 2019:124) suggested that those teaching in higher education (HE) need to acknowledge that:

> Being surrounded by visual media does not necessarily mean that students know how to find appropriate images, understand their meaning and cultural context, or integrate them into academic work.

This need to integrate images into academic work is gradually increasing. There is a move to diversify assessments within HE, in part driven by technological advances (France & Wakefield, 2011) and also by the need to make assessment fairer by rewarding different abilities in a diverse student population (Cox et al., 2010). Visual elements are an integrated part of most digital communication and to be fully competent in understanding and crafting multimedia messages, students need to be aware of the role that images and other visual elements play. However, despite the drive for assessment diversification, the rate of change varies. There is still an acknowledgment that assessment in HE privileges print and spoken words as a means of demonstrating and communicating disciplinary knowledge, even if there are signs that this is beginning to change (Thomas et al., 2008; Jordaan & Jordaan, 2013) (Bowen & Evans, 2014). This is perhaps due to a reported distrust in the rigour of visual alternatives (Pauwels, 2008), and a feeling that they are more "superficial" (Cox et al., 2010:831) in comparison. Consequently, opportunities for students to develop a high level of visual literacy through repeated and *progressive* learning and assignments that *explicitly value* the role of visual material may still be relatively few when compared to text-dominant counterparts.

However, little is actually known about how much visual literacy development students receive during an undergraduate degree. Variation is to be expected, with those studying degrees that focus on visual materials such as some art and design disciplines expected to receive the most; but for those degrees that do not have such a visual focus, are there still sufficient opportunities in UK degree programmes for appropriate levels of visual literacy to be achieved? If not, why not? And what can be done about it?

1.2 My reasons for undertaking this particular study

I am, by profession, a learning developer working within an academic library. This is explained more in section 4.4 which considers my positionality, but here it is sufficient to say my role is central, interdisciplinary and concerned with giving students the knowledge, understanding and skills they need to make sense of, and thrive, in HE. I have a background in teaching ICT and alongside other learning development, I have always been the member of my team that is called on to help students get to grips with the more 'visual' assignments such as presentations

and posters, with their increased need for technical computer skills. However, when running presentation skills sessions or discussing presentations in individual appointments, for example, I have noted the lack of attention most students give to the visual components of their presentations. Not only their abilities to notice when visual evidence would be preferable to a list of bullet points, but their abilities to find and use good quality, suitable images successfully or create relatively simple diagrams themselves. Basic design knowledge was often lacking, with messaging being lost by poor choices in colour or layout. If images were used, it seemed they were often selected with little thought and rarely approached critically. These skills are increasingly important in all forms of multimedia communication and yet I became aware from seeing student feedback on assignments that they were not always particularly appreciated when they were used well: with some poor marks being given due to complaints of a lack of 'depth' even though the visuals were providing that depth rather than lists of text. Aware that good practice was occurring in some modules (as I was asked to come in and teach this and could see that it was incorporated into marking criteria), I wanted to know what made the difference. What was the extent of the variation and why? And, most of all, what could be done about it? Hence this study.

1.3 Research Questions

The above curiosity has led to the specific research questions for this study, which focus on a single HE institution and ask:

Q1 To what extent is visual literacy developed in a higher education institution's curricula?

Q2 What could be potential barriers to developing visual literacy within the institution?

Q3 What could be potential bridges to developing visual literacy within the institution?

This study will then consider how the identified bridges can be leveraged to overcome the barriers and improve the visual literacy of graduates leaving the institution.

1.3.1 Definition of terms

Issues with the definition of visual literacy and the finalised definition used in this thesis are covered extensively in Chapter 2, however here I would like to define my meaning of *develop* and its derivatives, in terms of developing visual literacy, as it is used in my questions and throughout this thesis.

When writing of opportunities for development, I am referring to gaining any skills and knowledge associated with being visually literate. This could be through direct teaching or facilitation of learning and further promoted through assessment and feedback in order for understanding and skills to progress. For example, setting a presentation assignment can potentially develop visual literacy but only if the way visual material is used within that presentation is taught and/or assessed. Without effective feedback, developmental opportunities would be minimal (Watling & Ginsburg, 2019; Cohen & Singh, 2020). In a more holistic sense, development also implies the need for progressive opportunities for students to use visual materials to increasingly higher standards and/or in a wider range of situations in order that appropriate visual literacy standards are met[1].

1.3.2 How the questions are answered

This study uses my own institution as a case study. By focusing on a single institution, a more detailed analysis of the extent of visual literacy development can be undertaken, and it acknowledges that bridges and barriers may be contextual. Full details of the methods used for gathering and analysing data are given in Chapter 4 so here only an overview is given.

Q1 is answered by auditing the entire module catalogue for a single academic year (2018-19) to identify anything within the module specifications (for example learning objectives or assessments) that could contribute to the development of visual literacy. When this is identified, the type of visual literacy skills developed (for example those relating to critical or creative aspects) is also noted. This allows me to see a picture across the whole institution, within wider subject groups and in specific subject areas.

Q2 and Q3 are answered by interviewing academic staff teaching on a variety of modules identified during the audit. By discussing their rationale and experiences, I identify potential difficulties or disablers, i.e. barriers to developing visual literacy, and potential aids or enablers, i.e. bridges to developing visual literacy that may be present in the institution. As indicated above, this has the aim of identifying how the bridges can be used to lessen the influence of the barriers and increase our graduate visual literacy levels.

1.4 Structure of this thesis

This thesis is made up of eight chapters (see Figure 1.1). After this introductory chapter, there are two chapters that review existing research literature. The first (Chapter 2) uses the

[1] As defined by the ACRL and introduced in more detail toward the end of Chapter 2.

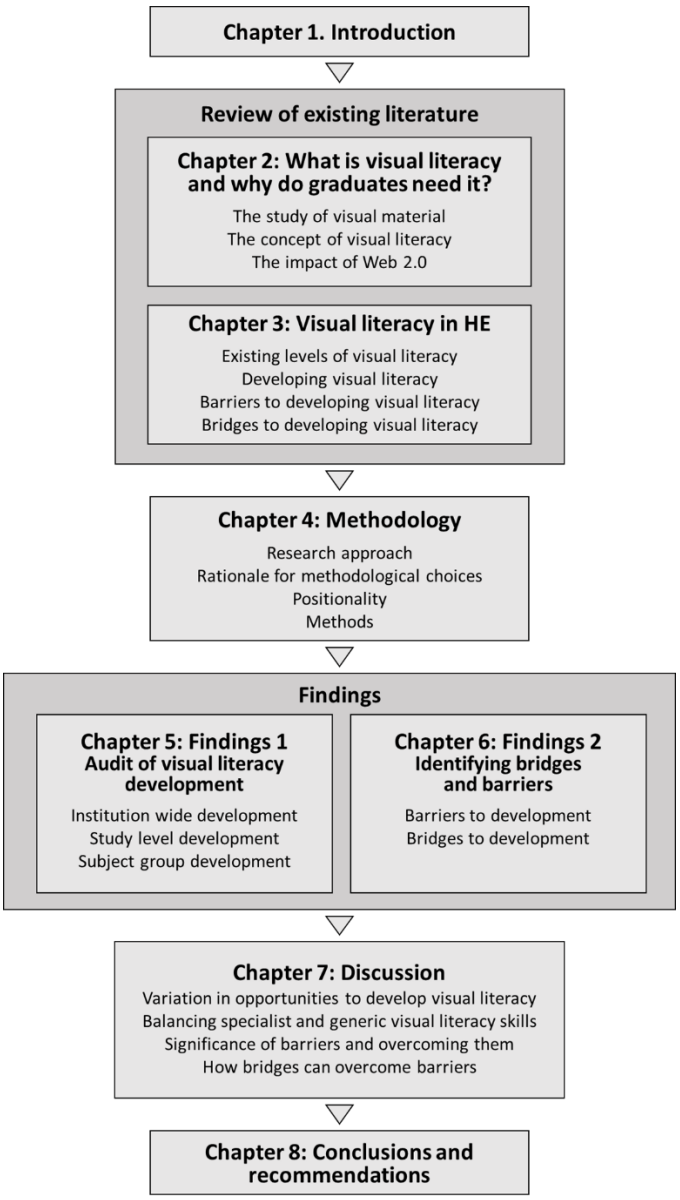

Figure 1.1 Structure of the thesis

literature to explain the nature of visual literacy and why graduates need it. It positions visual literacy within the framework of HE, briefly looking at the history of studying visual material, the development of the concept of visual literacy, and attempts to define it. It finishes by acknowledging the impact of the rise of user-generated web content and how that influenced the creation of the updated definition that is used in this thesis.

The second literature review chapter (Chapter 3) focuses specifically on how visual literacy is being developed within HE beyond the institution studied here, in order to put the first research question into a wider perspective. It considers initiatives to develop visual literacy in a variety of different disciplinary and interdisciplinary contexts worldwide and shows that successful development is possible. The chapter also begins to answer the second two

research questions by identifying any barriers or bridges to developing visual literacy noted or alluded to in the literature that may or may not be present in the studied institution.

Chapter 4 presents the research methodology used in this study, including my research approach, rationale for methodological choices and an explanation of the specific methods used to collect and analyse the data. The main methods are an audit of institutional module specifications in order to answer the first research question, and interviews of academic staff in order to answer the second two questions. These have led to two findings chapters. The first (Chapter 5) presents the results of the audit. Whilst it does provide an overview of the extent of visual literacy development in the institution, in wider subject groupings and at different study levels, the majority of the chapter focuses on individual subject areas and the variation between them, both in terms of amount and type of visual literacy developed. The second findings chapter (Chapter 6) presents the results of the interviews with members of academic staff undertaken to identify bridges and barriers to developing visual literacy. It confirms the existence of most of those found in the literature as well as some uniquely identified by this study.

Chapter 7 discusses the findings: it attempts to explain the variation found in visual literacy development in different subject areas by comparing the results of the audit to the requirements of subject benchmark statements (SBSs) produced by the UK Quality Assurance Agency for Higher Education (QAA). The chapter then considers each of the barriers identified via the literature review/interview data and discusses how the identified bridges could be used to begin the process of overcoming them.

The concluding chapter (Chapter 8) summarises the study, explaining how the questions were answered, the main findings and their implications. It also suggests the unique contributions made by this study, acknowledging its limitations. The chapter includes some recommendations for changes within the institution, with SBSs, and for further research. It concludes with a short reflection on the research process.

Chapter 2: What is visual literacy and why do graduates need it?

2.1 Introduction

The aim of this chapter is to position and explain the concept of visual literacy within an HE framework and highlight its importance for graduates entering today's visual society. It will begin by placing visual literacy in its historic and academic context by giving a short review of how visual materials have traditionally been studied within HE—which is mostly within the disciplines of art history and cultural studies—and showing how broadening this to consider the increasing use of visual materials in other disciplines and in everyday life has contributed to the development of the interdisciplinary concept of visual literacy (section 2.2). Section 2.3 will attempt to explain the term visual literacy and the concept it describes. Firstly, the appropriateness of marrying the words *visual* and *literacy* to form the term itself will be discussed (section 2.3.1); secondly the initial definition will be introduced and consideration given to how this fits within a university education (section 2.3.2); thirdly the parallels with verbal literacy are explored—where they are useful and where they fall short (section 2.3.2); and finally the difficulties in arriving at a consensus definition for the concept as a whole are addressed (section 2.3.4). The chapter will then discuss the impact that the digital revolution, specifically the advent of Web 2.0 technology, has had on the concept of visual literacy (section 2.4). This will consider how new skills need to be incorporated that enable visually literate individuals to navigate the sheer quantity of visual material available as well as the creative, legal and ethical issues that the sharing culture has generated. The chapter will conclude by evaluating the more recent definition and set of standards put forward by the Association of College and Research Libraries (ACRL), to see whether these are suitable as the agreed definition and visual literacy framework for this research project.

2.2 The study of visual material

This section by no means attempts to give a comprehensive account of how visual material has been studied in universities through the ages as that is beyond the scope of this thesis. Its more modest intention is to position the interdisciplinary field of visual literacy within the wider academic context, specifically highlighting some important academic areas where visual materials are studied extensively. A number of established disciplines all feed into the concept of visual literacy; for example, linguistics, philosophy and psychology (Hortin, 1994). Whilst these offer important tools and approaches that can be applied to the study of visual materials, they are only partially concerned with them as data. This section will focus on those

academic areas where visual materials make up a significant proportion of the primary data studied, particularly those where the skills involved are relevant to the concept of visual literacy.

2.2.1 Art history

The academic study of visual material, initially in the form of art history, can be traced back at least as far as AD 77 and the chapters in *Natural History* on the history of art by Pliny the Elder (Davis, 1993). A principal part of the academic discipline of art history is the analysis and interpretation of visual images, which also includes studying the influences on, and intentions of, the artists concerned (Lorenz, 2016). Whilst this analysis and interpretation can take many different approaches, it is limited in its scope to studying what can be defined as 'art' and through the lens of 'history' (Bal, 2003). Nevertheless, many of the processes and techniques used within this bounded discipline are important elements of the interdisciplinary concept of visual literacy. For example, a sociological approach to art history uses art as a window into the social world of the artist, or the society depicted (Barbu, 1970). An education that incorporated the development of visual literacy would use the same processes to analyse the sociological lessons from everyday visual materials. Similarly, a psychological approach to art history such as that of Rudolf Arnheim, which considers how the brain thinks using images (Arnheim, 1969) and how artists use elements such as a balance, shape, form, light, space and colour to influence thought, was described by Hortin (1994:10) as "perhaps the crux, of the visual literacy concept". The study of art history therefore, whilst focused on works of art rather than wider disciplinary or everyday visual material, has provided a theoretical basis that many visual literacy scholars have been able to expand upon.

2.2.2 Cultural studies

A wider study of visual material is found in the much younger discipline of *cultural studies*. Cultural studies began in England in the 1950s with the work of Richard Hoggart and Raymond Williams who were both struck by the cultural differences they encountered as working-class, scholarship-educated men, working in privileged university settings (in Hoggart's case the adult education department at my own university) (Dworkin, 1997). This inherently political, Marxist background formed the basis of cultural studies but as it grew as a discipline it incorporated elements from nearby disciplines such as "art history, anthropology, sociology, art criticism, film studies, gender studies…women's studies and… journalism" (Elkins, 2003:2). This widened the scope of cultural studies so that when visual aspects of culture were studied

it was from a broader perspective than the discipline of art history allowed—though it was still within the framework of the cultural studies discipline within a critical theory paradigm.

2.2.3 Visual culture and visual studies

Cultural studies spread to America in the 1980s where the increasing visuality of culture led to a new field of *visual culture* developing (Mirzoeff, 1998). Visual culture has been defined as "the social construction of visual experience" (Mitchell, 1995) and is not merely a field within cultural studies that concentrates on the visual; it has essential differences which Elkins (2003:2) described as

> less Marxist, further from the kind of analysis that might be aimed at social action, more haunted by art history… than the original cultural studies.

The specific study of visual culture marked a turning point in the study of visual material generally as it took it from the disciplinary boundaries of art history and cultural studies and made it a wider, *interdisciplinary* field. This interdisciplinarity not only encourages new perspectives on how to study visuals and visuality within existing disciplines but also challenges their traditions and practices (Mitchell, 1995). In the UK and North America visual culture is most often studied within departments of cultural studies, film studies, media studies and women's studies but in continental Europe and Latin America it is more likely to be associated with philosophy, semiotics and communication theory (Elkins, 2003). These different approaches used to study visual culture mean that visual materials are studied through many different lenses. Books and papers on visual culture vary hugely in their subject matter—museum artefacts, art education, cinema, computer graphic design, the holocaust, abortions, apartheid, religion—to name but a few. The growing use of visual materials to both represent and communicate within society means that this list is potentially infinite and suggests more scholars need to address visual culture within their academic fields.

To add complexity to the picture, the term *visual studies* is often used alongside or instead of visual culture and it is far from clear where the boundaries of the two fields lie. Some writers consider them synonymous: Dikovitskaya (2005:1) begins her book *Visual Culture* with "Visual culture, *also known as* visual studies is a new field of study…" [emphasis added], whilst others think that they are either subtly or substantially different. According to W. J. T. Mitchell (2002:166) "Visual studies is the study of visual culture" though he also suggests that the term visual studies is unnecessary as it is unclear what issues it addresses that are not covered by visual culture itself; and the fact that 'visual culture' is a term that can cover both the name of the field and the name of object of study. Elkins suggested that visual studies could be a more

evolved form of visual culture (what "visual culture might grow to be") that incorporates "the study of visual practices across all boundaries" (Elkins, 2003:7). Both Mitchell and Elkins have posed questions about the disciplinary, interdisciplinary and even *indisciplinary* nature of both visual culture and visual studies (see Mitchell, 1995; Mitchell, 2002; Elkins, 2003) and though neither attempt to answer their own questions, they both appear to value at least certain interpretations of their interdisciplinary status. The distinctions are not important here, they are noted to show that any surveyor of the literature on the study of visual materials must be prepared to embrace some fuzziness in the boundaries of the relevant fields and a wide variety of overlapping terms (image studies, visual intelligence and visual communication are also regularly occurring examples).

The crossing of boundaries that Elkins (2003) hoped for is an acknowledgement of the increasing role of visuals in *all* disciplines. A simple example of this is the changing nature of textbooks, with images playing an increased role not only in illustrating points from the text but in advancing explanations not mentioned in the text itself (Bezemer & Kress, 2010; Rybarczyk, 2011). Whilst working with some images is highly specific to the disciplines involved (for example MRI scans in psychology and medicine, molecular modelling in chemistry or geophysical maps in geography) working with visuals also involves more generic skills. A simple example of this would be the use of colour to draw the eye but it could also include more complex cross-disciplinary skills such as the creation and analysis of data visualisations such as charts, graphs, and increasingly, infographics. Both Elkins (2003) and Mitchell (2002) put forward strong cases for visual studies to be an interdisciplinary field and this is compatible with the wider concept of visual literacy as will be seen in section 2.3.

The previous short consideration of the ways that visual material has been studied shows a roughly chronological progression starting with art history and leading to visual studies. However, alongside the later academic developments, the growth of the reach of television in the 1960s brought visual materials into the living rooms of the majority of western homes (BARB, 2017; TVHistory.com, n.d.). This, and the increased use of visual elements in other media such as newspapers (see Figure 2.1), meant the need to be both critical consumers and effective producers of visual materials became a wider, more everyday, issue. There was a call for all children and students to be educated in the use of visual materials using some of the techniques and approaches previously recognised within the fields of visual culture and visual studies. This call, which was made by Debes (1969), was for visual literacy to be taught alongside verbal literacy and the specific concept of visual literacy is the topic of the next section of this chapter.

Figure 2.1 The Times newspapers from 1947 and 1967 showing an increase in use of visual elements such as photographs and typeface
(sources Pixabay (2017) and Historic Newspapers (n.d.) respectively).

2.3 The concept of visual literacy

At its simplest, the term 'visual literacy' relates to skills required to understand and create visual messages. Many of these skills equate to those already recognised by the earlier disciplines and fields mentioned above (amongst others) and there is no evidence that scholars of visual literacy consider it to be a replacement for those areas of study. Instead, it is a way of bringing some of the techniques, practices and approaches of those academic areas together to have a more practical and wide-ranging influence.

Despite the phrase being occasionally used earlier in the realm of art history (Elkins, 2008), visual literacy as a term and concept gained wider recognition in 1969 at the First Annual National Conference on Visual Literacy. In his opening speech, John Debes, one of the founders of the fledgling International Visual Literacy Association (IVLA) identified its approaching importance in a society where television was bringing visual media to the forefront of children's lives as never before (Debes, 1969).

2.3.1 Visual + literacy: an unlikely pairing

Marrying the word 'visual' with 'literacy' has not been without criticism. Gunther Kress, the primary advocate for recognising the multimodal rather than purely linguistic nature of communication, suggested that the word 'literacy' should be reserved for lettered communication (Kress, 1997; 2003). This is partially backed up by the word's etymology; it is derived from the Latin word *littera* (meaning 'letter') and concerned exclusively with the ability to communicate effectively via text (Latdict, 2017). Another argument against the term itself is that 'literacy' customarily refers to the skills of reading and writing print and that print itself is perceived visually and therefore the term visual literacy includes verbal literacy and is perhaps not sufficiently distinct, making it an unhelpful metaphor. Cassidy and Knowlton (1983) who put forward this argument suggested that 'visual-iconic literacy' better represented the

concept as this removed the visual aspects of reading words from the meaning of the term. However, the usage of words changes, and literacy is now increasingly used to mean 'a competency in'—as in such phrases as 'computer literacy', 'financial literacy' and 'mathematical literacy'. The term 'visual literacy' falls somewhere between this newer usage of the word 'literacy' and its Latin roots: whilst it does include competency in the use of visual material, it also refers to the ability to communicate effectively using a language—albeit a visual one (Bamford, 2003).

The potentially paradoxical nature of the phrase is for some, the very reason why it works so well. Elkins (2008:1) described it as an "unavoidable contradiction" and supports its use as it suggests both the 'reading' of images and being literate or knowledgeable about them, a point backed up by W.J.T. Mitchell (2008) when he wrote *Visual literacy or literary visualcy*? This conflating of 'visual' with 'literacy' therefore creates a useful counterpoint that highlights the connection to both reading and creating (writing) text whilst emphasising the visual nature of what is being 'read' or created.

2.3.2 Initial definition

Recognising that a new concept is more readily accepted when it has a formal definition, Debes proposed the tentative one below, which he gave as a starting point for discussion and stated that is was "sure to be changed" (Debes, 1969:27):

> Visual literacy refers to a group of vision-competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions, objects, symbols, natural or man-made, that he encounters in his environment. Through the creative use of these competencies, he is able to communicate with others. Through the appreciative use of these competencies, he is able to comprehend and enjoy the masterworks of visual communication (Debes, 1969:27).

This definition takes many of the same competencies that would be expected in students studying visual culture/studies (for example the interpretation of visible actions, objects and symbols) but applies them to everyday experiences. It also places emphasis on *using* visuals to communicate rather than simply consuming visual messages; an aspect that has gained even more importance since that time due to the rise of Web 2.0 technologies and this will be looked at in more detail in section 2.4.

Another important aspect of this initial definition, which is still used by many, is that it states that developing visual literacy is a *fundamental* element of learning which would place it firmly within the field of education. Words such as *discriminate* and *interpret* are ones that are used regularly when describing elements of critical thinking (see Sternberg, 1986; Stables, 2003), the development of which is a universally acknowledged aim of HE (Barnett, 1997). The phrase "through the creative use of these competencies, he is able to communicate with others" (Debes, 1969:27) is suggestive of the ability to communicate using a variety of forms and to different audiences which is a descriptor of the Quality Assurance Agency (QAA) UK HE framework from level 5 upwards (QAA, 2014b). From its first conception, developing visual literacy could therefore be placed within the scope of a university education.

2.3.3 Parallels between visual literacy and verbal literacy

One of the first people to recognise some issues with the initial definition was Debes himself. With his co-founder of the IVLA, he suggested that it may prove unsatisfactory as a tool for educators who may want something more practically oriented (Fransecky & Debes, 1972). Instead, a description of a visually literate person was given that emphasised the similarities to verbal literacy. So, instead of "discriminate and interpret" they made the direct comparison to reading and instead of "through the creative use of" made the connection to writing. Hence

> A visually literate [person] can "read" visual language with skill. He can "write," that is, compose visual statements with skill, perhaps with eloquence. He can translate from the visual to the verbal and vice versa. He has a basic understanding of the grammar of visual language and some realizations that it parallels verbal language. He is familiar with and somewhat skilled in the use of the tools of visual communication. And, finally, of course, he is developing a critical sensibility toward visual communication (Fransecky & Debes, 1972:7).

These parallels between less understood aspects of visual literacy and well understood elements of verbal literacy serve well to provide an accessible and practical definition.

In her early and influential book, *A Primer for Visual Literacy*, Dondis used the comparison to verbal literacy but developed the parallel a step further:

> A verbally literate person is defined as one who can read and write, but this definition can be extended to mean an educated person. For visual literacy the same extension of meaning should hold true. Beyond providing a body of shared information and experience, visual literacy holds promise of an educated understanding of that information and experience (Dondis, 1973:182).

This equating of a literate person with an educated person and the extension to visual literacy once again places the development of visual literacy firmly within the remit of schools and HE and again suggests it is not something that can just be 'picked up' by life experiences.

Further comparisons with verbal literacy can be made when considering different levels of literacy. Levels of verbal literacy are often used as indicators of levels of education and ability (Dondis, 1973). For example, when reading, *functional literacy* is the ability to recognise marks on paper and form them into comprehensible words and phrases which are understood at a superficial level (Stables, 1998). At the other end of the scale, *critical literacy* implies a deeper understanding of the text with the ability to recognise "cultural, social and political forces that shape the text" and react accordingly (Stables, 1998:158). Further, when writing, there are also different levels: functional literacy is represented by the ability to produce readable text (preferably grammatically sound and correctly spelled) with highly complex or creative writing at the other end of the scale—represented by academic works, novels or poetry. Likewise, with visual literacy, the ability to recognise objects within an image and discern superficial meaning is the most basic level when 'reading' images whereas the capacity to look deeper and discern other messages depending on a knowledge of the processes involved and the socio-cultural context shows a higher level of literacy. And when composing visual messages, the technical ability to draw some representational stick figures or find reasonably appropriate images would represent the lowest level, with the creation of masterworks of art or complex visual explanations[2] at the other extreme. Possession of very low levels of literacy in either case would not make an individual 'literate' in the sense of being well educated. To be classed as visually literate would therefore imply that an individual possessed more than functional visual literacy and that they possessed the higher levels of visual literacy (without the need to be a professional art critic or acclaimed artist). Such higher levels can be particularly well developed in HE where the 'critical sensibility' mentioned towards the end of Fransecky and Debes' description can be cultivated to a sufficiently elevated degree.

There is considerable evidence that there is a 'language of the visual' and a visually literate individual would be classed as educated in, if not fluent in, that language. Fransecky and Debes (1972:7) stated that a visually literate person "has a basic understanding of the grammar of visual language" and Dondis (1973) was one of the first to describe syntactical guidelines. More recently, both Kress and Van Leeuwen (2006) and Leborg (2006) published books on

[2] The work of Edward Tufte is particularly notable here such as *Envisioning Information* and *Visual Explanations* (Tufte, 1990; 1997)

'visual grammar' which cover such elements as colour, positioning and grouping and how these influence visual communication. An understanding of how these different elements of visual messages combine to influence meaning will enable a visually literate individual to communicate more effectively using visual media. Consciously recognising the effects of such elements also means a visually literate individual will be more likely to understand visual messages produced by others, including how they are themselves being influenced (even manipulated) by such design. Ignoring grammatical rules in both verbal and visual fields can always produce some highly creative results, but the majority of communication is facilitated by adhering to their basic principles—and knowing when to 'break' the rules for maximum effect.

Fransecky and Debes (1972) suggested that 'eloquence' be strived for in composing visual messages, though they implied that this was not necessarily a requirement of visual literacy, in the same way that it is not a prerequisite of verbal literacy. However, W.J.T. Mitchell suggests that visual literacy should indeed represent a higher level of ability which he described as 'connoisseurship':

> …the more advanced and specialized skills we might want to call visual literacy—that is, connoisseurship: rich, highly cultivated, and trained experiences and techniques in visual observation. (Mitchell, 2008:13-14)

Again, there is the implication in this statement that visual literacy needs to be *trained* and not left to simply 'mature' by natural processes as suggested by Cassidy and Knowlton (1983). The higher-level skills suggested in Mitchell's definition would imply that visual literacy skills should not be neglected in HE as this would be the ideal environment to develop the highly cultivated experiences and techniques that it calls for.

There is some opposition to making too many parallels with verbal literacy however. Messaris (1994), wrote of his discomfort in treating visual language as just another language and argued that visuals have a unique form of expression that is wholly distinct from aural or text-based equivalents. This is one of the reasons why he says he "reluctantly" used the phrase 'visual literacy' in the title of his book *Visual Literacy: Image, Mind and Reality* which he believed could perpetuate this misconception. He nevertheless acceded to the momentum that the term had already built and feared it would be pedantic to oppose its use. An emphasis on the "language-like" characteristics of images was also cautioned against by Callow (2005:6) who highlighted the "unique nature" of images and suggested that a "broader, interdisciplinary approach" that included visual culture and philosophy, especially hermeneutics with its

emphasis on individual meaning-making would be more beneficial. Many writers stress that this meaning-making is at the core of visual literacy when putting forward their own definitions of the concept (see for example Giorgis & Johnson, 1999; Nelson, 2004; Burns, 2006; Metros, 2008) and the multitude of different definitions is addressed in the following section.

2.3.4 The search for a consensus definition of visual literacy

A great deal has been written about the need for a consensus definition of the term visual literacy. The original Debes' definition was, up until early 2020, the one given on the *What is "visual literacy"* page on the IVLA website (IVLA, 2012)[3] despite it being half a century old and written only as a tentative starting point for discussion. The IVLA site further stated:

> the coexistence of so many disciplines…at the foundation of the concept of Visual Literacy…causing and at the same time emphasizing the eclectic nature of it, is the major obstacle towards a unanimously agreed definition of the term (IVLA, 2012)[4].

Debes himself acknowledged this situation, describing visual literacy as "a great amoeba-like entity with pseudopods reaching out in many directions" (Debes, 1969:25). The different directions are depicted in Figure 2.2 as the different disciplinary sources and needs that Debes suggested influence the shape of visual literacy. This multidisciplinary influence on visual literacy was also highlighted by Levie (1978) who listed a huge range of contributory academic areas:

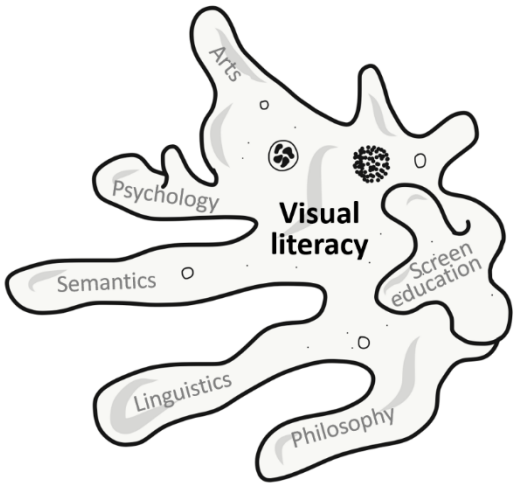

Figure 2.2 Visual literacy's amoeba-like form incorporating many disciplines.
Suggested by Debes (1969).

> Among the areas that have been mentioned as contributing to the study of visual literacy are aesthetics, anatomy of the eye, body language, cognitive psychology, communication theory, cultural anthropology, instructional technology, mental imagery, neurophysiology, perceptual development, psycholinguistics, semantics, and visual perception. (Levie, 1978:25)

[3] This web page is no longer available.
[4] Please note that any quotations without page numbers in this thesis are from unpaginated sources such as websites. Note also that the updated IVLA website no longer contains this quotation.

The more disciplines that get involved, the more complex any definition becomes as it grows to incorporate disciplinary viewpoints (Ausburn & Ausburn, 1978) and as a complex definition can negate its usefulness, writers have continued to define visual literacy more simply, often just in terms of reading/writing or understanding/creating, though others have added or emphasised additional elements. For example, authors approaching visual literacy from the fields of communication/journalism and science/technology commonly define visual literacy simply in terms of reading and writing visual messages, for example:

> Visual literacy is the ability to understand (read) and use (write) images and to think and learn in terms of images, ie, to think visually (Hortin [1983], quoted in Avgerinou & Ericson, 1997:281).

> Visual literacy might be defined as the ability to read a visual image, using skills that are somewhat similar to those used to read and comprehend a printed text (Eastman, 2015:41).

Similar definitions are given in Schamber (1987), Sims et al. (2002) and Schönborn and Anderson (2006) all of whom work in the fields mentioned above.

The ability to *think* visually mentioned in Hortin's definition above, also appears in several other definitions, for example, Seels (1994:108) stated "three theoretical constructs, visual thinking, learning, and communication, help define the phrase" and Braden and Hortin (1982) defined visual literacy as "the ability to understand and use images, including the ability to think, learn, and express oneself in terms of images". Visual thinking is also stated as a key by Wileman (1993), Christopherson (1997), Avgerinou and Pettersson (2011), and Vasquez (2012). This links back to the work of art historian and psychologist Rudolph Arnheim and his 1969 book *Visual thinking,* and is a good example of how visual literacy uses many of the theories developed in other disciplines. Advances in brain research have further enabled a more psychological, even neurological, approach to visual literacy such as that seen in the work of Hill (2008) and Dake (2007) and definitions continue to change as a result.

Within the fields of education and literacy, several definitions highlight the importance of meaning-making. Whilst this is similar to 'reading' or 'understanding' it implies the need to bring other knowledge and experience to the reading process. For example:

> Visual literacy is the ability to construct meanings from visual images (Giorgis & Johnson, 1999:146).

> Visual literacy is the competency to make meaning from what we see and to create images that convey implicit and explicit messages to others (Burns, 2006:16).

> Visual literacy is the ability to decode and interpret (make meaning from) visual messages and also to be able to encode and compose meaningful visual communications (Metros, 2008:103)

Other educationalists stress the importance of *intentional* communication. For example Ausburn and Ausburn (1978:291) gave their definition as:

> a group of skills which enable an individual to understand and use visuals for *intentionally communicating* with others. [Emphasis added]

With Avgerinou (2001:142) expanding this to:

> In the context of human, *intentional* visual communication, visual literacy refers to a group of largely acquired abilities, i.e. the abilities to understand (read), and to use (write) images, as well as to think in terms of images. [Emphasis added]

The literature abounds with more definitions. Brumberger (2011:21) pointed out that "the richest definitions include both an interpretative and a productive component", although she suggested later in the same paper that both may not always be necessary. Throughout the literature however, there is a constantly recurring theme that the lack of a consensus definition is problematic, holding back research and generally obstructing the advancement of what Mullen (2004) described as the 'visual literacy movement'. For example, Barbara Seels titled her 1994 book chapter *Visual Literacy: The definition problem*, Braden (2001:491) called the lack of definition a "major impediment… to research on visual literacy" and Avgerinou and Ericson (1997:280) provocatively stated:

> It is self evident that if a concept does not have a broadly accepted definition, if the theory behind it is confusing, and if its viability on practical terms is a matter of continuing controversy, then the only reasonable way to cope with it is to abandon it.

In 2007 there was a concerted attempt to address the issue by conducting a Delphi study in which an expert panel was invited to try to reach consensus (Brill et al., 2007). Fifteen individuals were selected and identified as experts in the field (voted for by other scholars of visual literacy) and through a variety of surveys the following initial consensus definition was proposed:

> A group of acquired competencies for interpreting and composing visible messages. A visually literate person is able to: (a) discriminate, and make sense of visible objects as part of a visual acuity, (b) create static and dynamic visible objects effectively in a defined space, (c) comprehend and appreciate the visual testaments of others, and (d) conjure objects in the mind's eye (Brill et al., 2007:57).

However, this definition is somewhat cumbersome, using some phrases that readers from outside the field of visual literacy may not immediately understand.

The Delphi study researchers concluded that this definition could still not be considered a consensus definition as response rates from the participants were low. They challenged the visual literacy community (although they began to question the existence of such), and the IVLA in particular, to reflect on the definition and decide whether it, or a refinement of it could be considered consensus. This echoed an almost identical call to the IVLA 15 years previously by Braden and Hortin (1982) and yet, as seen on their earlier website (see page 27), until recently they seemed more pragmatic about the lack of a consensus definition and happy to accept its eclectic nature.

This pragmatic approach is potentially sensible. Despite the predictions of woe about the lack of a consensus definition hampering research, there is little evidence that this has been the case in terms of volume. A search of the Proquest global thesis database for theses with “visual literacy” in their title or abstract shows there have been more than 200 such PhD theses since 1980 and a similar search for academic papers in multidisciplinary journal databases returns over 1,400 results. The IVLA publishes a journal of increasingly empirical research articles (Brumberger, 2019), provides research funding, and has an annual conference showcasing research initiatives (see IVLA, 2020a). Many of the research articles do start by considering a definition of the concept but many do not think it necessary beyond a cursory mention. However, to return to Debes’ earlier analogy, an amoeba is nevertheless a single-celled organism with one nucleus that controls its actions and growth; a consensus definition of visual literacy could clarify its common nuclear components and provide a stronger foundation for research and researchers to build upon. It does not matter that research takes different directions within different disciplines—many see this as a strength—but it is important that researchers can build upon research that has taken place within other disciplines with the confidence that it is relevant to their own research area. An agreed understanding of the core components of visual literacy, even if this does not form a precise definition, would therefore be beneficial.

The lack of a consensus definition may not have hampered visual literacy research unduly, but it could be a contributory factor in the failure to embed widespread visual literacy development into educational practices. As Fransecky and Debes pointed out back in 1972, educators prefer a practical definition. This is even more important today when a concept is only likely to be adopted if it can be translated into measurable learning outcomes in order to meet the demands of institutional module approval systems. This is particularly true of interdisciplinary concepts which can be harder to embed within the UK higher education system with its strong disciplinary boundaries. There is a lack of research looking specifically at how visual literacy is developed in the disciplines, and the first research question in this paper will seek to partially redress that gap as it aims to create a picture of the current extent of visual literacy development in different subject areas in the case institution and considering what could be causing any variation found.

The bulk of the papers included in this chapter originate in the United States (US) indicating that it is a more recognised concept there. However, the fact that so many began by a fairly lengthy explanation of the concept including their definition of visual literacy suggests that it is not universally understood or accepted, and the lack of a consensus definition may be compounding this problem. One reason an agreed, practical, definition has proved difficult to fix upon could be that, unlike traditional verbal literacy, the work to define visual literacy has come at a time when the skills and attributes needed to be classed as visually literate have been changing as technology has rapidly progressed and images have become such a prevalent and universal communication tool—this is discussed next.

2.4 The impact of Web 2.0 on visual literacy

The majority of the aforementioned definitions and descriptions of visual literacy and visually literate individuals were written before the exponential rise of digital technologies that the world is currently witnessing. Whilst a notable shift towards the visual as a means of communication in the second half of the 20th century was noted by W.J.T. Mitchell and described as "a pictorial turn" (Mitchell, 1994:11), it was even then impossible to predict the present explosion of visual communication; described by Avgerinou (2009) as a *bain d'images*[5]. The coming of the Web 2.0 age, with the rise of user-generated content (UGC)(O'Reilly & Battelle, 2004), has changed who is creating visual content and how it is accessed. This has had two important impacts on visual literacy; firstly, it has widened the need for visual literacy to

[5] Image bath

be developed at all levels and in all disciplines and secondly it has focused more attention on how visual literacy can be operationalised in an increasingly digital world so that practitioners can more readily understand the skills and attributes needed to be visually literate in today's society.

2.4.1 The widening need for visual literacy

In Western universities, technological advances mean that students studying every discipline are now more likely to need to communicate in a way that requires some use of visuals. Despite there being a generally conservative approach to assessment innovation, maintaining the dominance of written assignments and examinations (Burger, 2017; Times Higher Education, 2019; O'Neill & Padden, 2021; Thomson et al., 2021), improved access to computers and other technology means that increasing numbers of assessments now require some elements of visual communication. For example, digitally produced posters and presentations have become commonplace and more innovative multimodal assessments producing, for example, infographics, digital stories and videos are increasing in popularity (Toth, 2013; Reyna et al., 2018; Ross et al., 2020). Nearly all students will be expected to produce at least one, if not several, of these potentially visually-rich products during their undergraduate years. To focus on the most ubiquitous of these, assured use of presentation software such as PowerPoint has been expected by audiences within education and beyond for more than two decades (Hill, 2000). Academics are now beginning to accept that using both text and images can help construct new meaning (Metros & Woolsey, 2006) and accordingly, PowerPoint has been described as a 'semiotic technology' (Aiello, 2020; Jones et al., 2020). The majority of research on the effective use of PowerPoint in HE, centres around how lecturers use the software (for examples, see Nowak et al., 2016; Pate & Posey, 2016; Roberts, 2018a; 2018b; 2019) and these examples all emphasise the importance of using effective visuals and design to promote learning. Similarly, for student presentations to be a truly effective form of assessment, students need to be able to use images within a cohesive visual rhetoric—that is to use images as effective evidence within arguments rather than as ornament (Cyphert, 2007; Bowen, 2017). Arguably, this is also the case for posters and the other multimodal assessments. It is highly likely, therefore, that *all* students need to be able to source or create images, evaluate their effectiveness, and use them appropriately, within a well-designed message, to help convey meaning to their audience—that is to demonstrate visual literacy. Alongside the changes in assessment practices outlined above, there has been an unprecedented growth in the volume of visual material easily available to students in a society where Web 2.0 tools and UGC mean that everybody can be, and is increasingly expected to be,

a producer not just a consumer. This has meant that, as well as the increased need for visual literacy, the parameters of visual literacy itself have widened in recent years and a new set of skills needed adding to complement those already included in existing definitions, this is the topic of the following section.

2.4.2 Visual literacy skills and attributes for a Web 2.0 society

The increase in UGC requires visually literate individuals to use a wider skillset than indicated by previous definitions. These include an increased awareness and ability to navigate specific legal and ethical issues (George & Scerri, 2007); the ability to cope with information overload due to the overwhelming variety of images easily available (Rybin, 2012) and increased technical and design ability to create effective visual material (Spalter & van Dam, 2008).

The difficulty in balancing creative freedom with intellectual property rights and other legal issues is a particular problem (George & Scerri, 2007). Finding images may appear to be a simple task with the power of tools like Google Image Search, but finding *legal* images that a user has the right to adapt and build upon is another matter. Whilst relatively free use of images may be acceptable for educational use under current UK 'fair dealing' rules (HM Government, 2014), visually literate individuals need to understand image licensing terminology such as the Creative Commons licensing agreements (Creative Commons, 2017) and understand how to use and share images within their stipulations beyond academia. They also need to be aware of ethical issues regarding the manipulation of photographs and data visualisations including those they have created themselves and therefore own the legal copyright to, and act accordingly. Photographic manipulation is not a new issue, famous examples during Stalin's reign in the USSR are often cited and some good examples are given in *Digital Forensics: Photo Tampering Throughout History* (Scientific American, n.d.). However, the ease with which even the general public can now 'photoshop' images means that visually literate individuals need to not only recognise such tampering, but also be ethically conscious of what is acceptable when creating and editing (possibly manipulating) their own visual material, especially material that can appear to represent reality in a way that earlier technologies were not able to manage so seamlessly.

The second set of new skills are related to the potential of information overload—with access to thousands of images it can be a daunting and difficult task to select the most appropriate visuals for a given project. Personal experience indicates that faced with such variety, most students tend to use an "it'll do" approach, choosing an image they encounter early in the search process that reasonably fits their needs without taking the time to approach them critically and seek

more appropriate alternatives. This is perhaps a way to cope with what Bawden and Robinson (2008:182) describe as "the paradox of choice" which can cause anxiety and 'freezing' in some situations. Visually literate individuals need more effective image search strategies in order to reduce the overwhelming number of choices that an uninformed or careless search approach can return. They also need to recognise the most appropriate images when they find them by evaluating them in terms of meaning, legality, ethics and design suitability.

This leads to the third main new skillset required of visually literate individuals as a result of the Web 2.0 era—technical and design skills. These could be seen as more advanced aspects of visual literacy, but in a society where it is commonplace for the general public to be producing their own web-based content, the technical and design abilities for professional and effective communication (which now includes the use of visuals) are becoming expected rather than optional in the job market regardless of the field (Wilson et al., 2017). Spalter and van Dam (2008) recognised that to be classed as visually literate in our digital world, everyone needs to be a designer. Data visualisations are getting more creative and, in the US, university staff have reported increased interest from students in taking classes about graphic design and infographics (Bellard, 2017). Furthermore, courses teaching graphic design skills to students of any discipline have been shown to improve students' communication and creative skills which can in turn be put to use effectively in their own fields and in professional situations (Alway-Rosenstock, 2011).

Even individuals who would suggest they are in no way creative or artistic are increasingly judged by their ability to produce effective multimodal[6] communication which involves well considered design choices. For example, most of the visually-rich assessment artefacts mentioned in section 2.4.1 typically have some marks awarded for effective design, such as being well laid out or using appropriate colour choices. When trying to get a job or a promotion, CVs are rejected for poor visual layout (Financial Services Recruitment, 2021) and presentations are regularly required and evaluated in job interviews (Reed, 2021). In both work and social settings, use of the most ubiquitous tools such as those found within Office 365 or popular web authoring tools such as WordPress, comes with the need to make or accept design choices (Lansche, 2016; iSynergy, 2020) and poor decisions can affect the appeal and effectiveness of the final product when they are put before their intended audiences. Popular publications such as *The Non-designer's Design Book* and *The Non-designer's*

[6] The field of multimodality recognises that communication happens through the interaction of text, visuals and gesture (Jewitt, 2005) and is a large field with much crossover with visual literacy. When mentioned in this thesis, I am primarily referring to the role that visuals play within multimodal communication.

Presentation Book (Williams, 2015; 2017) explain the need for employing basic design skills for effective communication in today's visually sophisticated society. As Williams puts it

> "Knowledge is power. Most people can look at a poorly designed page and state that they don't like it, but they don't know what to do to fix it" (Williams, 2015:10)

A fully visually literate individual would, arguably, have the knowledge to do so.

2.4.3 An updated definition

The first of the two new skillsets mentioned in the previous section (legal/ethical considerations and coping with large volumes of information) are also part of a related set of abilities that fall under the heading of *information literacy*—which describes the skills needed to deal with the overwhelming amount of information readily accessible via the internet (Albitz, 2007). Information literacy skills are seen as a major part of the remit of academic libraries and in 2001 the Association of College and Research Libraries (ACRL) in the US published a set of information literacy competency standards for HE (ACRL, 2001). The subsequent change in the nature of information towards the visual was recognised ten years later and the ACRL produced a similar set of standards that helped operationalise visual literacy. A definition was included in these standards that has become the most accepted definition for academic papers published on visual literacy since that time, especially those related to librarianship and education (Thompson & Beene, 2020) which is of particular relevance with this being a study undertaken as part of an educational doctorate by a researcher based within an academic library. Thompson and Beene (2020) suggested the ACRL standards and definition should now 'unite the field' when it comes to defining visual literacy—which may happen now that this definition has finally, in the last year, been added to the IVLA's updated website (IVLA, 2020b). The ACRL's definition (which is the one accepted and used by this thesis) is:

> Visual literacy is a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media. Visual literacy skills equip a learner to understand and analyze the contextual, cultural, ethical, aesthetic, intellectual, and technical components involved in the production and use of visual materials. A visually literate individual is both a critical consumer of visual media and a competent contributor to a body of shared knowledge and culture (ACRL, 2011).

The above definition, and the associated visual literacy standards, have been endorsed here in the UK by the equivalent professional body, the Chartered Institute of Library and Information Professionals (CILIP), with the publication of the book *Visual Literacy for Libraries: A Practical, Standards-Based Guide* (Brown et al., 2016) which is aimed at academic libraries within tertiary

education which is my own working context. This definition has been chosen as the one for this thesis as it maintains the two core and unchanging components of visual literacy (i.e. the need to be able to both critique and create images and visual media), but also covers areas such as ethical, cultural and technical components which may, on an operational level, change as society changes. The definition is flexible enough to cope with this.

The ACRL website specifically states that visual literacy abilities "cannot be taken for granted and need to be taught, supported, and integrated into the curriculum" which echoes points made earlier in this chapter about the need for such abilities to be developed explicitly and not left to spontaneously and unpredictably mature. The ACRL goes on to praise areas where visual literacy is already recognised as part of wider set of *metaliteracies*, but there is a specific north American focus which does not reflect experiences within countries such as the UK and the rest of Europe. The endorsement by CILIP could be a significant step to addressing the lack of initiatives to promote visual literacy in the UK.

The standards are particularly appropriate to this current research project which will consider the current state of visual literacy development in a UK university and try to identify both barriers and potential bridges to improving its recognition and further development. The standards are particularly useful as they are designed to be used as a whole when a particular curriculum has a focus on visual materials, or individually as stand-alone tools when modules have only a few learning outcomes relating to visual materials. This makes them flexible enough to use to identify where aspects of visual literacy are currently developed.

The standards are framed in terms of what a visually literature individual is able to do and are shown in Table 2.1.

Table 2.1 Visual literacy standards
(ACRL, 2011)

Standard One	Determine the nature and extent of the visual materials needed
Standard Two	Find and access needed images and visual media effectively and efficiently
Standard Three	Interpret and analyze the meanings of images and visual media
Standard Four	Evaluate images and their sources
Standard Five	Use images and visual media effectively
Standard Six	Design and create meaningful images and visual media
Standard Seven	Understand many of the ethical, legal, social, and economic issues surrounding the creation and use of images and visual media, and access and use visual materials ethically

By looking to see if any of these standards (which are further broken down into performance indicators [see Appendix 1]) and learning outcomes) are covered, both explicitly or implicitly, within module specifications, it should be possible to build a picture of existing visual literacy development within the institution studied. This could help identify areas of good practice and areas where more development may be appropriate so that individuals involved can be interviewed to help construct a shared understanding of possible bridges and barriers to future visual literacy provision.

These standards are currently the most comprehensive framework for helping educators develop visual literacy and for researchers to study it. It is difficult to tell how often they will need updating to match technological advances and increased role of the visual in social communication. The recent rise and continued evolution of social networks like SnapChat, Instagram and TikTok, with their exclusive emphasis on visual communication and increased use of visual storytelling (Kuchler, 2017) may precede fundamental changes in the attributes that society needs and values. The boundaries between visual and verbal literacy are undoubtedly blurring, with 😂 (face with tears of joy emoji) being the Oxford English Dictionary's 'word of the year' in 2015 (Oxford Dictionaries, 2015). It is conceivable that visual literacy will be the predominant form of literacy in a world of the not-too-distant future and whilst the ACRL definition is written in a way that should embrace and cover these changes, the standards themselves, may need adjusting accordingly. Until then however, they form a practical framework for the current study.

2.5 Chapter summary

Visual literacy is not a simple concept to work with. The slippery nature of its definition has long been a source of contention amongst its most ardent advocates. It has been a chameleon, changing its colours to fit into disciplinary surroundings whilst trying to maintain an interdisciplinary shape that was recognisable across disciplines.

This chapter has shown that there has been a natural progression within HE from the disciplinary study of visuals in subjects like art history and cultural studies to the development of the interdisciplinary field of "visual studies". This development, alongside the explosion of visual materials found in everyday life, has paved the way for the concept of visual literacy. Visual literacy differs from visual studies in its scope – whilst visual studies is interdisciplinary, visual literacy is even wider, it crosses from the bounds of education into real-world practices and back again, with real-world practices widening its own parameters. Despite visual literacy's definition difficulties, it has proved a remarkably resilient concept and has gained

considerable, and increasingly worldwide, momentum (as will be shown by the examples of initiatives given in the Chapter 3).

Much has been written about potential problems caused by the lack of a consensus definition. Although some definitions appear more than others throughout the literature, it is true that a myriad of definitions are used. These vary in their focus depending on the discipline they are used within. Some emphasise parallels with verbal literacy, specifically the need to both read and compose images; some concentrate on individual and cultural meaning-making whilst others focus on visual thinking or the need for communication to be intentional. Although the multiplicity of definitions can be confusing, it also shows the flexibility of the concept of visual literacy which can be adapted to different situations. Despite predictions that the lack of a consensus definition would lead to research stagnation, there is little evidence that this is the case; however, the lack of a consensus definition is potentially a contributory factor in the relatively poor adoption of practices to develop visual literacy within some education systems—though issues such as how the definition can be operationalised and general distrust in the academic rigour of using images over words probably play a greater role.

The massive increase in the visual content of communication, both academic and social, alongside the shift towards UGC dominance of the internet in the last decade has necessitated a new look at the concept of visual literacy. The ACRL have provided an updated definition and set of standards that help operationalise visual literacy for today's digitally dominated society. The comprehensive standards incorporate ready-made performance indicators and learning outcomes. These practical standards have the potential to significantly ease the adoption of visual literacy development into educational programmes across the globe. They have already been adopted by CILIP in the UK whose members have the potential to influence university policies on visual literacy in the same way that they have on information literacy. These standards can also be used as a framework to research the current state of visual literacy development in university courses and will be used within this project to audit existing programmes at a UK university in order to recognise where further qualitative investigation could reveal bridges and barriers to further developing the visual literacy of UK graduates.

Chapter 3: Visual literacy development in higher education – a review of existing literature

3.1 Introduction

This research project looks at visual literacy development in a UK higher education (HE) institution: to what extent and in which disciplines is it being developed? And what are potential bridges or barriers to furthering development? The previous chapter concentrated on defining visual literacy whilst making a case for it to be taught and developed as part of a university education; this chapter will analyse the wider literature about visual literacy development in HE in order to understand how other researchers and practitioners have approached the issue. This will also answer questions about the ways it is being developed and in which disciplines it is being developed on a wider scale, this will help put my analysis of the case institution into context. By showing that visual literacy is being developed successfully in a wide range of disciplines, it raises the question of why such development is not more widespread. This question forms the basis of my final two research questions regarding potential bridges and barriers to developing visual literacy as part of an undergraduate degree, which this review will also address.

Academic literature about visual literacy takes a number of forms. A recent study, which focused on articles published in the *Journal of Visual Literacy* since its launch in 1981, suggested that these can be categorised as being theoretical, pedagogical case studies (reports of initiatives rather than empirical case studies), or research papers (Brumberger, 2019). In that mapping exercise, Brumberger found that a major focus of research papers was visual literacy in education with 'students' and 'learning' occurring in a consistently high number of research questions across the decades. This current study is concerned with those same issues but with a specific focus on how visual literacy is or can be developed in HE. As such, this review will look at all forms of academic literature: research papers, reports of initiatives, and relevant theoretical papers, with that focus.

In order to find appropriate academic papers relevant to my own research, I took a methodical approach and used a search strategy designed to maximise the yield of papers in which visual literacy was a primary or important component and which related to its development within HE. The strategy involved searches of relevant academic journal databases, initially ones specific to the field of education (Education Research Complete, ERIC and Proquest Educational Journals) and then widening to include multidisciplinary databases (Academic

Search Premier, Web of Science and Scopus). The search terms used to query these databases included likely phrases such as “visual literacy” and “visual communication” and also searches for related concepts such a “multimodality”, “digital literacy” and “media literacy” that also included the word “visual” (all searches using appropriate wildcard symbols to ensure stemmed words were also included). Titles were read, then appropriate abstracts, and any that related to HE or were not educational-level specific, were stored in an EndNote library. This library further expanded during the review as relevant papers cited within the other papers were also included. In all there were 190 identified papers that related to visual literacy or a related concept in HE or that were non-educational level specific.

The first notable feature is that the academic literature is dominated by researchers in the US, with more papers originating there (108, 56%) than in the rest of the world combined. This can probably be explained by the nature of the US HE system. As mentioned in the previous chapter, their more flexible credit-accruing format allows for interdisciplinary fields like visual literacy to flourish as many universities offer modules from Sociology, Communication Studies or Journalism programmes as optional modules to students from other disciplines. These often include visual communication, visual culture, visual studies or visual literacy (Elkins, 2003; Brumberger & Northcut, 2016). There were just five papers from the UK (3%), which was just over 10% of the papers from Europe. In total nearly 70% of the papers are from English-speaking countries (Australia, Canada, New Zealand, RSA, Singapore, USA, Ireland and the UK). Overall, 37 countries from all six major continents were represented, indicating a worldwide interest in the concept of visual literacy.

This review will first explore literature that considers existing levels of visual literacy in undergraduates (section 3.2) in order to understand the existing context in which initiatives to further develop it are working. It then showcases worldwide examples of how visual literacy is being successfully developed within HE in different disciplines and subject areas (section 3.3). Finally, it will identify from these, and other papers, any potential barriers to developing visual literacy more widely (section 3.4) and any bridges that could help to overcome or potentially counteract these (section 3.5).

3.2 Existing visual literacy levels

There is a premise, inherent in this thesis, that visual literacy levels of undergraduate students are not high enough. This is not an unfounded assumption, however, as there is a body of literature that looks at assessing the visual literacy of students and the overriding impression this gives is that despite living in an increasingly visual world, existing levels of visual literacy in

university students are poor. For example, Brumberger (2011) specifically assessed the visual literacy levels of students described by Prensky (2001) as *digital natives*, i.e. millennials who have grown up surrounded by technologies and who, it is argued, have therefore automatically developed certain associated skills. She tested the hypothesis that, as many of these skills are visually oriented (due to the visual nature of new technologies), such digital natives may be expected to have higher levels of visual literacy—an argument she felt was not particularly convincing. Her survey was wide ranging and looked at many different aspects of visual literacy including both critical and creative skills. She found that her survey participants were "far from adept at producing and interpreting visual communication" (Brumberger, 2011:44) and subsequently argued that any link between high levels of visual literacy and digital natives was 'a myth' (Brumberger, 2017). A further study that built on Brumberger's research looked at college students' abilities to recognise and identify culturally significant and generally well-known images. In this study, Emanuel and Challons-Lipton (2013) found that for all but the most recent and well-known images (for example the Facebook symbol), digital natives struggled to identify images correctly, even if they believed they recognised them. Although this research looked at a very limited aspect of visual literacy ability, it did highlight that familiarity with images does not lead to the ability to interpret them accurately. The authors went on to create the *Cultural Image Literacy Assessment-USA©* framework (Emanuel et al., 2017) which will be discussed in section 3.5.4.2; they created it to assess cultural image literacy within the US by identifying images that every American should know. Although the main purpose of the research was to develop the framework, the work they did to validate the framework also indicated that their undergraduate students did not fare well (they gave them an average grade of D) with political and fine art images being particularly poorly recognised. It could be argued that this indicates a lack of general education rather than specifically visual literacy—but the fact that ubiquitous images such as those used to represent the Democrat and Republican parties were only recognised by half of the respondents is worrying when such images are used routinely in political campaigns to align policies with parties and again highlights the need to develop visual literacy more generally.

The conclusion that students have poor base-line visual literacy was also made by Takaya (2016) who found that his students were unable to effectively analyse an advertising image unless they had access to more background information via the internet (and then only improved in some areas); by Farrell (2015) who found that graduate students entering teacher education had weaknesses in significant conceptual areas of visual literacy that would hamper their abilities to develop it within their future students; and by Mnguni (2018) who tested the

visual literacy skills of third year biochemistry students and concluded that their visual literacy was so poor that they "do not always have the visual literacy skills that may be required for successful learning in biochemistry" (page 494). These empirical findings confirm the need for visual literacy development called for in many of the theoretical papers cited in Chapter 2. It is not, however, as desperate a situation as could be concluded from this area of research as the following section of this review will show how initiatives employed to develop visual literacy can be effective in helping students to both develop such skills and increase their confidence in using them.

3.3 Developing visual literacy

A significant proportion of the research into visual literacy in HE is concerned with the effectiveness of initiatives to improve visual literacy in college/university students. Where the development of visual literacy (or related concepts such as media literacy or visual communication skills) was a stated aim, instruction followed by measurement or evaluation showed notable improvement in aspects of visual literacy and/or confidence in their use. Although the published papers are likely to be self-selected for success, they do show that a wide range of visual literacy skills can be effectively developed in a range of disciplines. It is worth noting that initiatives from disciplines that have always been devoted to the study of visual material (such as art and design, art history and computer game design) have been excluded from the examples given, as visual literacy is implicit in these and this research is primarily concerned with developing visual literacy in disciplines where it is not the prime focus.

3.3.1 Initiatives in media studies, and journalism courses

Although much media is visual, media studies cover a much wider spectrum and so is included here. Several initiatives in the related fields of media studies and journalism involved teaching students how to question what they see in images with the aim of developing their critical visual literacy skills. These include Fleming (2007) and Kędra (2013), who both worked in the field of media literacy and taught students to question and analyse what they see in news videos and photo-stories and Thompson (2019) who developed and taught a method for analysing photographs on a journalism course. All these researchers found positive results by qualitatively analysing student discussion or subsequent essays. With the concept of fake news being of such current interest to both the public and researchers (see for example LaPierre & Kitzie, 2019; Long et al., 2019; McDougall, 2019), and with the increasingly visual nature of media output, it is reassuring that such criticality can be effectively taught and, as argued in

the previous chapter, this ability to critically read images should be extended to all graduates as with the critical reading of texts.

In an initiative to develop a wider set of visual literacy skills, Ariga et al. (2016) asked non-design students studying information and media to create three photoblogs that aimed to increase student understanding of (1) visual perception, (2) visual variables (position, size, colour, texture etc) and (3) visual signification (meaning making). They also hoped to develop criticality by asking students to peer-critique using a given rubric and to reflect on their own work. Analysis of these and lecture evaluations showed that over the course of three exercises, confidence and creativity increased and reflective comments showed a deeper level of critical analysis. Again, the need for all students, not just those studying visual arts or design, to develop such skills was made in the previous chapter and this research suggests that even non-design students *can* develop the ability to create meaningful visual communications.

3.3.2 Initiatives in business courses

Business communications are becoming increasingly visual and one form that is proliferating is the infographic. Toth (2013) documented the rise of this communication genre and then outlined two initiatives in which he has been teaching business students to analyse and create them. Whilst this was not an empirical study, he discussed the ways in which students learned to recognise good design, understand visual rhetoric and produce their own effective communications for specific audiences. Toth acknowledged that instructors without any design background themselves may feel uncomfortable teaching this, but that speakers from design disciplines could be invited to give guest lectures and useful interdisciplinary bridges could be built. This lack of confidence and experience in teaching staff may be one of the reasons that visual literacy is not more widely developed, and this potential barrier will be returned to in section 3.4.8.

A series of initiatives, specifically designed to enhance students' abilities to communicate visually, saw positive results in the Dublin Business School (Sweeney & Hughes, 2017). As with the Ariga et al. study above, the majority of students taking part had no design background. They were asked to undertake design and photography projects, including poster displays, photography exhibitions and art installations and then take a survey to feedback on their experiences. The results suggested that the students considered their visual communication skills to have improved and that they had an increased appreciation of their value in the workplace.

3.3.3 Initiatives in education courses

A number of studies attempted to increase the visual or multimodal literacy of pre-service/trainee teachers or existing education professionals. Visual literacy as a concept is potentially more understood in education studies than in most other HE disciplines. When I first began this project, all the books relating to visual literacy at my institution could be found in the library of our satellite campus which had a specialism of teacher education. The need for children to be visually literate was implicit, perhaps because of the importance of picture books in traditional literacy development (Callow, 2005; Pantaleo, 2015; 2016). Beyond this, there is a worry that in some ways, teachers are becoming less adept and creative than their students in the multimodal digital environment (Ryan et al., 2010) and an assessment of the visual literacy levels of students entering post graduate teacher-education suggested that their own abilities in this area were unlikely to be high enough to enable them to successfully develop it in their students (Farrell, 2015).

An initiative to improve the multimodal literacy of students studying early childhood education was found to have positive results for both raising the multimodal literacy of the students themselves but also their awareness of how to apply this in a school setting (Papadopoulou et al., 2018). An optional course "Multimodal texts: analysis, comprehension and production" was taken by over half of the researchers' students who learned to analyse printed multimodal texts and undertook a small-scale research project to find out how children made meaning when reading or creating multimodal materials themselves. Analysis of assessments, questionnaires and focus group discussions found that students' understanding and levels of criticality when analysing visually-rich multimodal messages increased as did their confidence and creativity when using or developing multimodal texts with children.

In a Masters in Education and Training Management (eLearning) course at Dublin City University, Crotty (2011) sought to foster both creativity and visual literacy. ELearning is a topic that lends itself to a more visual approach to learning (Clark, 2002) and, over seven modules, Crotty's students were assessed via a range of multimodal resources such as literature review podcasts, conference posters, website storyboards, videos, comic strips, photo slideshows, interactive articles and vodcasts as well as some more traditional methods such as essays and a dissertation (though this could be partially presented as a video if preferred). The result was a course where students developed a strong sense of community (peer feedback was routine) and reported an emotional connection to their work. Indeed, Malekian et al. (2012) found that there is a significant correlation between emotional intelligence and visual literacy and this

could be a reason why student affect is more noticeable when producing visually-rich assessment artefacts as discussed at the end of the next section.

3.3.4 Initiatives in STEM courses

Science, technology and engineering courses are visually-rich environments. Students need to be able to understand and learn from visual representations of complex scientific processes as well as produce their own, often highly technical, drawings and diagrams as part of scientific communication (this is acknowledged within all the papers mentioned in this section). As Myatt (2008:188), quoting DeFanti and Brown (1991), points out:

> Much of modern science can no longer be communicated in print; DNA sequences, molecular models, medical imaging scans, brain maps, simulated flights through a terrain, simulations of fluid flow, and so on all need to be expressed and taught visually.

Biochemistry seems to be a STEM discipline that has acknowledged the importance of developing the visual literacy of its students (see for example Linenberger & Holme, 2015; Mnguni, 2018). An interesting initiative, given my own working context, was described by Cook et al. (2015): academic library staff and biochemistry academics collaborated to reimagine a traditional scientific poster assignment into a digital format. They also developed an assessment rubric based on the ACRL (2011) visual literacy standards and had students use it for peer review. This meant that some critical skills were also developed. The evaluation did not provide details of whether they found students had improved their visual literacy skills when creating their digital posters, but they did report that they were hoping to partner with other faculty to introduce similar initiatives, so it must have been deemed at least a partial success.

The creation of scientific posters is one of the most common forms of visual communication that students in STEM disciplines undertake. Whilst developing visual literacy is rarely a stated aim of these posters, an emphasis on the need for them to be visually-rich means that they are potentially an extremely valuable vehicle for this. The need to introduce this assessment type early in the curriculum, in order to allow for development throughout a programme, was the driving force for Logan et al. (2015) when they developed an existing chemistry 'lab of the week' formative task into a summative assessment. Students were given access to combined course data from the labs and asked to produce group poster presentations with an emphasis on visual representations of the pooled data (with word limits to prevent text-heavy posters). Students also undertook formative exercises that introduced the concept of visually

representing scientific procedures and data. The result was an assignment that the students felt proud of and higher quality posters in future research projects.

Discourses within university STEM disciplines are typically characterised as impersonal and objective, following the norms of a scientific writing style. However, introducing activities that develop visual literacy can lead to students engaging at a deeper, more affective level with their work (Archer, 2006; Milkova et al., 2013). In her initiative to develop the communication skills of engineering students in South Africa, Archer (2006) found that purposefully requiring visual communication (in this case a poster with annotated photographs about engineering solutions to problems in rural communities) enabled students to express an emotional connection with their work (particularly in their photo-captions) that was missing in a standard report covering the same project. Whilst it is a STEM subject, engineering requires students to find solutions to social problems with their inherent personal and affective stories and a purely scientific approach could miss important understanding. Archer argued that traditional scientific discourse is an example of Foucauldian institutional regulation (see Foucault, 1970) and that moving away from the linear constraints of a scientific report to the photo-poster format allowed a more realistic connection between everyday life and scientific thinking. In another study, Milkova et al. (2013) found that biology students who, after some instruction in visual analysis, were tasked with analysing art works through their disciplinary lens (in this case, the biological aspects of love), were more curious, engaged, subjective and creative than in standard assignments, whilst still developing higher level critical thinking skills and disciplinary knowledge. Both of these examples show that some activities to develop visual literacy can move scientists beyond their usual objective discourse to connect more creatively with their subject matter. Creative thinking is a key skill for scientists who often have to try many different solutions to problems (DeHaan, 2011) and these more innovative assignments can therefore effectively complement the standard reports and conference-style posters usually produced within STEM disciplines.

3.3.5 Initiatives in health and medicine

As with other sciences, health and medical professionals are increasingly required to be visually literate. For example, images have been shown to increase understanding and retention of health instructions and these are more effective when created by health professionals and not artists/designers (Houts et al., 2006). Understanding visual information is also an essential part of the diagnosis of many conditions and Griffin et al. (2017) described innovative training for dermatology students in Salford which followed a US model (see Naghshineh et al., 2008) of analysing artwork in a local art gallery. Whilst this has similarities to

the approach used by Milkova et al. above, it was fundamentally different in that the art works studied had no direct links to the discipline and the analysis did not require students to apply disciplinary knowledge. Participants found the course improved their observational skills, so essential in dermatology diagnosis, and also their ability to verbalise and write about what they see, which is key to explaining that to others. Both the US and British studies used Visual Thinking Strategies (VTS) which is described as "a methodology that uses art discussion to develop critical thinking, communication skills, and visual literacy" (Naghshineh et al., 2008:992). VTS has more recently been used in workshops for entry level nursing students (Moorman et al., 2017) and first year medical students (Agarwal et al., 2020). The nursing students gained confidence in communicating what they saw and the medical students increased the number of clinically relevant observations they made. Similarly, in an earlier initiative with nursing students, studying carefully chosen art was used to improve "observational and communication skills, narrative sequencing abilities, and empathy" (Frei et al., 2010:672). These studies show that the skills learned when becoming more visually literate are inherently transferable and a critical approach to analysing images can have wider benefits than the initial context may suggest.

3.3.6 Other social science initiatives

As well as the fields of media studies and education covered earlier, the development of the interdisciplinary field of visual culture following the *pictorial turn* (Mitchell, 1994), mentioned in Chapter 2, has brought visual materials and visuality into many other social science disciplines. Whilst not always referring to visual literacy directly, there is a general rise in fields such as visual sociology, visual anthropology (Pauwels, 2015) and visual geography (Schlottmann & Miggelbrink, 2009).

Some papers in these fields do specifically aim to improve the visual literacy of students in order that they can engage with and create visual material more effectively (and indeed affectively). Visuals and observation have always been important in geography: how to make observations in the field, analyse aerial photographs, use and create maps and work with Geographic Information Systems are part of every undergraduate geography curriculum (QAA, 2019s) but Hollman (2014) argues that where photographs are used in projects, they are used only superficially and "not analysed, interrogated, opened up, or unpacked" (page 140). This echoes Goin's (2001) call for wider visual literacy in geographers when he argued that photographs can depict more than just reproduced 'fact' and geographers need the skills to interpret other meanings. Realising her students did not have the necessary visual literacy to truly unpack photographs, Hollman redesigned several activities in her course on Latin

American Geography in order to give her students the opportunity to develop it. Students were first asked to pick images to represent Latin America and then, as with the initiatives in media studies and journalism courses, provided with a set of questions to help them analyse these and other photographs (although these necessarily had a more socio-geographical angle than the earlier studies). She found that by providing exemplars of image types and providing possible questions to use, the students found more diverse images and were able to write about them more effectively, indicating that their levels of visual literacy had increased.

Although the study of visual culture is a relatively established topic, students are rarely asked to create, as well as critique, artifacts. Cifuentes and Buiu (2006) developed their *Seeing Culture* online gallery space specifically to help students develop both aspects of visual literacy by producing and sharing their own photographs, photo-montages or videos which were then the basis of peer critique and discussion. Although it had a similar format to the Ariga et al. (2016) example mentioned in section 3.3.1 this initiative developed a different set of visual literacy competencies. Ariga et al.'s students were learning the interdisciplinary skills and knowledge of visual design, whereas Cifuentes and Buiu's students were working within their discipline by constructing examples of visual culture and the skills needed to interpret these. An interdisciplinary concept such as visual literacy can, in this way, be successfully incorporated into disciplinary teaching.

Another example of this comes from the field of gender studies. Denda (2015) helped design and run a workshop where one of the stated aims was to develop ACRL (2011) standard three: "The visually literate student interprets and analyzes the meanings of images and visual media". The visual media they used were video clips and the workshop focused on reading body language, gestures and facial expression in order to prepare students to participate in a mock research interview in preparation for their own subsequent research project. Student feedback indicated that 88% found the workshop informative and qualitative comments indicated that confidence in reading non-verbal messages had improved. Though this focus was very specific, it again shows how aspects of visual literacy development can be incorporated into wider disciplinary goals.

Nevertheless, one of the most compelling initiatives that shows how visual literacy can be developed comes from an *interdisciplinary* first year, semester long seminar course in the US, where the system makes such a course possible. Improving visual literacy was a stated learning objective of the *Falling from infinity* course (Palmer & Matthews, 2015) and research was undertaken to measure visual literacy skills at the beginning and end of the semester making it

a rare example of research that specifically analysed the impact that instruction in visual literacy can have. The course, in which students grappled with the nature of infinity from a multiplicity of perspectives, used a selection of images amongst the data sources used to explore the topic. The course used a variety of instruction methods to develop a subset of visual literacy skills (for a full breakdown see Palmer, 2015) and at the end of the course used Toulmin's argument model to measure student responses to an image. These were compared to their responses about a different, but similar image at the beginning of the course. The research hypothesised that following the intervention, students would:

- make more basic and advanced observations in an image;
- offer more supporting visual evidence for a claim they made about that image;
- make stronger connections between their claims and the visual evidence (Palmer & Matthews, 2015:3).

All three hypotheses were confirmed by the subsequent analysis. In addition, student confidence was increased with nearly all strongly agreeing with the statement "Because of this course, I am better able to critically analyze visual images" (page 7). As suggested, this research is one of few to directly measure the impact of formal instruction on visual literacy levels and it is reassuring to see that the instruction had the desired effect, further confirming that visual literacy can indeed by developed effectively within tertiary education.

3.3.7 Overall picture from these initiatives

Looking at these initiatives as a whole, they show that individuals in a wide variety of academic disciplines in HE value visual literacy and are successfully adapting pedagogies to develop it. Whereas some courses were themselves interdisciplinary, others showed how an interdisciplinary concept like visual literacy can be incorporated into a disciplinary context. These examples all had an explicit aim of developing visual literacy, media literacy or visual communication skills and it is likely that more examples could be found that develop visual literacy skills and competencies without these being specifically highlighted. Whilst most disciplinary groupings are represented by at least a few examples, it is perhaps notable that some are not. For example, disciplines such as law and politics do not appear to be currently researching how visual literacy can be developed in their students. Politics is particularly surprising as many research papers are published where visual literacy is being used by the researchers or analysing the visual literacy of the public. These include the analysis of the images used in political campaigns (see for example Burriss & McComb, 2001; Seidman, 2010; Edwards, 2012); analysis of political cartoons (see for example Bedient & Moore, 1985; El

Refaie & Hörschelmann, 2010) analysis of extremist stickers (see for example Vigsø, 2010; Reershemius, 2019) and recently, the role of photographs in the Black Lives Matter movement (Casas & Williams, 2019). Interestingly, there were some papers looking at teaching students visual literacy by analysing political cartoons but these were from more than two decades ago (Bedient & Moore, 1985; Steinfirst, 1994). It is impossible to tell from the literature whether this is because such teaching is now commonplace in politics education (as research papers tend to report on what is new), whether it is assumed that current students already have the necessary skills or whether it is no longer considered important. The current study will look at recent module specifications in law and politics at the case institution to see if there is evidence of current visual literacy development or whether the lack of literature coincides with a lack of opportunities for students to develop these essential skills.

What is clear from nearly all of the papers mentioned in this section is that none of the authors, even those of the most recent papers, felt the fight for visually literacy had been won. Most start by justifying the need to develop visual literacy and end with a plea for this to be more widespread. Some have highlighted or at least alluded to possible barriers preventing this and these will be discussed in the following section.

3.4 Potential barriers to developing visual literacy

One of the key aims of this thesis is to identify potential barriers to developing visual literacy in undergraduate students at a UK university. Barriers to developing visual literacy do not seem to have been the focus of any published research, but some barriers have nevertheless been discussed or alluded to. One piece of literature that did consider barriers directly was a report produced by an international group of experts (including several visual literacy authors) at the 21st Century Literacy Summit in 2005. They identified a number of potential barriers to moving towards a world where the education system fully values multimodal literacies. The first of these is common to most types of innovation in education: “institutionalized resistance to change” (The New Media Consortium, 2005:11). With no real incentive to change and with the research not reaching appropriate audiences, they saw this as a major hurdle to overcome to achieve what they described as their “global imperative”.

The literature suggests that institutionalised resistance comes in two forms: one is the privileged nature of logocentric communication in HE and the other is the difficulty of introducing interdisciplinary concepts into traditionally siloed HE structures. The previous section gave some examples of how the latter can be overcome but it relied on enthusiastic

individuals to drive it rather than institutional policies. These two barriers are discussed next, as the first two of several potential barriers identified from the literature.

3.4.1 Logocentric dominance in HE

Logocentric dominance, i.e., valuing written and oral methods of expression above all others, was, and still is, seen as something to be overcome by many of those writing about developing visual literacy. Back in 1998, Mirzoeff wrote that:

> Western culture has consistently privileged the spoken word as the highest form of intellectual practice and seen visual representations as second rate illustrations of ideas (page 5).

However, he went on to suggest that the emergence of visual culture and Mitchell's (1994) *Picture Theory* was challenging this domination and that the idea of "the world as a written text" (page 5) was being replaced by a pictorial model instead. There were subsequent calls for the concept of literacy to be expanded to take this into account and to stop privileging print, with Williams (2001:21) boldly claiming that "our current verbal-based education system produces illiterates in our highly visual and multimodal modern society" and Daley (2003) arguing that to privilege print within HE ignored the effects that technology had already made on the way we communicate. She recounted a conversation with George Lucas, the filmmaker, who also suggested that students in the coming decade could be seen as 'illiterate' if they left university without the ability to read and write the language of the screen. In the first few years of the century, these claims of illiteracy may have been seen as overly strong, but with the explosion of visual communication since then, it is easy to argue that their claims now have even more strength. Soon after this, Matusitz (2005) writing about the American college system, called for visual communication to be given more prominence within HE as visuals had "unique epistemic power" (page 102) and that the existing focus on verbal language was detrimental to effective communication. All these papers were focused on the American HE system and it could therefore be argued that this does not indicate that logocentricity was an issue anywhere but there. However, Archer (2006) working in South Africa, specifically wrote that her paper (mentioned in section 3.3.4 above) "tackle[d] the logocentrism of academic literacies" indicating that the issue could indeed have been more widespread.

As implied in the Mirzoeff quote at the beginning of this section, a lack of trust within academia in the worth of visuals to convey academic information is likely to be the reason that logocentrism perpetuates. Pauwels (2008) argued that many intellectuals distrust anything other than words and numbers and consider modern image culture to be 'superficial' and

blame it for a decline in verbal communication. This was also reported by Daley (2003:172) who wrote that the academy had a "deeply ingrained suspicion of images" and that they did not realise that the visual could also have intellectual worth. Even with an acknowledgement that multimedia texts and presentations were becoming more prevalent, Thomas et al. (2008:23) wrote that academia still thought that images were only used to provide "a respite from serious academic work" and that their early role in teaching children to read meant they were thought less valuable in adult learning. There was, however, a feeling that things were changing and Pauwels (2008) was optimistic that pressure from an increasingly visual society could promote change. This optimism may have been misplaced however, as it appears that the situation has perpetuated from then to this day, with Blair (2012); Jordaan and Jordaan (2013); Bowen and Evans (2014); Bowen (2017) and Kortegast et al. (2019) all referring to the overreliance on oral and written communication within HE. This suggests that there is little doubt that individuals working in this field consider it to still be a barrier and it will be interesting to see if my own research suggests that it is also recognised by academic staff who do not necessarily have that focus.

Although this suggests that logocentric dominance is still a potential barrier, it was argued in section 2.4.1 that more visually-rich assessments *are* increasing in popularity, and this is one of the reasons why it is important that undergraduate students develop visual literacy. However, even if there is a gradual change to better represent visual or multimodal communication within teaching and assessment, the personal educational experiences of those teaching in HE are still likely to have been dominated by words, be they oral or written (Brumberger & Northcut, 2016; Ross et al., 2020), making adaptation to teaching and assessing visually-rich assignments personally challenging to many academics. This is why the creation of frameworks and rubrics for assessment (and training in how to use them), which will be the last area covered in this review, could be so important. Academic staff need assistance and support in order to feel confident that they are robustly assessing work in a way that meets institutional and disciplinary standards.

3.4.2 Disciplinary silos

Several successful initiatives to embed visual literacy development within the disciplines were given in section 3.3. However, some researchers did refer to the challenge of breaking down disciplinary silos and institutional hierarchies to achieve any success. For example, as professor of visual communication, working in what she described as the *meta-discipline* of media arts, Rosner (2019:231) described "entrenched higher education territorial hierarchy" as a problem to overcome when trying to find the best place to house the teaching of a concept that did not

sit comfortably in a single discipline. Similarly, in a wide ranging literature review for her PhD thesis looking at critical thinking in the visual arts, Ashlock (2018) considered projects where visual arts were incorporated into STEM projects (known as STEAM projects to indicate the incorporation of art). Whilst such projects were clearly beneficial to promoting creative approaches to problem solving, she identified that in order to have the structure and autonomy to try such innovative initiatives, barriers and silos between departments and across disciplines needed to be dismantled—which she acknowledged was "not an easy task" (page 33). In an article that also presented a number of projects where art was incorporated into science projects, Bear and Skorton (2019) argued that more should be done to promote such interdisciplinary education as students constrained by disciplinary silos find it harder to see connections between the different forms of knowledge that make up our increasingly complex world. They were, however, looking specifically at the US system where students can often take minor courses in areas unrelated to their major degree subject. They argued that interdisciplinary teaching can bring together these apparently disparate subjects to show the worth of looking at the world from different viewpoints. Although this does not relate directly to the UK system, it argued that disciplinary segregation can be an issue when trying to promote such interdisciplinary thinking—including the development of visual literacy which was one such interdisciplinary topic specifically mentioned in the paper.

Much of the literature on the effect of disciplinary silos and how they can be challenged focuses on problems related to collaboration between researchers (see for example Kragt et al., 2011; Stirling, 2014; Collyer & Smith, 2020) and is increasingly about tackling complex interdisciplinary issues such as climate change and global health (see Machalaba et al., 2015; Byrne & Mullally, 2016; Kone et al., 2018). Literature related to disciplinary silos and undergraduate education is less extensive and research papers and articles that address it tend to be about breaking down barriers between closely related fields such as accounting and management (Thorne & Davig, 1999), pharmacy and other health sciences (Chen et al., 2021) or different branches of engineering (Hodgson & Kruchten, 2009). Research specifically related to developing visual literacy to undergraduate students that challenges disciplinary boundaries is rare—although the initiatives using VTS to teach visual criticality in health subjects mentioned in section 3.3.5 do show that some successful attempts are being made when enthusiastic individuals work to ensure such boundaries are crossed. In addition, it is interesting to note that the successful project reported at the end of section 3.3.6 was acknowledged to be interdisciplinary which shows that where this is made possible, a module with the stated aim of developing visual literacy skills can be highly effective. Without breaking

down the disciplinary boundaries, however, there would be no place to position such interdisciplinary modules.

It is worth noting that not everyone thinks that disciplinary boundaries are causing issues or even that disciplinary silos exist. Jacobs (2017) argues that disciplines are in fact porous with information and research from related fields constantly crossing their boundaries. And, Rayner (2002), himself a proud interdisciplinarian, argues that when academics and researchers have strong disciplinary identities, it is more likely to give them the confidence to allow their disciplinary borders to relax. Both Jacobs and Rayner make compelling arguments in defence of disciplines and how they can actually benefit interdisciplinary research, but for teaching interdisciplinary concepts like visual literacy they may not be as helpful. In institutions with internal structures based around disciplinary or faculty units, there may well still be major barriers to developing visual literacy if expertise in the skills it requires is held within particular subject areas and there are limited mechanisms for sharing that expertise or good practice with areas in other parts of a university. Internal funding systems could also mean that interdisciplinary modules such as the one mentioned above are less possible, especially if these cross faculties as well as disciplines, as the issue of who pays for such teaching compared to who get the funding for the student becomes more difficult to reconcile.

3.4.3 Assumption of organic skills development

The literature suggests that a potential barrier is an underlying assumption by tertiary educators that students will somehow automatically develop many of the skills of visual literacy by simply being immersed in visual culture, and that specific interventions to develop such skills are therefore redundant. For example, in making their case for formal visual literacy teaching in HE, Jordaan and Jordaan (2013:76) criticised an education system which "assumes that students will 'pick up' the necessary competencies along the way". As was mentioned in Chapter 2, the ACRL (2011) also specifically warned against taking visual literacy abilities for granted implying that they too felt this was a concern. Even if some students are partially "organically educated" (Rosner, 2019:218) in some of the technical aspects of communicating visually, due to their status as 'digital natives', the papers already mentioned in section 3.2 show that even for such students, their wider visual literacy remains low, indicating that core aspects of visual literacy are not developing in the same organic way as some technical skills and any assumption that they are could well be a barrier. Even the technical aspects may only be successful picked up by some students as the assumption that exposure leads to understanding has been disproved with many aspects of digital literacy (Murray & Pérez, 2014).

One piece of research confirmed directly that educators are making assumptions that exposure to images automatically leads to visual literacy development: Linenberger and Holme (2015) surveyed a wide group of biochemistry academics across the USA and found that the most common pedagogy for teaching visual literacy skills was “exposing students to representations” (page 27) without any explicit instruction on how to decode such representations. This despite the fact that they acknowledged the value of visual literacy in their discipline. This research also reported that most of the academics admitted that they used assessments that assumed skills but did not test them. This is a potential barrier in itself and discussed in section 3.4.4 next.

There is a great deal of current attention in education generally and in HE in particular about hidden aspects of the educational experience. Terms such as ‘the informal curriculum’ and ‘the hidden curriculum’ relate to both assumed and/or unintended learning that takes place alongside the formal curriculum (Hafferty, 1998; Tsang, 2011; Thielsch, 2017). These terms represent complex concepts with both unique and overlapping themes and most current attention is, quite rightly, focused on those unintended lessons that contradict the formal curriculum or the claimed values of the institutions that teach them. An example of this would be the passing on of social norms that favour the dominant racial group whilst promising to embrace diversity. As well as conveying such unintentional learning, assuming knowledge and learning also promotes the hidden curriculum as students do not have equal capacity for picking up such assumed understanding (Webster et al., 2018). Whilst Snyder’s original (1971) book *The Hidden Curriculum,* argued that the hidden expectations benefited the middle classes (who were more aware of what was expected of them as this fitted with their existing-middle class values) and disadvantaged working class students (who were less aware), today’s HE institutions look beyond class and recognise that their much more diverse student bodies bring widely differing cultural and life experiences to their learning and aspects of the hidden curriculum are potentially detrimental to a greater range of students. This means that even if a number of students are able to pick up some assumed skills, there are likely to be others who, although experiencing the same formal curriculum, will through no fault of their own, fail to develop them—so if this happening with visual literacy, it would be a key barrier to its equitable development.”

3.4.4 Lack of assessment

There is an established body of literature that argues the important role that assessment plays within learning processes and in what students perceive as being valuable in their learning (see

below). Accordingly, it can be argued that if visual literacy is not assessed, it is less likely to be developed effectively. Although it is outside the realm of this thesis to present a detailed and extensive argument that assessment is a key part of the learning process, a brief explanation of some of the literature that supports this claim may be useful to establish its validity.

Early work by Entwistle and Ramsden (1983) recognised the role that assessment plays in the learning process for students categorised as employing what they termed a 'strategic' approach to learning, implying this could be a less optimal approach than those adopting a consistently 'deep approach' which was motivated by a desire to learn rather than to achieve higher grades. However, students with a strategic approach have been characterised as switching from deep to surface approaches (often rote learning of material) depending on what they deem will best ensure they achieve higher grades (Hoskins & Newstead, 2009). Such students will therefore develop deep approaches and want to achieve learning objectives if these are sufficiently aligned with assessments (Elton, 1996; Baeten et al., 2010)—effectively switching the responsibility from student to teacher to ensure that surface approaches would be ineffective. The role of assessment is motivating student learning cannot be underestimated—a point which Lynam and Cachia (2018:225) make clear:

> Assessments in higher education have several functions, including grading, evaluation of student achievement and supporting student learning. Their role in motivating student learning is undoubtedly their most important.

One reason that assessment motivates learning is that when knowledge, skills or competencies are assessed, it "shape[s] people's understanding about what is important to learn (Moss et al., 2006:111), and accordingly, if certain skills, knowledge or competencies are not assessed, it arguably sends a message that they are not valued, which is another aspect of the aforementioned hidden curriculum.

Alongside this argument, the idea of assessment *for* learning (AfL) has grown. Early conceptualisation of assessment that specifically promotes learning concentrated on the difference between formative (developmental) assessment and summative (judgemental) assessment (Bloom et al., 1971), but the concept of AfL has evolved to challenge this dichotomy. Boud (1995) argued that the emphasis that students themselves place on summative assessments means that these also need to be *for* and not just *of* learning. This new conceptualisation, which emphasises the role of effective feedback for all assessment tasks, as well as approaches such as peer- and self-assessment, is now a widely accepted and valued concept within HE as it promotes rather than undermines learning—which was a

criticism of some earlier approaches to summative assessment (Boud, 2010; Wiliam, 2011; Sambell et al., 2012). In addition, the concept of assessment *as* learning has been recognised, which describes assessments where the students learn specifically by engaging with assessment tasks and where the tasks are designed to *prioritise learning* over assessment (Yan & Boud, 2021). Whichever approach is used, there is clear evidence that assessment is increasingly seen as integral to the process of learning in HE

If assessment is integral to learning, then in order for the skills that make up visual literacy to be effectively learned, it is important that they are assessed. It is clear from Linenberger and Holme's (2015) research in the previous section that even in fields were visual literacy is acknowledged as important, it may not be routinely assessed. In a similar piece of research, Keller et al. (2018) surveyed mechanical engineering faculty members to explore how visual literacy was being developed. Though they concentrated on one institution, making their sample size considerably smaller, they found that despite almost all respondents thinking that visual literacy was important, less than a third of them (7 out of 22) assigned any grade points to it in their assessment. If this is widespread practice, it would indeed be a barrier to visual literacy development because it can lead to students not seeing the value of visuals within their communications and without formally addressing visual components in assessment criteria, students are less likely to receive specific feedback on their use of visuals and without such feedback, development is potentially inhibited. Without assessing, staff are also less able to evaluate any strategies for developing visual literacy that they may have put in place. It could be argued that lack of adaptable assessment rubrics could be a contributory factor, but as will be seen in section 3.5.4, there has been considerable work done in this area.

3.4.5 Media tools and technology

Another potential barrier identified by the 21st Century Literacy Summit (The New Media Consortium, 2005) was media tools and technology themselves. Whilst they also accepted that this could be an enabler (Web 2.0 facilitates creation as well as consumption of visual materials and access to technology is higher than it has ever been), they recognised that some technological tools are expensive and hard to master. This point was repeated by Fleming (2007) who added that the slow nature of funding requests in HE also means that technology can be obsolete before some hardware or software is in place. It could be argued that this was the early days of Web 2.0 capability and many tools are now widely available and an integral part of student life. However, this does not mean that all students are equally technically able when learning new software (Fadzil, 2018) nor do they all have access to equitable hardware or internet connections due to what has become known as the digital divide (Van Dijk, 2017)—

a problem highlighted in the current COVID-19 pandemic with the forced switch to online learning (Ramsetty & Adams, 2020; Reddick et al., 2020). Most universities also have tight budgets, meaning that educators are forced to source free or basic versions of software for projects (see for example University of Edinburgh, 2020; University of York, 2020) which have limitations and are often less user-friendly than more expensive industry standard packages. This suggests that unrealistic pricing and licensing to educational establishments by the providers of such software is another barrier (The New Media Consortium, 2005).

Furthermore, it is not just access to technology that can be a barrier. When it is available, Northcut and Brumberger (2010) suggest that too much focus on it and what it can do, can prevent design decisions from being focused on communication needs. For example, teaching how to use presentation software can become too focused on 'click this' than good practice, and design decision are now partly undertaken by the software's inbuilt *Designer* (Microsoft, 2021) rather than by the creator with an audience's needs in mind. Technology therefore drives the need for visual literacy (as argued in section 2.4) but could simultaneously limit opportunities to develop it fully.

3.4.6 Decreasing levels of visual literacy in schools

Another barrier identified at the 21st Century Literature Summit was the erosion of Arts in schools which would in turn decrease levels of visual literacy in school leavers. Whilst this erosion has undoubtedly continued (Robinson, 2011) and can indeed have an effect on the visual literacy of students *arriving* at university, it is not something that has come up notably in other literature on visual literacy in HE—other than perhaps contributing to the poor visual literacy levels noted in section 3.2.

3.4.7 Student expectations and experience

Another potential barrier is that students can struggle to reconcile their expectations of an academic assignment with the requirements of a more visual assessment (Bowen, 2017) and they can experience frustration regardless of the amount of direction given (Bratslavsky et al., 2019). In Bowen's (2017) study, the participants were students on popular culture or communications courses and the assessments designed to represent the type of multimodal communication that students would need to create if they entered related industries. That even these students had difficulty transferring their knowledge of existing academic practices to the new assessments shows what a significant issue this may be for students studying unrelated disciplines, who may find it an even greater challenge. This issue is strongly associated with the first barrier noted herein: the logocentric dominance of HE means that

students are more familiar with text-based assessments such as reports and essays or oral presentations. Highly visual assignments can take students out of their comfort zone and cause anxiety (Bowen, 2017). In a sector where student evaluations of teaching are used as a measure of teaching quality (Holland, 2019) and can impact appointments and promotions (Boring et al., 2016) staff may be understandably cautious about asking students to undertake potentially unpopular assignments. This reluctance can therefore act as a barrier to the development of the skills needed to undertake such assignments successfully.

3.4.8 Staff experience and confidence

For staff to teach and assess visual literacy, they need to have some confidence in their ability to do so. It was mentioned in section 3.4.1 that most academic staff in HE are inexperienced in assessing non-written or non-verbal work (Brumberger & Northcut, 2016; Ross et al., 2020) due to their own experiences, both as learners and teachers, in a traditionally logocentric sector. And, without effective institutionally accepted rubrics for even commonly produced artefacts like presentations and posters, and support in using them, many may not have the confidence to take autonomous steps toward changing the status quo. As Toth (2013) recognised, staff without any background in visual design are likely to lack the confidence to teach this to their students and may feel they need to bring in staff from other disciplines—which could be difficult to arrange in the siloed system acknowledged in section 3.4.2.

Staff also need to feel confident that they are teaching the most appropriate elements of visual literacy for their discipline. In their survey of biochemistry academics, Linenberger and Holme (2015) found that there was no consensus of which visual literacy skills were most important for biochemistry (they used Schönborn & Anderson's [2006] list of eight identified visual literacy skills for biochemists). The fact that there was such a limited number of skills to choose from and yet they still did not agree, means that the more complex ACRL (2011) standards and performance indicators may in themselves be a barrier to educators deciding which skills to develop within their discipline. Indeed, in her masters paper, Bellard (2017) found that even some academic librarians thought the standards overcomplicated visual literacy.

This research will investigate if these or other potential barriers are present within the case institution and, if so, whether there are any bridges that can help in overcoming them. Potential bridges to developing visual literacy identified from the literature are discussed next.

3.5 Potential bridges to developing visual literacy

In many cases, it could be argued that anything that counters potential barriers is a bridge. Accordingly, reducing the logocentric dominance; breaking down disciplinary silos; making media tools and technology more accessible; accepting that visual literacy needs to be taught and creating appropriate rubrics and incorporating them into assessment criteria are all bridges. These in turn could lead to staff gaining more experience and confidence and students being more comfortable with assessments that include visual components due to more exposure to them.

The creation of assessment frameworks and rubrics is a particularly important bridge, and a notable portion of the literature focuses on this. It will therefore be considered in more detail towards the end of this review. First, in addition to those bridges that are simply nullifying barriers, it has been possible to identify some bridges in their own right, and these are considered next.

3.5.1 Creative Commons licensing

In addition to the potential offered by new technologies, The New Media Consortium (2005) recognised Creative Commons licensing (see Creative Commons, 2017) as an enabler as it encourages individuals to experiment with new media without infringing intellectual property rights. The report bemoaned the fact that Creative Commons was not well known at the time but since then it has gained more recognition and recent changes to the way that Google enables images to be licensed and more obvious image search filters (Byford, 2020) mean that knowledge of Creative Commons licensing should continue to rise.

3.5.2 Academic libraries

Academic libraries, as the epitome of multidisciplinary and interdisciplinary knowledge, have self-identified as bridges to developing visual literacy. The ACRL, whose visual literacy standards are so key to this research, is itself the professional body for academic libraries in the US and, as has been mentioned earlier, CILIP, the nearest UK equivalent body has endorsed those standards.

Two of the papers already mentioned in this review have been written by authors working in academic libraries (Cook et al., 2015; Denda, 2015). In both cases, the authors worked collaboratively with members of academic staff to design teaching strategies or assignments. It is interesting that Rockenbach and Fabian (2008:27) suggested more than a decade ago that “the academic library is being called upon to provide and support the use of visual materials in

unprecedented ways on campus" and yet in the case institution, until I started this research, there had been no such notable call from faculties, beyond requests to ensure images can be cited appropriately in local referencing systems. Any other initiatives, such as providing access to copyright-free image sites via the library's web pages and teaching about Creative Commons licensing in presentation workshops, have been library-initiated. In that vein, Fullmer (2019:22) argued that libraries and academic libraries are in a strong position to improve visual literacy:

> As institutions that promote social justice, libraries can help improve diversity and inclusion in their communities through teaching visual literacy skills at all levels. Critical visual literacy instruction can also help academic libraries advance student scholarship, which can only be achieved if they are literate in all forms of knowledge production (Fullmer, 2019:22).

This shows the important role that academic libraries have in *guiding* their institutions toward a recognition of a wider range of academic literacies. It would, however, be essential for academic libraries to have strong connections with their academic faculties for this to have the greatest effect. In the US, there is a recognised gap between libraries and faculty (Library Journal and Gale Cengage Learning, 2015) and the removal of subject librarians in many UK universities has also been credited with weaker relationships between the two areas (Pinfield, 2001)—although in many institutions subject librarians have been replaced with academic liaison librarians who have a specific role in promoting stronger relationships between them (Rodwell & Fairbairn, 2008). Unfortunately, this role has also been removed from the library staff structure in the case institution. Nevertheless, having a library that recognises and promotes visual literacy could be an incredibly strong bridge to ensuring more undergraduates develop those skills that allow them to critically use and consume visual messages.

3.5.3 Inclusive assessment

Building on Fullmer's statement above, which makes the connection between visual literacy and diversity and inclusion, a final additional bridge noted in the literature is the fact that multimodal assessments are seen to be more equitable and inclusive (Stein, 2000; Newfield et al., 2003; Archer, 2006). Students who struggle with written assignments, for any of a number of reasons (for example cultural background, specific learning differences [SpLDs] or physical disabilities) can often thrive with a multimodal approach incorporating more visual elements (Newfield et al., 2003; Andreou & Vlachos, 2013). In addition, the widening participation agenda coupled with the need for inclusive assessment (Waterfield & West, 2005) has meant that many institutions are now looking at providing alternative assessments for some students (Burnell, 2019). Many of these are more visual in nature (see for example Hay et al., 2010;

Deneen et al., 2018) meaning that staff should become more experienced and comfortable assessing such work and realise that they can also be less onerous to grade (Toth, 2013), making this another potential bridge that may make staff more willing to use such assessments with all students, not just those needing alternatives for inclusivity reasons.

3.5.4 Developing frameworks and rubrics for assessment

As mentioned at the beginning of this section, a number of papers have a stated aim of developing effective ways to assess visual literacy and whilst there are implicit assumptions (that visual literacy *can* be assessed for example) and limitations (the cultural context for example), it does appear that effective rubrics can be developed. Literature on assessment frameworks, rubrics or scale development includes some papers that have already been mentioned in the previous chapter, which considered, amongst other things, the definition of visual literacy. This is to be expected, as it is difficult to measure something if its parameters have not been defined.

3.5.4.1 The visual literacy index

One of the earliest attempts at developing an assessment framework was made by Maria Avgerinou for her doctoral research; she went on to become a co-chair of the IVLA. Her thesis *Visual literacy: anatomy and diagnosis* (Avgerinou, 2001) was an attempt to define and classify visual literacy and develop tests to assess it. The consequent paper *Towards a visual literacy index,* presented at the 2000 IVLA conference (Avgerinou, 2007 [special reprint of award winning papers]), concluded that it was possible to measure visual literacy and that the developed index did measure elements of visual literacy with sufficient internal validity to be reliable. The battery of tests involved various questions about visual images that assessed the candidates' understanding of visual conventions and vocabulary, ability to make meaning, think and reason visually, construct meaningful images, visualise concepts and view images critically. She did recognise, however, that some elements of visual literacy (specifically the 'encoding' or creative elements) were not tested sufficiently and that as far as visual literacy assessment was concerned its "questions beg more answers than we can currently handle" (Avgerinou, 2007:43). The index therefore was not sufficiently tested and developed at that stage to become widely used.

3.5.4.2 Discipline-specific visual literacy assessment

A few subsequent researchers have sought to develop their own assessment measures and, as with the definition problem identified in the previous chapter, no particular measurement index/rubric has gained prominence. This is almost certainly due to the interdisciplinary nature

of visual literacy as each new group of researchers tend to develop new tests that address visual literacy from their own disciplinary standpoint and for the educational/developmental level at which they are working. For example Callow (2008) as a researcher working in the field of literacy education, based his *Show Me* framework for testing visual literacy in young children on existing standards developed by the International Reading Association (IRA) & National Council of Teachers of English (NCTE). Callow designed the framework to include affective, compositional and critical dimensions and used the IRA/NCTE standards to create grade-specific performance indicators. Although this was aimed at younger students, the affective/compositional/critical breakdown could have formed the basis for successful rubrics at different academic stages but there is no evidence that anyone developed it beyond the original. Similarly, Emanuel et al. (2017) developed their *Cultural Image Literacy Assessment-USA©* from the point of view of cultural studies and with American undergraduates in mind. This paper did cite the earlier index used by Avgerinou and also the later ACRL (2011) visual literacy standards as influential, but concentrated on what they saw as an underlying gap in existing knowledge about iconic images from American culture. So rather than measuring competencies or skills, their assessment rubric focused on testing knowledge by analysing whether students could answer three questions about 15 iconic images (an even mix of photographs, symbols and paintings). The questions tested recognition, identification and knowledge of what an image meant or represented. This assessment, whilst adaptable to different cultural contexts, is therefore severely limited in the scope of the visual literacy standards it assesses.

3.5.4.3 Cross-disciplinary visual literacy assessment

Whilst some rubrics have been designed in a discipline-specific context, their creators have argued these could have cross-disciplinary reach. D'Angelo (2010) developed and tested a framework for multimodally analysing academic posters and, by implication, some of the productive aspects of the visual literacy of their presenters. The framework involved assessing the presence of 'interactive resources' (elements that organise the flow of information on the poster) and 'interactional resources' (elements that attempt to interact with the reader and involve them in the argument). These were expected to include both visual and textual elements. The framework was successfully tested by analysing a single poster in the field of Applied Linguistics, but D'Angelo suggested that wider analysis could highlight cross-disciplinary conventions and influences. Unfortunately, if such wider analysis has occurred, it remains unpublished and therefore it is hard to know if the framework can be used successfully in related disciplines. Similarly, Cook et al. (2015) reported on a change in an

assignment format (from traditional to digital poster) where librarians worked collaboratively with a visiting STEM academic to update the assignment and develop an appropriate assessment rubric. The rubric was not described in detail but was said to be assessment-specific and based on the ACRL visual literacy standards which the authors suggested made the grading more objective. It was further suggested that the rubric could be adapted for other digital posters, not just those in the STEM disciplines. This idea of an underlying assessment framework for a *type* of assignment (such as a poster, presentation or blog post for example), based on the ACRL standards, with indications of how it can be adapted to create a rubric which takes into account the disciplinary context would, I envision, be more appealing to many discipline-oriented academics than a more prescriptive or generic rubric.

3.5.4.4 Multimodal assessment

The literature search highlighted only two recent papers attempting to develop a rubric to assess visual literacy on the same scope as Avgerinou's earlier thesis. Working in the interdisciplinary field of communications, Bowen (2017) proposed a Visual Literacy Competency (VLC) rubric that could be used to both scaffold the teaching of, and practically assess, the range of visual literacy standards described in the ACRL framework. Bowen adapted the Biggs and Collis SOLO taxonomy, which assesses the structure of observed learning outcomes, and devised equivalent levels related to VLC. She associated each of these levels with competencies that can be identified during assessment to determine whether an individual student has reached that particular level. Bowen successfully tested this new rubric in two existing courses where traditional assessment methods were proving insufficient and multimodal assignment artefacts were more appropriate to demonstrate the desired learning outcomes than traditional documents. The majority of HE assessments that involve visual material (and therefore can assess aspects of visual literacy) are multimodal in nature and an understanding of the interaction between words and visuals is implicit in many of the ACRL visual literacy standards. A framework for assessing multimodal assignments is therefore relevant to assessing visual literacy. Bowen's paper shows that visual literacy can be meaningfully assessed whenever the production of multimodal artefacts is required in assignments. By designing and providing the rubric, Bowen ensured that the students were aware of what was required of them, even though she reported that they struggled to transfer from a traditional written assessment to the multimodal equivalent.

This need to ensure students understand the expectations of multimodal assessments was also a key driver in the work undertaken by Ross et al. (2020) in the most recent paper addressing the need for a wider, more adaptable, multimodal assessment framework for HE. Their initial

research explored student understanding of a specific multimodal assignment's assessment rubric, the revising of that rubric and subsequent student understanding. Like Cox et al. (2010), they found that students often find the language associated with assessment rubrics more confusing than helpful and their revised rubric tried to address this by being less vague about what some of the criteria were looking for. Their research led to the creation of a framework that university teachers could use to devise their own assessment rubrics for multimodal assignments. This framework has four dimensions: "criticality, cultivating creativity, taking a holistic approach and valuing multimodality" (page 299). Each of these was expanded upon and, for some, specific guidance on rubric design was given. For example, for criticality:

> Assignment descriptions and rubrics need to convey how technical and narrative elements work together to construct an argument. Judgements about the quality and criticality of the argument should be foregrounded, and the technical and narrative elements understood as contributing to this. (Ross et al., 2020:300)

For many academics, used to text-dominant assignments, the multimodal approach, which embraces the interaction between word and image, may be a more acceptable way of developing visual literacy than something with visuals alone. Assessment rubrics that value what images can bring and that are adaptable to the disciplinary context could ensure that relatively common assignments such as presentations and posters, as well as more innovative assignments such as blogs, magazine articles, infographics and videos, are assessed in such a way that higher levels of visual literacy (both critical and creative) are more explicitly developed and assessed.

3.6 Chapter summary

This review has revealed that when assessed, baseline visual literacy in undergraduate students is poor, despite living in a visually-rich environment. Indeed, in some cases it is less than is needed to be able to complete their degree successfully without intervention. However, the literature is rich in examples of such successful interventions in a variety of subjects beyond those where analysing or creating visual images is their primary focus. This review showcased examples from across the world where innovative educators have taught and developed visual literacy skills in a range of HE disciplinary and interdisciplinary contexts. Some have developed a wide range of visual literacy skills (both creative and critical), some have concentrated on just one side of the visual literacy equation (creative *or* critical) and some have focused on a very small and specific subset of skills. Overall, the examples found show that even non-design students can create effective, even powerful, visual messages and that the analysis of visual images, including visual art, can be successfully taught to students

from many different disciplines and that these learned skills can be transferred between contexts and applied in real-world situations. Several of the initiatives also indicated that learning visual literacy can promote the development of emotional intelligence and help students develop a deeper connection with their learning.

As this research is concerned with finding bridges and barriers to developing visual literacy, part of the review process involved noting any potential bridges or barriers identified or suggested by those advocating for or involved in visual literacy development. Potential barriers include some hard to overcome issues such as entrenched practices within HE (logocentric dominance and disciplinary silos) or that occur before students reach HE (decreasing visual literacy development in schools). Some other barriers involve challenging assumptions, for example that visual literacy skills develop naturally as a result of exposure to visual materials and that there is therefore no need to address visual literacy skills directly in assessments. Whilst still difficult, these would perhaps be easier to address than the more entrenched practices. The final two potential barriers could be described as resulting from the earlier ones: the lack of experience that staff have in teaching and assessing visual literacy skills and student expectations of what a university assignment should look like. Both of these can only improve with time and by successfully challenging the earlier assumptions.

A major bridge to promoting visual literacy development is the ability to effectively assess it by developing suitable frameworks and rubrics and this review finished by looking at that area. It found that assessment frameworks have been developed that have the potential to be contextualised to different disciplines and different assessment tasks. The first notable attempt to develop an assessment tool was two decades ago with Maria Avgerinou's *Visual Literacy Index,* a non-disciplinary framework which set the groundwork. A variety of other frameworks or rubrics have since been developed that work within disciplinary, cross-disciplinary and interdisciplinary contexts. Bowen and Ross et al.'s latest frameworks recognise that most visuals in HE are found within multimodal contexts, with text and their relationship with it being equally important. Useable, adaptable assessment frameworks and rubrics could well be one of the key persuasive elements of any strategy to encourage potentially wary academic staff to adapt their assignments to teach students to work more critically and creatively with visuals. This review has shown that these can be successfully developed.

As well as the development of assessment frameworks or rubrics, or indeed any intervention that counteracts barriers, the review process identified three further potential bridges to developing visual literacy. Firstly, the existence of, and increased awareness of Creative

Commons licensing, which makes it clearer how and in what circumstances images can be re-used and gives the creators of visual material more control over the process. Secondly, the work of academic libraries who can promote visual literacy development and guide their institutions in how to integrate this practically into teaching and assessment. And finally, the increased push for assessments to be inclusive and accessible to all, regardless of cultural background or educational/mental/physical differences. Such bridges are essential to raising the profile of visual literacy and therefore promoting its development.

Along with mapping the opportunities for developing visual literacy across the academic programmes in the case institution, this research will look to confirm if these bridges and barriers are present and search for more—perhaps smaller, more easily broken barriers and simpler, more easily implemented bridges. Identifying practical steps to take and small changes to practice that can be applied may increase the attention given to visual literacy and be the first stages of the longer process of breaking down those bigger, more entrenched barriers mentioned herein.

Chapter 4: Methodology

4.1 Introduction

This chapter is divided into four sections: First my **research approach** (section 4.2) which is an explanation of my choice of a pragmatic research approach due to my personal ontological, epistemological and axiological beliefs. This is followed by the **rationale for methodological choices** (section 4.3). This gives the reasons why I have chosen to undertake an institutional case study rather than other possible methodological choices in order to answer my research questions. This includes the reasons behind the choice of documentary analysis of module specifications and interviewing academic staff via semi-structured interview as part of the aforementioned case study. Next comes a section on my **positionality** (section 4.4), an important consideration of my position within this research due to the subjective nature of the qualitative design I have chosen. Specifically, it examines how power differentials between my role as a learning developer and my participants' roles as academic staff may have come into play and how my status as an insider researcher within my own institution have influenced both my relationship with my participants and some ethical choices. Finally, the **methods** (section 4.5) explain how I have put my methodological choices into practice. This includes the specifics of documentary analysis, participant selection, question framing, the pilot process, interview methods and interview analysis.

4.2 Research approach

Any piece of research is underpinned by the philosophical position of the researcher and their beliefs about the nature of the knowledge they are creating. For many researchers, this is a fundamental issue that needs establishing before research begins as it determines the methods chosen for data collection and analysis as well as the vocabulary they use to describe findings. Navigating the complex metaphysical issues of ontology, epistemology and axiology can be challenging for a first-time researcher, but the fundamental question of what their conclusions will represent is critical to their understanding of their own research process. My personal philosophy is that knowledge is socially constructed, and that truth can only ever be understood in terms of 'what works'. In other words, I am a pragmatist. More specifically, I am essentially a Deweyan pragmatist though this is heavily supplemented by elements of Rortian neo-pragmatism. This description of my philosophical stance is based upon the answers to three metaphysical questions which consider how my beliefs about reality, knowledge and values influence my research approach.

The pragmatic approach is also one that challenges what Dewey described as 'false dualism' in educational research (Pring, 2000). The apparent incompatibility of positivism and interpretivism; objectivism and subjectivism; quantitative and qualitative methods is richly debated. As someone with a scientific background, moving into educational research, this dualism has always made me feel unbalanced. It seemed that leaning toward either end of the paradigmatic spectrum was cutting off possible directions for exploration. I needed to find an approach that was flexible enough to adapt to different questions and different circumstances without compromise and this led unwaveringly toward pragmatism.

4.2.1 Reality and truth

The first metaphysical question a researcher needs to answer is ontological: whether there is a reality (or realities) 'out there' that knowledge corresponds to or somehow represents. This is often discussed by referring to 'truth' and what that means. Dewey's pragmatism was fundamentally realist: he was happy to accept that there was a 'real world' and that there was some sort of relationship between this and our knowledge of it (Biesta & Burbules, 2003). Rorty, on the other hand, although a self-confessed "disciple" of Dewey (Rorty, 1999:xvii), continually challenged the notion of knowledge corresponding to reality (this is an underlying concept in most of his writings but was a prominent theme in Rorty, 1979). It is not that he denied that things *could* be true or that reality *could* represent 'how things are' he just thought there was no point talking about such things as they could just as equally not (Rorty, 2005). Rortian pragmatism "drops the notion of truth as correspondence with reality altogether" (Rorty, 1982:5), suggesting that knowledge is not useful because it helps humanity to understand reality, but simply because it helps humanity. I too, have a similarly insouciant attitude to truth and reality—these are not relevant or useful concepts when it comes to my research approach. I am not searching for basic truths nor trying to discover an independent reality, I am simply hoping to develop knowledge that can be useful in moving understanding of a small part of my field forward. This is not to say that truth is not important in my research, it is just that, for me, it has a different definition to 'what is known about reality'. My definition concurs with that of both Rorty and Dewey who replaced the notion of truth as corresponding to reality with truth as justification, what Dewey (and later Rorty) referred to as 'warranted assertability' (Dewey, 1941; Rorty, 1979; 1998). My search for conclusions that can be justified to my peers rather than conclusions that are 'real' is both practical (i.e. achievable) and modest (an important feature of a pragmatic approach which is covered further in section 4.2.3.3).

4.2.2 Knowledge

The next metaphysical question that a researcher must answer is epistemological. If knowledge does not correspond to reality, then what is it? Dewey described knowledge as 'transactional': something that arises when an organism interacts with its environment (Biesta & Burbules, 2003). In other words, it is not concerned with 'objects' themselves but with the relationship humans have with them. As part of a research approach this is important because it implies that knowledge is subjective, constructed and changeable. That is, it is impossible to take the person out of the knowledge transaction; knowledge is created (constructed) as part of the transaction; and both what is known and the person change as a result of the transaction. Biesta and Burbules (2003) suggest that a consequence of this is that it re-draws the relationship between theory and practice. Instead of the commonly held belief that theory informs and practice follows, it is a more circular picture of practice generating theory which then feeds back into practice. The relationship between educational research and educational practice is therefore similarly re-drawn. Knowledge resulting from my research is not separate to practice but intimately woven into practice: emerging from it, created by it, returning to it and producing more of it. To some extent, elements of my research *are* practice. Whilst it does not quite fall into the category of action research (for which it has also been suggested that pragmatism provides a suitable philosophical foundation - see Reason, 2003; Elliott, 2006) the sort of conversations I have with my participants could easily be described as everyday practice. They fall completely within the bounds of the type of conversations I could, and perhaps should, already be having.

The Deweyan idea of knowledge highlights its transitory nature as any transaction is impermanent. Rorty's neo-pragmatism also embraced the instability of knowledge but his focus was more on the use of language and how that evolves to meet the needs of society and any particular situation. He argued that language is susceptible to a form of Darwinian natural selection (Rorty, 1979; 1990) where it will only survive if it can be effectively put to work. This language evolution is an important element of a neo-pragmatic approach and the evolution of literacy to include the visual could be argued as an example of this *in extremis*. Indeed, Rorty did not regard 'language' as being entirely logocentric, he described "our language" as "the science and culture of twentieth century Europe" (Rorty, 1989:16) and indicated that the necessary re-descriptions needed for progress can include those provided by musicians as well as poets, philosophers or writers (Melles, 2008). It is not unreasonable then to suggest that following the "pictorial turn" (Mitchell, 1994:11) and the explosion of image production and consumption in our current digital culture, these re-descriptions could also be visual. Indeed,

the idea of a *visual epistemology,* which Drucker (2014:8) defines as "ways of knowing that are presented and processed visually" is an example of the evolution of descriptions of knowledge.

Neo-pragmatic research such as my own should therefore not aim to provide definitive answers, but "descriptions that meet our particular needs" (Badley, 2003:303), with an acknowledgement that these can only ever be 'work in progress' until better (more useful) descriptions can be found or the needs themselves change. Admitting that one's research findings are transitory creates a necessarily uncertain state of "reflective equilibrium" (Rorty, 1991:184) where, although the initial research questions may be answered, only a "brief respite" (Badley, 2003:305) is obtained as any findings should be a springboard to further inquiry. The aim of Rorty's philosophy was not to find an ultimate truth but to "keep the conversation going" (Rorty, 1979:378) and this can just as easily be applied as the aim of research where, again in the words of Rorty "it is the journey that matters" (quoted in Badley, 2003:302). This research will hopefully therefore provide answers that represent a junction or at least a useful way-station—not to a particular destination, but on a never-ending research journey.

4.2.3 Research values

The final metaphysical questions to be answered by researchers are axiological. What values are brought to the research and how do they affect decisions? One of the reasons that I am taking a neo-pragmatic approach is that it corresponds so harmoniously with my own values around three important concepts: solidarity, democracy and modesty.

4.2.3.1 Solidarity

The concept of solidarity refers to a state of human togetherness in understanding experiences and Rorty (1989:190) believed that "we have a moral obligation to feel a sense of solidarity with other humans". He went on to suggest that the way we feel a sense of solidarity is by broadening our sense of who is included in our definition of 'we' and shrinking our definition of 'they'. This is not suggesting that we all need to think or believe the same things; it is saying that we need to widen the range of understanding to include more viewpoints and so expand the consensus. That is, more people accept that their viewpoint is part of a wider range of accepted and acceptable viewpoints. When such an expanded understanding is shared by a greater proportion of society, solidarity is increased and is more able to assist change.

In the case of visual literacy, I argued in Chapter 2 that the lack of a consensus definition was not necessarily a problem *per se* and that embracing and accepting the multiplicity of

definitions (increasing solidarity) potentially increases the concept's flexibility in that it can be adapted to different situations. My decision to use the ACRL standards was based on both their flexibility to be used as a whole or in their component parts and on their usefulness for practical application within UK HE. In the same vein, my empirical research has the aim of widening the understanding of what is helping or hindering the development of graduate visual literacy—embracing the multiple viewpoints found in the literature and described by my participants and so expanding the existing consensus. The wider the consensus, the stronger the sense of solidarity, meaning that practical ways forward are more likely to be embraced and succeed. The concept of solidarity also impacts on my research methodology because the attempt to build it is necessarily a democratic one. This concept of democracy is discussed next.

4.2.3.2 Democracy

A democratic approach to research is one where all participants are treated as individuals "worthy of respect" (Pring, 2001:410) rather than objects. This suggests that interview research should primarily take the form of a conversation where those involved have an equal worth and where knowledge is created together. I have attempted to ensure my interviews felt more like informal, yet respectful conversations, albeit with a specific focus. I will discuss this more in section 4.3.4 where I look at the nature of the semi-structured interview technique I have employed.

Respecting individuals also means that I have treated my participants with the courtesy of anonymity and have endeavoured to present their contributions (both explicit and implicit) with honesty and sensitivity. Where anonymity was difficult (when talking about very specific disciplinary areas for example) I have asked for specific permission to include it so that any misrepresentation or other difficulties are avoided.

Democratic values have also influenced my approach to the topic of visual literacy more generally. The majority of university disciplines still value and reward students who are able to demonstrate a version of knowledge that can be communicated logocentrically or numero-centrically (Drucker, 2014; Kortegast et al., 2019). A democratic university should equally laud those whose talents lie in communicating in different ways, including visually, whatever their discipline (i.e., not just in the visual arts). At a time when most HE institutions have such a diverse student body and decolonisation of the curriculum has been identified as a key force influencing teaching over the next decade (The Open University, 2019), the need to jettison traditional western notions of how knowledge can be demonstrated is increasingly important.

4.2.3.3 Modesty

After such hefty concepts as 'solidarity' and 'democracy', the concept of 'modesty' seems appropriately moderate. Nevertheless, it goes hand-in-hand with its loftier counterpart 'honesty', as it represents an honest admission of the limitations of research for reaching anything but tentative and transitory conclusions. It also acknowledges that whilst research may hope to provide knowledge that can lead to practical solutions to problems, it is more likely to provide what Hammersley (2002:42) referred to as "moderate enlightenment", with many other sources of information also influencing changes to practice. A pragmatic approach accepts the uncertainty of knowledge produced by research (Feilzer, 2009); not because it does not represent 'reality' (it deems this irrelevant as already indicated) but because it acknowledges the shifting status of the knowledge transaction. The process of undertaking this research has already changed the researched. Asking questions raises awareness, challenges practices and promotes reflection amongst participants as well as the researcher. These effects have already led to changes in practice before any findings have been shared. This is not a weakness of the research but a strength of the pragmatic approach which champions subjective, transitory and practical knowledge.

4.2.4 False dualism

Within educational research there are acknowledged philosophical divisions. These mostly revolve around the ontological and epistemological issues already discussed: objective reality versus constructed realities; truth corresponding to reality versus truth as a negotiated construction; research findings being discovered versus research findings being created. The division is also often referred to on a methodological level in terms of quantitative methods versus qualitative methods. These divisions have led to claims of incompatibility between different approaches by some influential writers in the field of research methods (see for example Smith, 1983; Guba, 1990; Guba & Lincoln, 2008). This 'incompatibility thesis' (Howe, 1988) has always made me feel uncomfortable and by adopting a pragmatic philosophy, I reject the dualisms inherent in the argument for incompatibility. Rorty (1999:xix) described pragmatists as "anti-dualists", rejecting the distinction between absolute and relative ontologies and insisting that the only distinction necessary is that between 'more useful' and 'less useful'. The "false dualism" that exists in educational research (Pring, 2000:248; Badley, 2003:296) can lead to the closing of pathways of inquiry when a more flexible, diverse approach can open more opportunities for new knowledge to be created or found. It is worth noting here that although researchers are regularly challenged to decide if they are *finding* or *creating* knowledge; both Dewey and Rorty dismissed this distinction as pointless, indicating

they are just different types of interaction with the environment (Rorty, 1999; Biesta & Burbules, 2003). By refusing to privilege a particular paradigm, pragmatists are able to choose appropriate tools (methodology, vocabulary) for investigating and describing different aspects of a research topic. The methodological choices for the current research project are explained next.

4.3 Rationale for methodological choices

With no methodological choices 'off-limits' when approaching research pragmatically, it is necessary to put the needs of the project first and consider the most effective way to answer the research questions whilst taking into account the research values identified earlier.

My research questions are:

Q1 To what extent is visual literacy developed in a higher education institution's curricula?

Q2 What could be potential barriers to developing visual literacy within the institution?

Q3 What could be potential bridges to developing visual literacy within the institution?

Due to the institutional focus, and the need to use more than one research method to answer the questions, it was decided that this research should take the form of an institutional case study incorporating documentary analysis of module specifications and semi-structured interviews of academic staff delivering a sub-set of those modules. The reasons for these choices and rejection of some possible alternatives follows.

4.3.1 Institutional case study

There are diverse and conflicting ideas about what constitutes a case study and what it can achieve (Hamilton & Corbett-Whittier, 2013). In fact, Yazan (2015:135) describes it as "one of the most contested methods in educational research". Perhaps one of the reasons for this is the fact that it is difficult to be clear about what it actually is. Cohen et al. (2018:375) ask the question "Is it … a method, a process, a methodology, a research design, an outcome, a research strategy, [or] a focus?" They prefix this question however, by admitting that "a single definition … is elusive and unnecessary". Therefore, this section will not attempt an unnecessary definition and instead focus on justifying its choice as an appropriate way to answer my research questions.

This study is researching a "human activity embedded in the real world" (Gillham, 2010:1) and that activity is also occurring within "a bounded system" (Smith, quoted in Stake, 1995:2). Both of the quotations come from descriptions of what defines a case study. Incidentally, Gillham does not define what he means by 'real' here, but it is unlikely that he wished to start metaphysical debates or imply that only researchers with certain ontological beliefs can undertake case studies. I take it to mean practical as opposed to theoretical situations. Merriam (1998) stated that if a researcher can 'fence in' what is studied then it can be designated as a case. She described this visualisation by Miles and Huberman (1984:25) which shows the focus of the research within such a boundary:

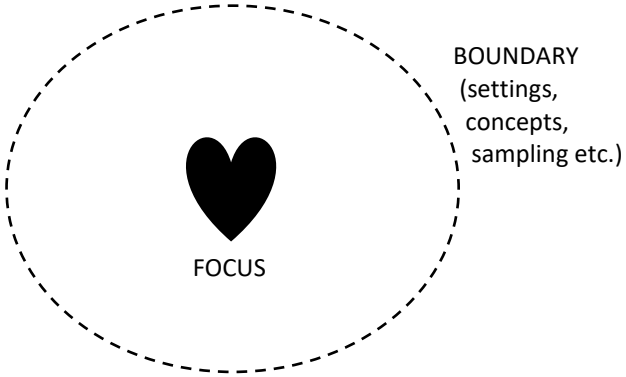

Figure 4.1 The case as the unit of analysis
(from Miles & Huberman, 1984:25)

For the current study, the focus is visual literacy development and the boundary is the institution (more specifically the modules delivered and the academic staff who deliver them). The two cannot be separated. They are integral to each other. Some of the barriers and bridges that I (and my participants) identify may be external, but they would be affecting both elements of the case as an integrated whole. As the institution forms the boundary of my research, this is an institutional case study.

One of the contentious areas of case study research is its potential for generalisation (or not). The issue of generalisation in case studies is two-fold. Firstly, there is potential generalisation *within* the case—what Stake (1995:7) referred to as "*petite generalizations".* Within some case studies, including my own, only a sample of the potential participants is included in the study and this can lead to accusations that these are being used to generalise the views of others. That is, if an issue, circumstance or view comes up repeatedly within my research (i.e. a 'theme' is identified) then there is the potential to falsely attribute this to the whole case. However, the searching for themes is the basis of many different types of qualitative research

and not just case studies. With the pragmatic research values of solidarity and modesty outlined in section 4.2.3, such themes would never be claimed to extend to the whole case. Within-case generalisation in this research will not be appropriate as any themes or even single incidences of relevant viewpoints would only be part of the vocabulary intended to add to known views and widen institutional consensus as described in section 4.2.3.1.

Secondly, there is the issue of whether findings from a specific case study can be generalised to the wider community—what Stake (1995:7) referred to as "*grand generalizations".* To some extent this question is in itself a generalisation as it applies to qualitative research more widely. Schofield (2009) suggests that until relatively recently, the literature on qualitative methodologies ignored the issue of generalisability as it was seen to be neither important nor achievable, concentrating instead on the concepts of internal validity and reliability. Nevertheless, case studies in particular, regardless of their internal methods (qualitative/ quantitative/mixed) have been singled out for criticism about their lack of generalisability as it is argued that a single case is a poor representation of a wider population. There have been numerous attempts to negate this criticism by reconceptualising or at least qualifying what is meant by generalisation from case studies. The attempts began more than forty years ago when Stake (1978:6) introduced the concept of "naturalistic generalisation" as an addition to formal, scientific generalisation. By focusing on the 'particular' (i.e. a single case) and developing in-depth and experiential knowledge of such, he argued that a researcher develops understandings than can help in other situations. Lincoln and Guba (2009) developed this idea of usefulness in other situations and proposed that rather than generalisation, case study research should aim for "transferability" (page 39). So, rather than generalising to an entire population, knowledge could be transferred and applied in other similar situations. The amount of similarity, or "fittingness" (page 40) between the two contexts would determine the degree of transferability. Both Stake's and Lincoln and Guba's proposals called for the researcher to give sufficient information about the context of the case for a reader to recognise any similarities in their own context and so make a judgement on the appropriateness of the knowledge themselves. In this way, the researcher does not need to propose the generalisation/transferability but leaves that for others to decide.

Conversely, Donmoyer (2009) argues against the need for situations to be similar for effective generalisation and proposes that even widely different cases can provide useful learning. He struggled to put exactly what he meant into words, writing "[t]he research community does not currently have a language available to translate my intuition into linguistic form" (page 55). I would argue that it might, for what his subsequent anecdotes and examples were describing

is remarkably similar to the Rortian concept of solidarity through widening consensus as described in section 4.2.3.1. The essence of Donmoyer's thesis was that the understanding of other situations or cases, even (and to some extent, especially) those that are very different to our own, through the vicarious experience of reading about them (for example), can lead us to behave more thoughtfully. I suggest that this can be interpreted as widening the range of understanding to include more viewpoints, and thus expanding the consensus of what constitutes acceptable, useable viewpoints, in other words *solidarity*.

Finally, there is the idea of 'fuzzy generalisation' provided by Bassey (1998; 1999). This also has some parallels with the research values given earlier as it requires the use of language that demonstrates modesty in its claims. Fuzzy generalisation, Bassey argues, provides no certainty but it does provide justifiable possibilities. Using hedging terms like 'may' and 'could' in any proposed generalisations from educational case studies, he suggests, acknowledge the complexity and instability of educational environments rather than represent uncertainty in the reliability of the findings. This fits in with several pragmatic values: Dewey's concept of warranted assertability (see page 69), Rorty's reflective equilibrium (see page 71) and Hammersley's idea of moderate enlightenment (see page 73). It is therefore a combination of these last two models of generalisation that this case study will seek to provide.

4.3.2 Alternative methodologies

Although it could be argued that I am researching a phenomenon (visual literacy development), which may suggest a phenomenological approach be appropriate in order to embrace the multiple lived experiences of participants, I am not trying to discover the 'essence' of that phenomenon as suggested by Adams and van Manen (2008). Instead, this research is aiming to provide useful knowledge that can be put to work to help pave the way for more visual literacy development in order to meet the need established in Chapter 2. In addition, Yin (quoted in Rowley, 2002:18) stated that a case study should be used when "the boundaries between phenomenon and context are not clearly evident". This is definitely the case with visual literacy development as it is not clear to what extent the institutional context will influence or affect it.

Given that the aim of the research is to eventually improve visual literacy development, and that it could be argued this is within the remit of my existing job role, an action research project may also have been suitable. Reason (2003) argues that action research is an appropriate choice for neo-pragmatic researchers as Rorty's ideas fit well with many of the characteristics of that methodology—especially the connection between being a reflective

practitioner and the state of reflective equilibrium mentioned on page 71. However, in order to develop possible courses of action to research, more information about the underlying issues of why visual literacy is currently not universally developed is needed, and this case-study will hopefully provide some of that information. This may eventually lead to an action research project, but that is considered premature at this point.

4.3.3 Documentary analysis

As part of this case study, undergraduate module specification documents were analysed. The specifics of *how* this was undertaken are given in the methods section below. This section gives the rationale for *why* this was undertaken.

The module specifications will be analysed in order to answer the first research question:

Q1 To what extent is visual literacy developed in a higher education institution's curricula?

The specification documents contain what the writer(s) consider to be the main aims and learning objectives of the modules in question. They also include indicative content and the proposed methods for assessing the learning objectives. When this study began, they were publicly available on the institution's website and available for all modules, in every subject area and at all undergraduate levels. As such, they could provide valuable insight into what is considered important to module and programme designers, as well as their disciplines.

Of course, there is the caveat that module designers want their modules to be accepted and so will also write them to fulfil what they believe the boards making such decisions will require for approval. However, once they are accepted, they (or those who inherit them if staff change) are obliged to ensure they are delivered as written. Some are written with a little flexibility incorporated, but the learning objectives and assessment methods cannot change substantially without a new specification being approved. Following the advice of Scott (1990), it is nevertheless conceded that they are not objective accounts of 'what is' within the teaching programme of the case institution but constructions requiring interpretation. The justification for these interpretations will be methodologically triangulated (Flick, 2007) during the interview stage when questions about the modules that participants lead will provide the opportunity to confirm these for specific modules (for example when looking at whether the use of visuals is assessed for presentation assignments).

The decision to analyse these documents, and not others (for example module handbooks, assessment guidelines, or marking rubrics) was because of their accessibility which enabled a

holistic view to be obtained. Obtaining other documents would have required either digital or personal permissions to be granted which could have resulted in the under-representation of certain areas in the data. By choosing to analyse the module specifications, every one of the 1,725 modules could be included.

4.3.4 Semi-structured interviews

As with the above, this section will consider the reasons why semi-structured interviews were undertaken as part of this case study. The specific details of participant selection and question framing will be covered in the methods section below.

Semi-structured interviews were used to help answer the second two research questions:

Q2 What could be potential barriers to developing visual literacy within the institution?

Q3 What could be potential bridges to developing visual literacy within the institution?

To answer these, it was necessary to speak to academic staff who are working directly with the students but who also have a role in designing modules and programmes. Several module leaders were therefore interviewed (see section 4.5.2 for details).

Semi-structured interviews, rather than unstructured interviews, were undertaken in order to give some shape to the interview (Given, 2008), make comparisons between some answers across participants and to provide the participants with prior-sight of the questions should they so wish (only one participant asked to see the questions in advance). Semi-structured interviews, rather than structured interviews, were chosen in order to allow for the wide variety of responses that were anticipated and to allow follow-up questions (Given, 2008). They were also chosen over structured interviews because they engender a more collegiate, conversational atmosphere to develop. A democratic approach to research requires respect for the participants and a conversational approach could demonstrate this as the participants could decide how much detail they wished to give, how closely they wished to stick to topic and also made it easier for them to ask questions of me.

Interviews are a data-generating rather than a data-gathering process as each interview is an interaction between both participants (Freebody, 2003). This develops shared knowledge which is consistent with the concept of solidarity and the building of consensus which are part of the neo-pragmatic research values brought to this project. As a researcher within my own

institution, my positionality when undertaking data-generation and analysis also requires some consideration and this is discussed next before specific details of the methods use are provided.

4.4 Positionality

Researcher positionality refers to aspects of the personal and professional identity of the researcher in relation to the participants and their situation (Rose, 1997; Giampapa, 2011). This relationship is often described in terms of dualities: insider/outsider (Merriam et al., 2001; Perryman, 2011); middle class/working class (Mellor et al., 2014); straight/gay (England, 1994); senior/junior (Merriam et al., 2001) although some of these positions may fluctuate within a study and could be better represented as a continuum rather than as dualities (Mercer, 2007).

Because, in qualitative research, "the researcher is the instrument" (Patton, 2015:700), it is important that this thesis includes some information about myself and my position within both the case institution itself and in relation to my participants and data. I am a middle-aged, middle-class woman who works as a learning developer within a central team based in the University Library. Learning development is:

> a complex set of multi-disciplinary and cross-disciplinary academic roles and functions, involving teaching, tutoring and research, and the design and production of learning materials, as well as involvement in staff development, policy-making and other consultative activities.
> (Hilsdon, 2011:13)

As such, it "infiltrates throughout the university" and is, according to the Association for Learning Development in Higher Education (ALDinHE) both a service and an ethos (ALDinHE, 2019:1). As a service, a learning developer's role is to help students (and staff) understand academic practices and make the most of learning opportunities (Hilsdon, 2011). This may be related to academic writing, research, digital capabilities or general study skills. As an ethos, it is about inclusivity, collaboration and widening opportunities (ALDinHE, n.d.). Learning developers occupy the *third space* in UK HE (Whitchurch, 2008): a space between academic and professional territories which means they can have "fluidity of identity" (Whitchurch, 2018) which may affect their professional confidence as well as the degree of recognition afforded them within the institution. This is reflected in some aspects of my position within this research.

Researchers are positioned by many different traits but not all will come noticeably into play in any given research project. Chiseri-Strater (1996:115) listed "age, gender, race, class,

nationality, institutional affiliation, historical-personal circumstance, and intellectual predisposition" which is probably a conservative list. Those that come into play will depend on the interaction between these and the equivalent traits in the participants (or in some cases, data sources). In this project, I do not consider age, gender, sexuality, race or class to have caused notable issues; I am not saying that academia is not affected by issues related to these traits, they just did not apparently influence this research. One issue that potentially did create a different dynamic within the interviews was nationality. However, this was minor and I do not want to focus on it because there is the potential that it will compromise the anonymity of some participants. Here, I will focus instead on two issues that could fall into the categories of 'personal circumstance' and 'institutional affiliation': the power differentials due to my position as a learning developer interviewing academic staff and considerations due researching in my own workplace.

4.4.1 Power differentials

During the interview stage of this study, the power differentials (see Brooks et al., 2014) regularly changed. This is, in part, due to the fact that the relationship between learning developers and academic staff is itself multifaceted and changing. In years gone by, we were seen almost exclusively as separated from disciplinary academic practice, providing only remedial central support (Hilsdon, 2011); a view that persists in some areas of academia. However, we are now increasingly taking on the role of expert (ALDinHE, 2019) and being invited into module sessions to work with academic staff to provide context-specific learning development using disciplinary examples. Nevertheless, this is still a relatively new perception of learning developers, and I am aware that I still sometimes feel it is a battle that I need to fight. Conversely, in my role as a researcher, interviewing staff who are themselves research-active, I concede that I am very much the neophyte with a fledgling researcher identity.

Between interviews and within interviews the power differentials caused by these two different positions was fluid. At times I was acutely aware of trying too hard to appear knowledgeable about things, and during transcription it seemed I may have inadvertently put some words into some of my participants' mouths. It could also be argued that I sometimes talked about my own experiences a bit too much. Reflecting on this, I feel this was a case of me still fighting the battle for learning development and feeling that I was "researching up" (Desmond, 2004:262). Far from working to ensure my participants felt worthy of respect as Pring (2001) insisted was needed for the research to be democratic, I was working to ensure my participants felt I (and my profession) was worthy of respect. At other times, for example when I was explaining the ACRL (2011) visual literacy standards and asking my participants to

map how confident they felt to assess them, I felt far more like the expert and that I needed to reassure the participants that it was fine to admit if they were not confident. This may have led them to give different (though probably more candid) answers to their initial instincts. In the context of the interview as constructed data generation rather than objective data gathering, I have concluded that all of these issues can be seen as integral to the process. Powney and Watts (1987) suggested that bringing in personal viewpoints could distract participants or even create self-fulfilling prophecies where participants respond in the way they believe the interviewer desires. However, despite the few occasions when my participants picked up on and used my specific words, I have examined my transcripts carefully with this in mind and have not found any occasions where it has changed the point they were themselves making unduly. More relevantly to my research approach, Ellis and Berger (2003) suggest that by relating my own experiences, I was involved in joint meaning-making by connecting these with my participants' experiences which could have further opened up conversation. Furthermore, the more reciprocal conversational style that the shifting differentials created could have engendered greater trust (Mercer, 2007) which is essential in democratic research.

4.4.2 Pros and cons of insider research

As the case in this research is my own institution, I can be classed as an *insider* researcher (Mercer, 2007; Floyd & Arthur, 2012; Saidin, 2017). This insider status can be seen as "a double-edged sword" (Mercer, 2007:1) as there are both positive and negative aspects associated with it. Positive aspects were both expedient and relational. On a practical level, being an insider meant I had greater and more convenient access to my participants—fitting interviews into my working day at times that were convenient for both parties, with the support of my line manager. In some cases, I already had an existing professional relationship with my participant, having worked with them in my role as a learning developer. This meant I did not have to work as hard to build the rapport necessary to develop the trust needed for a successful interview. Even with those participants with whom I had no previous relationship, they knew who I was and there was a sense of shared endeavour. When I thanked one person for agreeing to the interview they said that they felt it was important to support research in the institution and said "we have to help each other, don't we". I felt this attitude was common to all. Being an insider also meant I was able to discuss changes in the institution that would not be common knowledge to anyone coming in from the outside: aspects of reorganisation, an upcoming change to the way module assessments will be measured and such.

Negative aspects of being an insider researcher relate to ethics because, as Floyd and Arthur (2012) recognised, it is impossible to keep the identity of the case institution anonymous—

even without its inclusion at the front of this thesis, a very basic Google search can easily identify my workplace. This could translate into an increased chance that my participants can themselves be identified. Anonymity is the most basic form of respect that I can give those who participated in this study and I have therefore done all I can to ensure that this is maintained. For example, although the discipline may sometimes be important in identifying a bridge or barrier to developing visual literacy, where there was a remote chance that this could identify an individual, I have done one of three things: omitted it; grouped it with like-disciplines; or asked specific permission of the participant for the information to be included. In addition, during the interview phase of the study, I had to be careful to set interviews as 'private' in my diary as this is shared with colleagues. It has also been impossible to keep some of my interview participants' identities from my immediate colleagues as the participants have revealed these themselves. This either happened because they had closer relationships with those colleagues and discussed with them the fact that they had been interviewed or because they asked for my team to deliver taught sessions specifically as a result of conversations we had during the interviews, and made this known when these were requested. I have nevertheless endeavoured to minimise the specific information being attributed to specific individuals in my results and discussion.

Although no doubt important, ethical permissions gained at the start of a project, with signed consent forms before interviews (see Appendix 4) are no guarantee of ethical practice throughout the research (Hughes, 2005; Brooks et al., 2014). It has been important to be aware of things changing during the research process and to react in an appropriate ethical manner throughout. For example, as some quotes from participants make it clear what subject area they work in, some of which are quite small, I have taken the additional step of changing all the pseudonyms I originally allocated to gender neutral names and replaced he/she, him/her with the gender neutral pronouns of 'they' or 'them'.

4.5 Methods

This section will document the specific actions undertaken to collect and analyse the data. Data comprise module specification documents, interview transcripts and visual matrices produced during interviews.

4.5.1 Analysis of module specification documents

All 1,725 undergraduate module specification documents submitted for the academic year 2018-19 were imported into QSR NVivo 12 Pro.

Modules were classified by their level of study: L3 and L4-L6 in the QAA framework for Higher Education (QAA, 2014b) and by their subject groups (as defined in the module catalogue):

Levels of study:

- L3: Pre-degree level, foundation year
- L4: Certificate in HE, typically first year undergraduate
- L5: Foundation degree, typically second year undergraduate
- L6: Bachelor's degree with honours, typically final year undergraduate

Subject groups:

Maths and Physical Sciences

- Arts
- Education and Social Sciences
- Engineering and Computer Science
- Environmental Sciences
- Health and Social Work
- Histories Lang and Cultures
- Business
- Law and Politics
- Life Sciences

Cases were created for each of the sections of a standard specification and the relevant text auto coded to those cases:

- Aims
- Learning Outcomes
- Indicative Content
- Learning and Teaching Methods
- Ethical Issues
- Assessment
- Resources

} Module Design

These cases were to enable later analysis which involved grouping and filtering as necessary.

A priori codes (themes) were added to the NVivo project for the seven ACRL main standards:

1. Determine the nature and extent of the visual materials needed
2. Find and access needed images and visual media effectively and efficiently
3. Interpret and analyse the meanings of images and visual media
4. Evaluate images and their sources
5. Use images and visual media effectively
6. Design and create meaningful images and visual media
7. Understand issues and use visual materials ethically

Text search queries were undertaken to identify specifications that included any of the following words (and any relevant words with the same stem). These were saved as initial codes so that they could quickly be identified in the modules during later analysis.

- Diagram
- Drawing
- Graphic
- Film
- Illustration
- Image
- Leaflet
- Multimedia
- Photograph
- Picture
- Poster
- Presentation
- Video
- Visual

Some additional words were searched for during the second stage of analysis when it became clear that in some specialist fields, other words may be used to indicate visual material. So, ChemDraw (a drawing package used in Chemistry), model (+ stems) and optic (+ stems) were also included. Note that the search for the word 'model' was limited to the Maths and Physical Sciences and, Engineering and Computer Science subject groups due to its wider, non-relevant use in other areas). A total of 941 modules were found to contain at least one of these words and required further analysis.

4.5.1.1 Developing categories

Two random specifications containing words from each of the 14 initial searches (28 modules) were opened, analysed, and relevant text manually coded to the appropriate ACRL standards as set out above. From these it was identified that modules fell into four categories, where visual literacy was:

A. Explicitly developed
B. Implicitly developed
C. Potentially developed
D. Not apparently developed

These were decided as shown in Table 4.1.

All remaining modules containing the search words were then opened and coded to one of these four categories. Even though the searches had initially identified these modules, several were still categorised as 'not apparently developing' visual literacy because the searched-for word was used in an unrelated context (for example 'drawing on the literature', 'this is an illustration of…'). All remaining modules were categorised as not apparently developing visual literacy. The number of modules assigned to each category is included in Table 4.1.

Table 4.1 Criteria for deciding classification of modules

Classification	Criteria	Nº of modules
A. Explicitly developed	Specific elements of visual literacy mentioned in the module design.	231
B. Implicitly developed	Assessment includes an aspect of visual communication and specific mention is made of the visual elements or need for different communication format.	74
C. Potentially developed	Assessment is via poster or presentation, but no specific mention is made of visual communication or visual elements. OR elements of visual literacy are mentioned but optional in module design or assessments.	446
D. Not apparently developed	Nothing related to visual material found through text searches.	975

Note that the second reason for a module being categorised as 'potentially developed' was added during further analysis as this did not arise during the first batch of coding and yet, if there was *a choice* to use visual materials or not, then there was only the potential for development and so this was a fitting category.

4.5.1.2 Coding to ACRL standards

Whilst coding to these categories, statements that indicated the ACRL standards were likely being met were also coded to the relevant standard. For example, the following two pieces of text were coded to standard 3: 'Interpret and analyse the meanings of images and visual media':

> Seminars will look at sources (textual, visual, material) to help develop an understanding of totalitarian regimes beyond the cult of the leader, and to consider how ideas and ideologies were transmitted to those living under these regimes.

> The ability to interpret complex graphical presentations of complex, multidimensional datasets.

The following two pieces of text were coded to standard 4: 'Evaluate images and their sources':

> By closely viewing and carefully analysing case study artworks, students will learn to reflect in detail upon the choices that were made during the construction of an artwork, and why those choices, above all others, were chosen as the best ways of securing the artwork's intended effects.

> [In relation to a poster presentation] Similarly, students will offer constructive criticism on the work presented by others. In this way, each student will not only grow in their appreciation of the value of peer review, but also will gain from useful feedback on their own research project in its initial stage of development.

In addition, a great number of pieces of text were coded to both standards 3 and 4 as elements of both interpretation and evaluation were present. For example:

> Adaptation will further be closely examined through, for example, the close analysis of the same text in different media such as Frank Miller's *Sin City* graphic novel and its film adaption, relating both to tradition of film noir and hardboiled detective fiction.

> The term paper will be written about a religious material object or a religious material practice and will include an image or a video clip. The final term paper will be published online on a WordPress site as an example of public writing and public research. Peer-feedback should go beyond mere comments on structure or spelling. Rather, peer review should be informed and researched feedback.

> Support students in exploring how maps and other forms of information presentation relate to the environment they try to represent, to appreciate the range of ways in which geographers and earth scientists observe, interpret and record the world, including through data collection and analysis.

Similarly, for the more creative elements of visual literacy, examples of text coded at standard 5: 'Use images and visual media effectively' are:

> They proceed to contextualise and interpret their source in a visual display designed to appeal to a non-academic audience.

> Students will be able to work in a collaborative manner to create a cohesive verbal and visual presentation. The rationale for this type of assessment is that in real life, they will all be required to work together in groups and present the work we have done to their peer group in a manner that is clear, concise and captivating (LO 1-4).

And examples of text coded at standard 6: 'Design and create meaningful images and visual media' are:

> **Stage Design and Visualisation**
> Covering: Studio practice, model making, technical and artistic drawing, spatial design.

> The students gain familiarity with microscopy and make interpretive drawing of the different stages of mitosis and meiosis, linking a knowledge of the important cell divisions with the consequences of these divisions to the inheritance of genetic material.

> Students are asked to prepare and develop a film which effectively explores creative teaching and learning and furthermore allows students to contextualise and reflect upon the creative learning situation in which they are actively engaged through a reflective account.

Again, it was common for text to be coded at both standards 5 and 6. Examples include:

> LO 2 will be assessed through a group poster presentation making use of augmented reality techniques (e.g. videos and other A-V resources linked via a smartphone app) to present findings from the field practical session.

> The summative Infographic Portfolio (60%) requires students to design and produce an information visualisation [digital poster] to critique a key psychosocial behavioural concept within health and exercise. An infographic allows for an in-depth A [sic] focus on appraising understanding through visually communicating a thesis statement, supported by citations and statistics sourced from the academic literature, enables students to convey complex information in a manner that can be quickly consumed.

An example of a coded module specification is given in Appendix 2.

4.5.1.3 Ambiguous coding (categories)

This coding was not always straightforward, for example, if a poster presentation was chosen so that it would enable a student to "convey the results of their research effectively in appropriate formats" or "present this is a creative way" then there is an implication that it means a format other than text even though no visual aspects were specifically mentioned. In the first example, an 'appropriate format' may be a numeric table, a chart or diagram of some sort but this could not be definitively determined. However, as all of these have visual components, this was classed as 'Implicitly developed'. In some cases, the indicative reading could also be used to determine if the use of visuals was promoted (for example if a book on displaying findings visually was essential or recommended reading).

Presentations also needed similar careful consideration. It is perfectly possible to produce a PowerPoint presentation or give an 'oral presentation' with no visual elements or where the visual elements were not valued (or assessed) and therefore most were classed as 'potentially developed'. However, if there was reference to enabling students to present material in 'different formats' or something similar, then these were classed as 'implicitly developed'.

Where students had a choice of assessments formats or the choice of sources to analyse, with only some having visual components, even if these covered many ACRL standards, this module was classed as 'potentially developed' as a student could still take the module and undertake no visual literacy development. If presentations or posters were *only* part of re-assessment

methods, these modules were coded as ‘not apparently developed’ as the majority of students would not have the opportunity to develop visual literacy in these modules.

It must also be noted that in some subjects, the topics were so technical and specialised that, as a non-specialist, I was unable to definitively identify if they involved visual elements. For example, ‘models’ in physics can be either visual or mathematical. If it was impossible to tell, then the modules were categorised as not apparently developing visual literacy as the skills would be so specialist that they would be non-transferable. Still, with some specialist areas (for example molecular modelling, 3D computer modelling) it was possible to recognise the development of some of the ACRL standards and hence visual literacy and these were coded as either explicit or implicit, depending on where the information came in the module specification document, i.e. explicit if in module design and implicit if in assessment only.

4.5.1.4 Ambiguous coding (standards)

Coding to standards sometimes required reasonable assumptions to be made. For example, if an assessment for a PowerPoint presentation required the student to use ‘appropriate visuals’, then this implied that the student would need to ‘find and access needed images’ (Standard 2) and ‘use images and media effectively’ (Standard 5). However, there could also have been an implication that students would both ‘interpret and analyse the meanings of images’ (Standard 3) and ‘evaluate images and their sources’ (Standard 4) in order to choose appropriate images when they found them. In such cases, the full standards, with their performance indicators and learning outcomes (ACRL, 2011), were referred to. In the example given here, the learning outcomes within those standards clearly indicated that to achieve standards 3 and 4, far more analysis and evaluation were required than implied by the module specification. In a case like this, only those standards where a significant portion of the learning outcomes appeared to be met were coded to.

The results of the module specification analysis are given in the following chapter.

4.5.2 Participant selection for interviews

Participant selection was purposeful and decided after initial categorisation of the module specifications.

Module specifications all include information about the module leader, including their contact details. Ten module leaders from each category were invited for interview. Twelve people responded positively to these invitations. The modules they led were in the categories shown in Table 4.2.

Table 4.2 Number of participants leading modules in the four categories

Category	Nº of participants[7]
A. Explicitly developed	4
B. Implicitly developed	3
C. Potentially developed	4
D. Not apparently developed	2

It would have been useful to have had positive responses from staff in each of the subject groups, but this was not the case. However, a range of groups were still represented as can be seen in Table 4.3. Only Arts and Business were therefore not represented.

Table 4.3 Number of participants from each of the represented subject areas

Subject group	Nº of participants
Environmental Sciences	2
Histories, Languages and Cultures	1
Life Sciences	2
Maths and Physical Sciences	2
Education and Social Sciences	3
Health and Social Work	1
Law and Politics	1

4.5.3 Framing of questions

An initial set of questions were devised which aimed to answer the following:

- Why visual literacy was or was not assessed (i.e. questions about rationale for a particularly assessment's inclusion and whether/why visuals specifically assessed).
- How important visual literacy was to their discipline (i.e. the type and amount of visuals commonly used, whether this is changing).
- Whether students received specific tuition or support in developing visual literacy (i.e. whether use of visuals was taught by academic staff or central staff brought in).
- How confident module leaders felt in assessing visual literacy (this used the grid and markers explained in section 4.5.5 below).
- Whether more awareness of the concept of visual literacy could mean it was incorporated into more modules (i.e. have other concepts like information and digital literacy been included more due to raised awareness)

[7] These sum more than 12 as one participant led modules that fell into two different categories.

4.5.4 Pilot process

Two academic colleagues were invited take part in pilot interviews to ensure the questions were fit for purpose.

One of these taught in a discipline where visuals were important and specifically assessed the visual elements of the assessed presentations the students gave. The other taught on modules where visuals were not routinely needed but had some experience of assessing presentations in another module.

The pilot interviews revealed that two further questions needed adding to the schedule in order to get some basic background information about the participants and to ensure potentially useful thoughts not covered specifically by my questions were included in the data. The final interview schedule can be found in Appendix 5.

4.5.5 Interview methods

The twelve participants were interviewed over a seven month period. Each participant was given the choice of being interviewed in their own office or in a neutral room in the university library; seven chose their own office and five the library.

The interviews were recorded using an app on my personal phone. As part of the interview, I also used a large (A1) grid divided and annotated as shown in Figure 4.2. I asked the participants to place a marker with each of the ACRL standards (with their performance indicators shown on the back for reference – see Figure 4.3) on the grid to indicate how important they felt each standard was to their discipline/field and how confident they would feel teaching/assessing them. Some participants needed help with placing the first marker (an explanation of the relationship between the two elements rather than what their thoughts on importance/confidence were) but after that were able to place the markers themselves without further aid. I took photographs of all of these grids.

The audio files and photographs were transferred to a secure PC and deleted from the phone. The interviews were manually transcribed by myself, using pseudonyms for all participants, and the documents imported into QSR NVivo for analysis. The data from the grids was transferred onto an electronic diagram for each participant. After colour-coding to represent whether the participants were teaching modules that explicitly, implicitly, potentially or did

not apparently develop visual literacy[8] these were combined onto a single grid which is presented in the section 6.2.1.7.

Skills I am very confident to teach/assess	An essential skill in my discipline/field
Not important in my discipline/field	Skills I have no confidence in teaching/assessing

Figure 4.2 Grid used to map participant confidence and perceived importance of ACRL visual literacy standards

Figure 4.3 Front and back images of one of the Standard markers

4.5.6 Interview analysis

The first cycle of analysis involved reading the interview transcripts and coding any text that referred to potential bridges or barriers to developing visual literacy. No *a priori* codes were used because at that stage, the literature review was not complete, and the bridges and barriers therein (which could have been used) were not yet identified. This was potentially a strength of the process as it helped to prevent any confirmation bias (Suter, 2012) where I may

[8] The participant who taught on modules that fell into more than one category was assigned to the higher category

have sought to find examples of specific bridges or barriers rather than identifying what the data contained independently.

A second cycle of analysis was then undertaken to look for themes within the newly coded material by creating hierarchies and positioning some codes within wider categories. However, acknowledging the need to widen the consensus and respect individual opinions, even bridges or barriers identified by single comments were included in the findings which are presented in Chapter 6.

4.6 Chapter summary

This chapter presented the methodological considerations of this research. It began by presenting my pragmatic research approach which included a detailed explanation of my personal understanding of the nature of reality and truth, what knowledge and hence my findings represent, and the research values that underpin my choices and decisions. In short, any truth within my research findings will be judged by my peers and not by a wider 'reality'. If they are sufficiently convinced, then the knowledge produced can be put to work to move understanding of this area of research forward and hopefully effect change. I acknowledge the transient nature of this knowledge and accept that it will provide only temporary relief in a search for further understanding. The values brought to this research are socially driven – education should be democratic and work for all, equally appreciating its participants. Individual opinions within this research are respected as adding to the wider consensus of acknowledged viewpoints in order to increase a sense of solidarity with others. This research is also modest in its expectations, understanding the unique circumstances of the context it takes place within and anticipating 'moderate enlightenment' at best. The pragmatic approach used by this research also rejects the false dualism that privileges one form of ontology over another and concentrates on finding the most useful knowledge rather than any particular type of knowledge.

The rationale behind the specific methodological choices of a case study, involving both documentary and interview analysis, explained that the research will be bounded within a single institution, enabling greater focus on visual literacy in that particular context whilst acknowledging the limitations to generalising any knowledge that arises. The documentary analysis enables an overview of visual literacy development across all subject areas to be sought whilst the interviews allow individual perspectives and experiences to be shared and analysed. In line with the democratic value of respect, the interviews were semi-structured

conversations to allow participants the freedom to generate more information than a carefully structured interview may afford.

The chapter included a reflection on my positionality within the research. As an insider researcher, studying my own workplace it is important to acknowledge the influence this has on various stages of the research process. The reflection identified that fluctuating power differentials during the interviews may have slightly influenced some answers but also that it could have created a more conversational approach which generated more trust. Being an insider researcher also helped me gain the trust of the participants, but it meant more consideration was needed to ensure the anonymity of my participants as their institution is my own and clear for all to see on the cover page of this thesis.

The chapter finished by presenting the specifics of the methods used to gather, generate and analyse the data. The documents analysed were the 1,725 module specifications published in the online module catalogue for the 2018-19 academic year in the case institution. After initial text searches to find modules containing words related to visual material, the identified modules were analysed to assign specific pieces of text to the appropriate standard from the ACRL (2011) visual literacy standards. Criteria were devised to categorise every module as either explicitly, implicitly, potentially or not apparently developing visual literacy. The subsequent analysis considered the amount and type of visual literacy skills developed in wider subject groups, levels of study and individual subject areas.

Potential interview participants were purposefully selected from the leaders of modules representing each category and invited for interview. The interview schedule can be seen in Appendix 5. As well as answering these questions, which aimed to identify potential bridges and barriers to developing visual literacy without directing the participants unduly, participants were also asked to map their confidence in assessing the various ACRL standards on a grid which also considered the importance of their standards to their subject area. The interview transcripts and these grids were analysed to identify bridges and barriers to developing visual literacy in the case institution. This included confirming any identified within the literature and finding new ones that could be a unique contribution to knowledge in this area.

Chapter 5: Findings part 1: Audit of visual literacy identified in module specifications

5.1 Introduction

This chapter will focus on the findings of the audit of module specifications within the case institution. This will seek to answer the first research question:

Q1 To what extent is visual literacy developed in a higher education institution's curricula?

With the caveats mentioned in section 4.3.3, it has been possible to use the module specifications to get an idea of which subject groupings were developing visual literacy more than others during the academic year studied and identify any areas where visual literacy development was particularly low. The level of study was also analysed to see if visual literacy was developed more at any particular point during the degree process. In addition, by using the relevant ACRL standards it has been possible to identify whether creative or critical areas of visual literacy were dominant in any of the subject areas.

This chapter will first give the results for the institution as a whole, looking at the overall levels of visual literacy development (section 5.2), how it breaks down across study levels (section 5.3) and the type of visual literacy skills developed based on the ACRL (2011) standards (section 5.4). It will then consider development across subject groups (section 5.5), before looking at each subject group in turn to give a more granular picture of how, where and which elements of visual literacy were being developed in their constituent subject areas (sections 5.5.1-5.5.10). It finishes by comparing the individual subject areas across the whole institution (section 5.6).

5.2 Institution wide development of visual literacy

Modules were categorised as explicitly, implicitly, potentially or not apparently developing visual literacy based on the criteria given in section 4.5.1.1. In the institution as a whole, only 13% (N=231) of module specifications indicated that an aspect of visual literacy was explicitly developed (it was mentioned in the design of the module) and a further 4% (N=74) implied that it was developed due to visual elements being referred to in relation to an assessment task (see Figure 5.1). Also, an additional 26% (N=446) of modules had the potential to develop visual literacy due to either the choice of assessment method used (presentations, posters or multimedia projects) or because students were given the option to use or engage with visual

media alongside options that did not require this. With assignments such as presentations and posters (which made up the majority of these modules), it was impossible to say, without making assumptions, that effective use of visual elements was sufficiently taught, promoted or assessed to qualify as helping to develop visual literacy without seeing assignment briefs and marking criteria. That is why these were only deemed to be 'potentially' developing visual literacy. In more than half of the module specifications (57%, N=975) there was no apparent opportunity for visual literacy development.

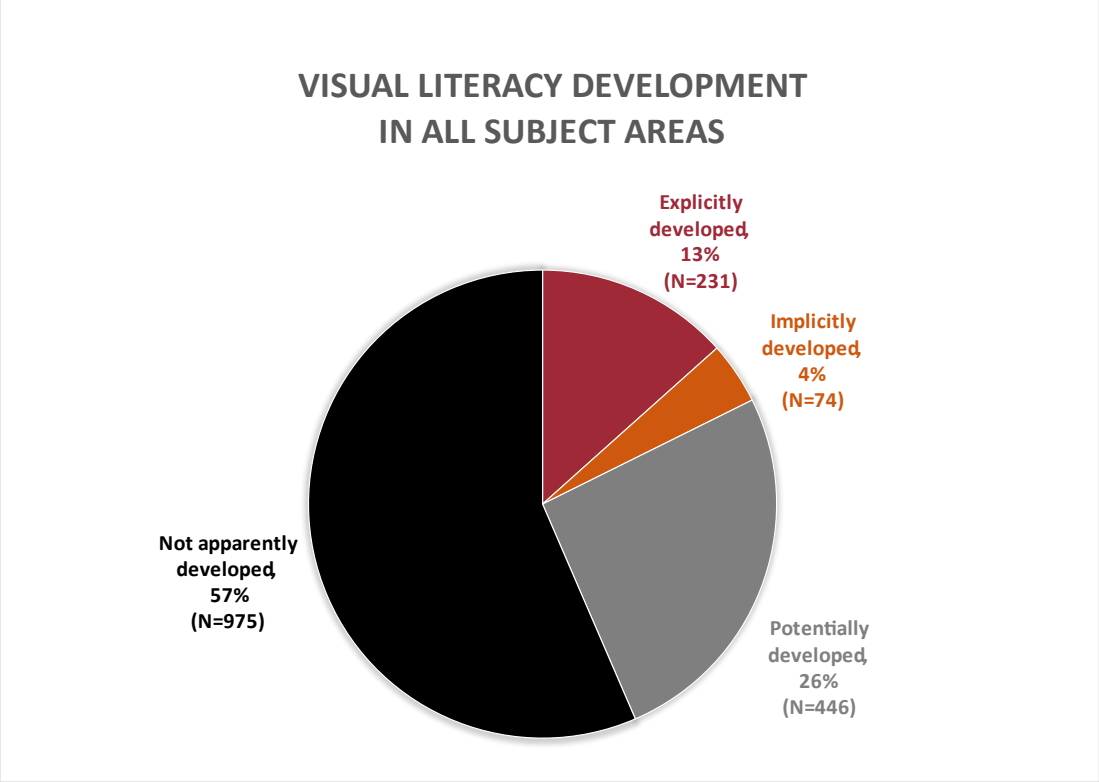

Figure 5.1 Visual literacy development in the institution as a whole (all subject areas)

This macro-level breakdown shows that there is at least the potential for visual literacy to be developed in a substantial proportion of modules but without further investigation it is impossible to tell if this is happening to a significant extent. The interview data will be used to get an idea of the level of development that may be happening when presentations or posters are set as assignments.

The picture regarding explicit and implicit development needed further analysis to see how such development was spread over the years of study and the sort of visual literacy skills that were represented by the identified development. The results of this analysis follow.

5.3 Study level development of visual literacy

Modules were broken down by level of study: L3 (foundation), L4 (first year), L5 (second year) and L6 (final year). The results show that visual literacy was not developed markedly more at any particular level (see Figure 5.2) although there was a relatively higher percentage of modules at L3 with the potential for development.

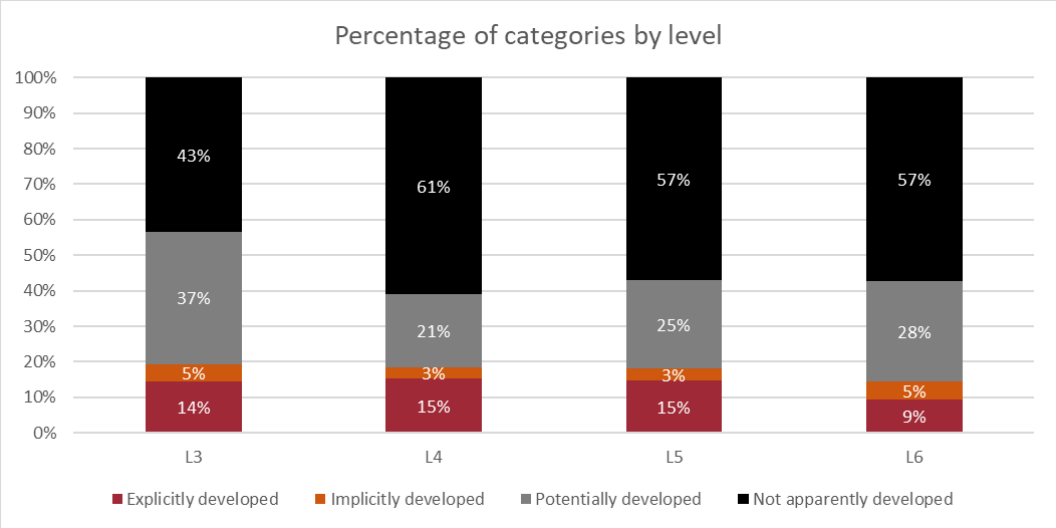

Figure 5.2 Visual literacy development in modules at different study levels

This was mostly due to the prevalence of assessments using presentations or posters which was higher than at other levels: 63% of all L3 modules were assessed using one or other of these methods compared to 35% at L4, 41% at L5 and 43% at L6 (see Table 5.1). However, only a relatively small number of students take foundation level modules compared to L4-L6 and so even if these assessments did emphasise visual communication, these opportunities would be missed by most undergraduates.

Table 5.1 Modules with a presentation or poster in assessments at each study level

	L3		L4		L5		L6	
	Nº	%	Nº	%	Nº	%	Nº	%
Poster	16	19%	17	5%	29	5%	48	6%
Presentation	36	43%	108	30%	188	35%	281	37%
Total	52	63%	125	35%	217	41%	329	43%

There was also a relatively small percentage of modules *explicitly* developing visual literacy at L6 (only 9%) compared to the other levels (14% at L3, 15% at L4 and 15% at L5). However, although initially it was theorised that this may be due the high number of text-based dissertation modules (which are less likely to develop visual literacy), this was not the case—as the percentage of modules with no apparent development was similar to L4 and L5. Instead, it was a higher percentage of modules categorised as *potentially* developing visual literacy that made the difference—possibly due to more choice being available at L6 in several subject areas. There is the recurring proviso here that not all modules categorised as potentially developing visual literacy are likely do this to a significant degree.

5.4 Type of visual literacy skills developed

The specification analysis also provided an insight into which areas of visual literacy were more likely to be developed across the institution, within levels and within subject groups. Information in the module specifications that referred to any of the ACRL (2011) standards was coded to the *a priori* codes created for this purpose. These were:

1. Determine the nature and extent of the visual materials needed
2. Find and access needed images and visual media effectively and efficiently
3. Interpret and analyse the meanings of images and visual media
4. Evaluate images and their sources
5. Use images and visual media effectively
6. Design and create meaningful images and visual media
7. Understand issues and use visual materials ethically

After completing the initial analysis, it was decided that the coding for standards 1 and 2 ('Determine the nature and extent of the visual materials needed' and 'Find and access needed images and visual media effectively and efficiently') required too many assumptions to be reliable. Information relating to these standards was rarely mentioned directly in the module specifications, possibly due to it being implicit in aspects of the other standards. For example, it could be assumed that any poster presentation that mentioned visual elements or visual communication would require skills from both standards 1 and 2 to be developed but there was no *direct* evidence of this. Accordingly, analysis around these standards was deemed unreliable and it was decided to concentrate on the analysis of whether critical elements of visual literacy (standards 3 and 4) or creative elements of visual literacy (standards 5 and 6) were developed as these could more consistently inferred from the descriptions in the module specifications. Examples of these descriptions can be found in section 4.5.1.2. In addition, this part of the analysis concentrated only on those modules where visual literacy was explicitly or

implicitly developed (those that mentioned visual elements directly) as potential development was too vague and some modules coded to this category were those where students could *choose not* to use visual sources or create visual assessment artefacts.

The final standard, 'Understand issues and use visual materials ethically' was coded to rarely, and only in three subject groups. This data will be presented when discussing the individual subject groups/areas in section 5.5.

The results show that across the institution as a whole, within modules that explicitly or implicitly develop visual literacy, there is a reasonably even spread of critical (interpretation and evaluation) and creative (application and design/creation) visual literacy skills developed (see Figure 5.3). This breakdown is not so even when looking at specific subject areas however and this data will be presented and discussed in section 5.5.

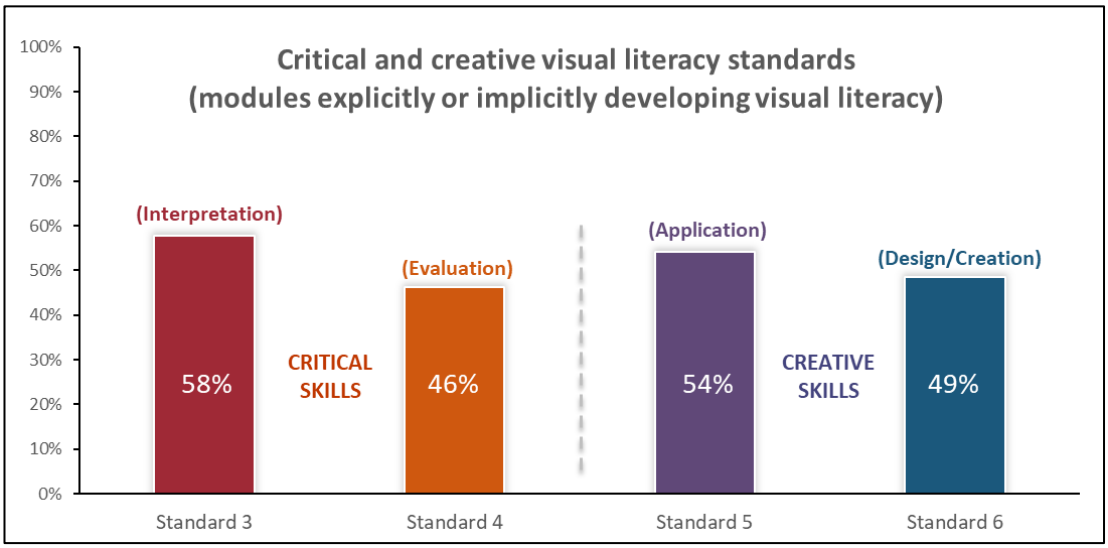

Figure 5.3 Breakdown of critical and creative visual literacy standards across all modules categorised as explicitly or implicitly developing visual literacy across the institution

5.5 Subject group development of visual literacy

A breakdown of visual literacy development categories by the wider subject groups is shown in Figure 5.4. Due to the strong visual dimension of some of its disciplines, the Arts subject group shows the highest percentage of modules developing visual literacy either explicitly or implicitly (32%). Also with a high percentage, were Environmental Sciences (30%) and Histories, Languages and Culture (24%). Law and Politics had the lowest percentage (2%) which corresponded with indications from the literature review (see section 3.3.7); but with only 3%, Health and Social Care had the second lowest percentage of modules that explicitly or

implicitly developed visual literacy,[9] which was not predictable from the literature which showed examples of visual literacy being developed successfully in health discipline elsewhere.

Each subject group is discussed in turn below, starting with the group with the most identified development through to the group with the least. Unlike the breakdown given in Figure 5.4, where modules were assigned to a single subject group that related to their position in the module catalogue, for the analysis below, modules were also assigned to any additional portfolios/programmes to which they were accredited. So, for example, a module in Environmental Sciences may also have been accredited to a programme in Life Sciences in which case it will appear in both groups. In addition, where a module was accredited to a joint programme (for example, BA History and Politics) then it is included in the analyses of both subject areas regardless of its host portfolio. This means that numbers may not tally exactly with those above but overall will give a more realistic picture. Foundation level (L3) modules are not included in this analysis for two reasons: the small number who take these modules and the multidisciplinary nature of the foundation programmes which sometimes spread across all disciplines in a subject group and sometimes only some, which was felt to confuse the picture rather than complete it.

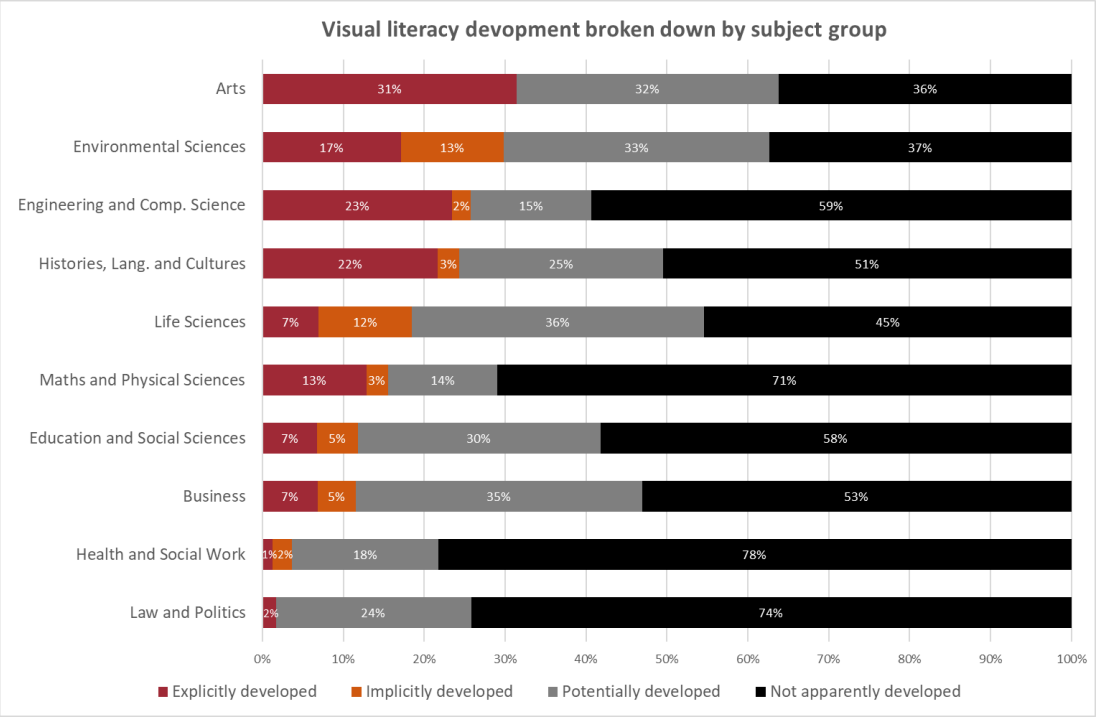

Figure 5.4 Categories of visual literacy development - breakdown in subject groups

[9] Note that throughout this thesis, general disciplines/subjects are referred to without capitalisation but specific subject groups and subject areas in the case institution are capitalised for clarity.

The following subject group breakdowns look at the proportion of modules in each of their constituent subject areas that explicitly, implicitly or potentially developed visual literacy as well as those that did not appear to do so. An indication of what this development comprised within each subject area is also given to create a richer picture. This is followed by looking at the proportions of the critical and creative ACRL standards that were developed in each subject area for those modules that explicitly or implicitly developed visual literacy.

5.5.1 Arts

In the case institution in the academic year studied (2018-19), Arts comprised four main subject areas: Drama; English and Creative Writing (ECW); Music; and Film, Media and Digital Design (FMDD). Visual literacy development was dominated by FMDD where, perhaps predictably given the subject matter, in over 80% of modules, students were explicitly working with visual sources or producing visual materials (see Figure 5.5).

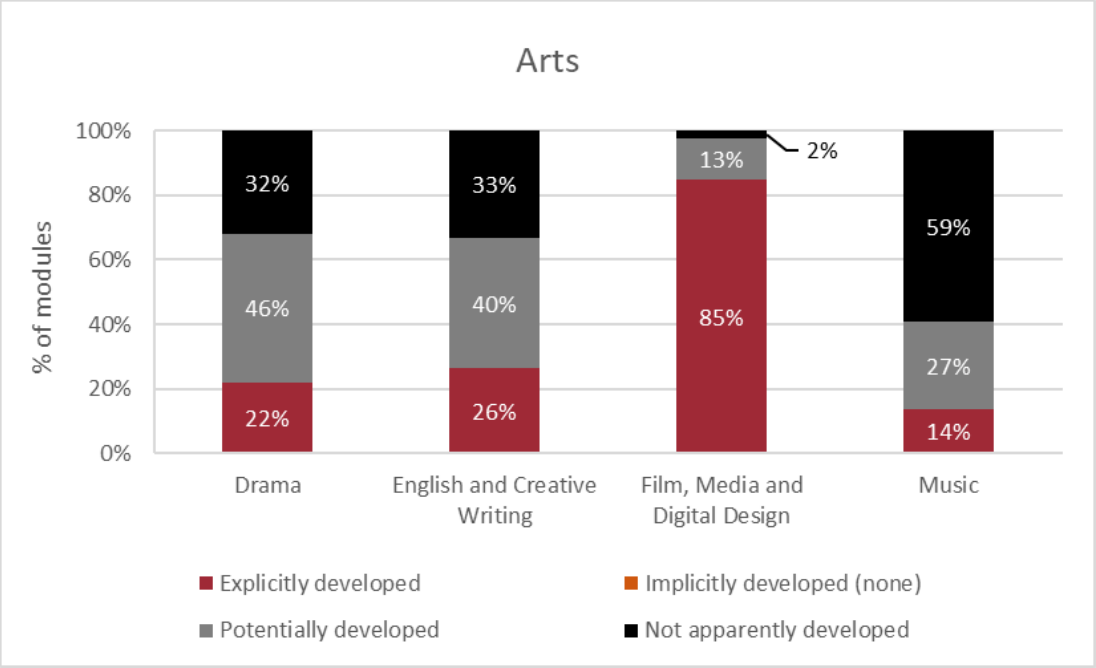

Figure 5.5 Visual literacy development in Arts modules

In Drama, explicit visual literacy development was primarily related to set design or was covered by students studying the combined degrees of Film and Drama or Drama and English (where some texts involve visual interpretation). A high percentage of Drama modules (46%) were also categorised as potentially developing visual literacy because they either involved a choice of projects that may or may not involve working with visual materials or had an individual or group presentation as an assessment task but visual elements were not mentioned. That was also true for Music which shared some of these modules. Visual literacy

was explicitly developed in Music only in modules where graphic scores were developed or where music was composed for film which required interpretation of the film in question.

ECW modules that develop visual literacy were those that looked at illustrated books, graphic novels or included analysis of related visual culture. Some others were shared modules that looked at genres relating to both literature and film. A presentation as part of assessment was the primary reason for modules in ECW to be categorised as potentially developing visual literacy.

Looking the ACRL standards, there is a marked difference between the breakdowns in each subject area for those modules categorised as explicitly or implicitly developing visual literacy (see Figure 5.6). As the actual number of modules that fall into these categories varies so much between subject areas, that number (N) is also given in each case so that the proportions can be appreciated in this context.

In Drama, FMDD and Music, in those modules where visual literacy was identified as being developed, there was a reasonable spread of both critical and creative skills, whereas development in ECW was dominated by critical skills. This perhaps mirrors the nature of the subject, but it does show how disciplinary biases may have an effect on students' opportunities to develop a wider range of transferable visual literacy skills.

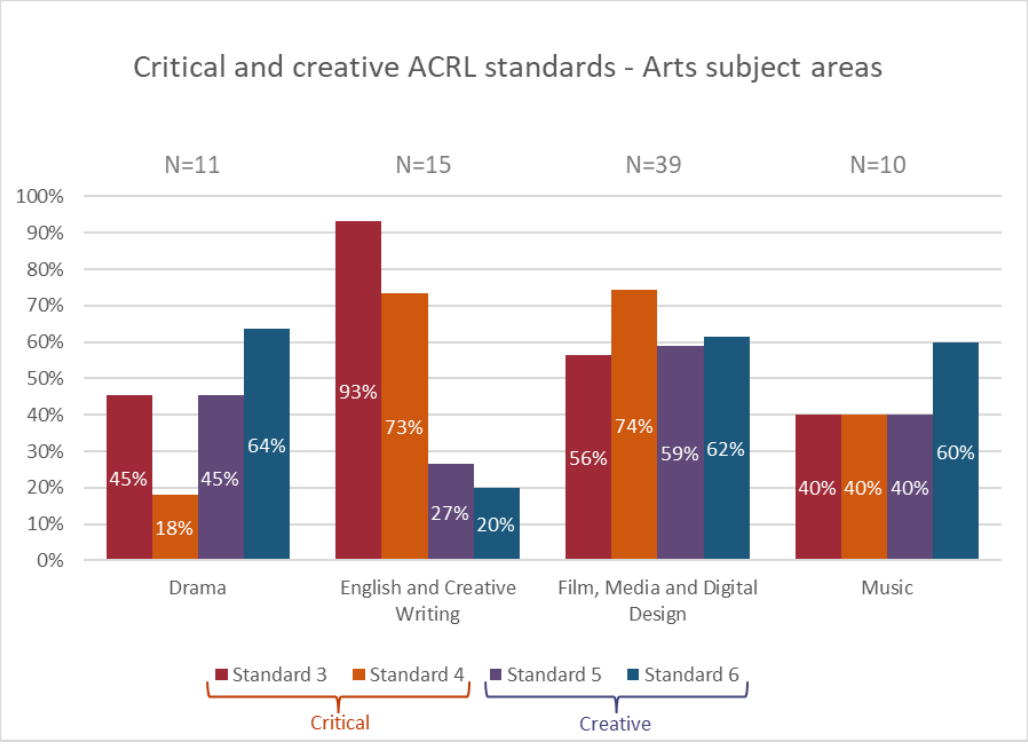

Figure 5.6 Critical and creative ACRL standards: Arts subject areas
(showing the percentage of *explicit* or *implicit* modules that develop the shown standards)

Arts was one of the subject areas where ethical issues that related to visual material was referred to in the module specifications. This was primarily in the area of FMDD, where students were regularly advised not to construct materials that may be offensive (including culturally); and in several modules, issues related to film copyright/intellectual property rights and consent were highlighted. Some of these modules were also accredited to Drama and Music programmes.

5.5.2 Environmental Sciences

Environmental Sciences comprised two subject areas: Biological and Environmental Sciences (BES) and Geography, Environmental and Earth Sciences (GEES). These both show comparable levels of visual literacy development (see Figure 5.7).

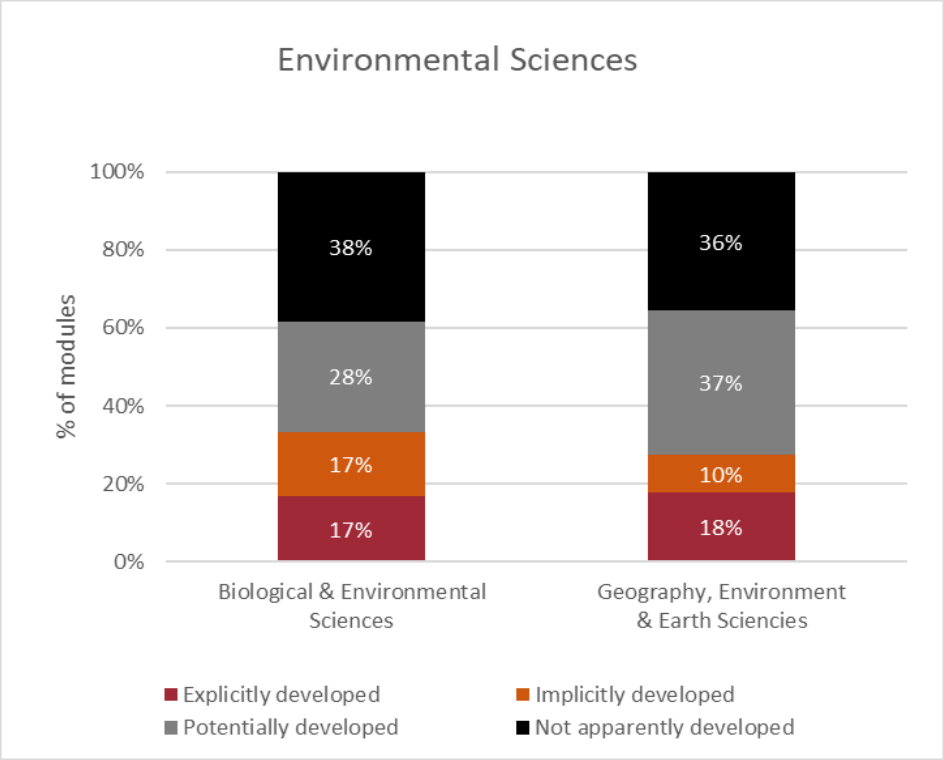

Figure 5.7 Visual literacy development in Environmental Sciences modules

In BES, most explicit visual literacy was developed in modules requiring students to create scientific drawings/sketches in the laboratory or field, or create/interpret visual data representations. Implicit and potential visual literacy development occurred often, mostly due to the number of poster presentations that are common in the discipline along with group PowerPoint presentations. Several of these modules specifically highlighted the importance of visual communication which is why there was a relatively high amount of 'implicit' development. Within GEES, there was naturally a great deal of explicit development around

the need to interpret and create maps and other landscape and geological visualisations. However, the growth of visual geography, which uses a wider variety of visual data to study culture geographically, also accounted for a good proportion of these and the skills involved here are likely to be more transferable than, for example, the interpretations of visual data produced by Geographical Information Systems.

Breaking these down into the critical and creative visual literacy skills, the two areas differ appreciably (see Figure 5.8). Whilst GEES only slightly promoted the development of more creative skills over critical ones, the development in BES was heavily skewed towards the creative elements with standards 5 and 6 being identified as developed in more than twice the proportion of modules developing standards 3 and 4. This can be partially explained by several modules that specifically emphasised the need to create drawings, sketches and visual data representations.

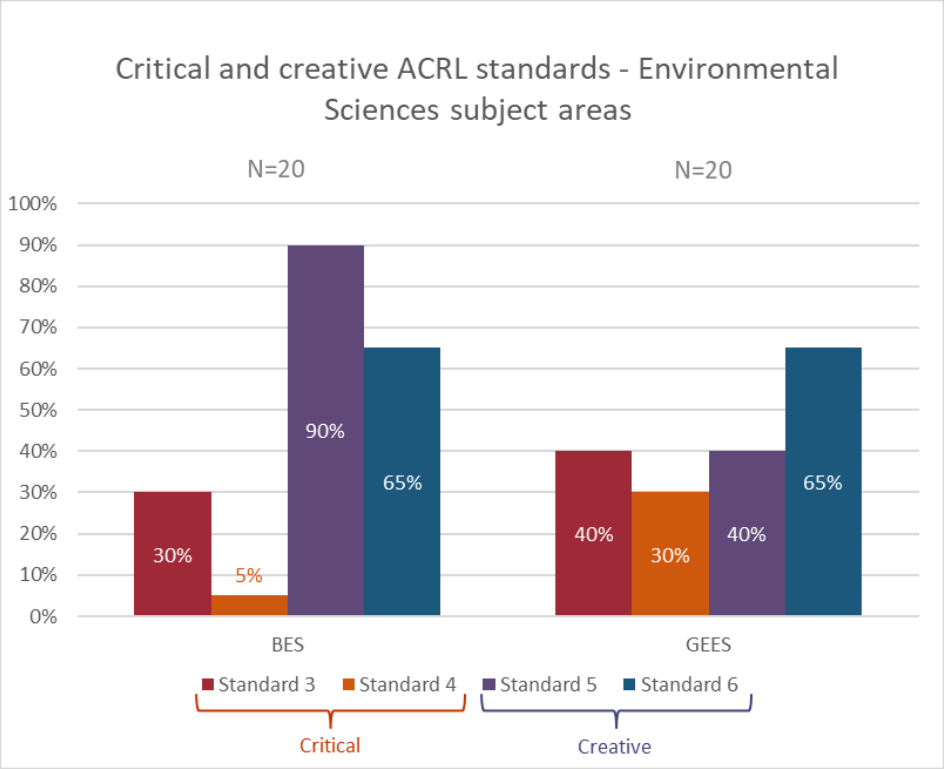

Figure 5.8 Critical and creative ACRL standards: Environmental Science subject areas (showing the percentage of *explicit* or *implicit* modules that develop the shown standards)

5.5.3 Histories, Languages and Cultures

Histories, Languages and Cultures comprised four subject areas: American Studies; History; Languages & Culture; and Philosophy. This subject group is notable for the high number of joint degrees, both within the group and with subjects in other groups. For example: Drama

and Modern Languages, American Studies and Film Studies, History and Modern Languages, and History and Politics to name but a few.

The amount of visual literacy development across the subject areas within the group varies considerably as can be seen in Figure 5.9. The subject area with the highest amount of visual literacy development was American Studies with 41% of modules showing some level of explicit or implicit development. There was also the possibility for this to be higher with a further 24% categorised as potentially developing visual literacy. In History, more than a third of modules explicitly or implicitly develop visual literacy, again with the possibility for this to be over 60% if potential modules were included. In these two subject areas, the 'potential' modules were more likely to be developing visual literacy as most modules were assigned to that category due to having presentations in their assessments and even though visual elements were not referred to in relation to the assessment, the topics covered were often heavily visual.

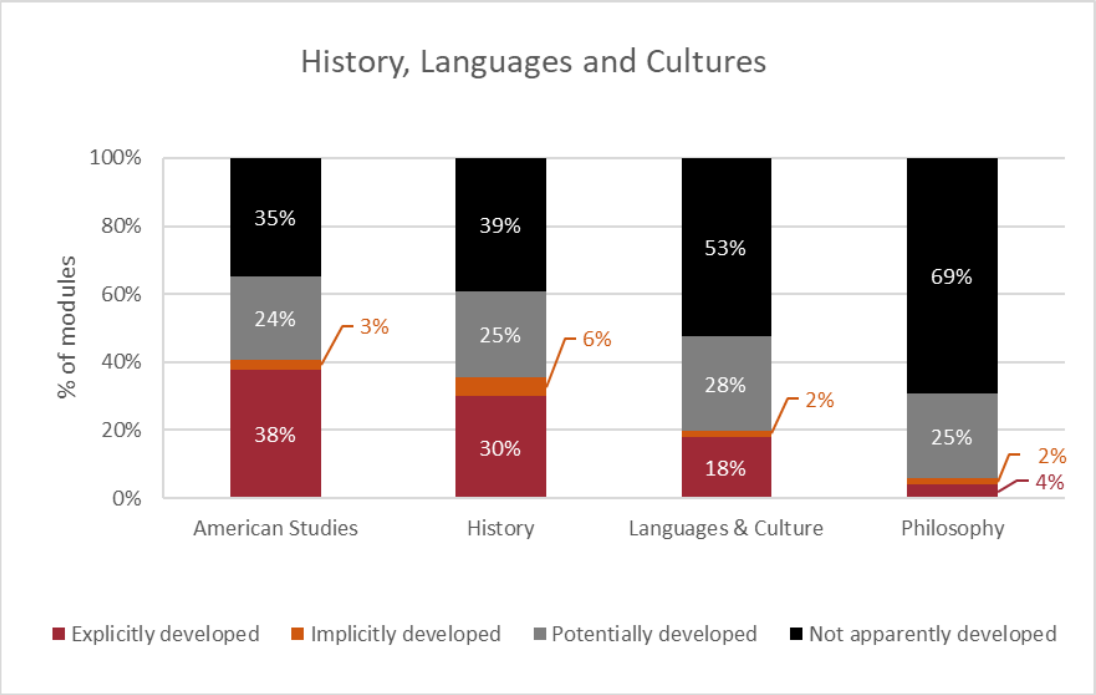

Figure 5.9 Visual literacy development in Histories, Languages and Cultures modules

The large proportion of visual literacy development in American Studies can be explained by the highly visual nature of much American culture. Films, television, indigenous and modern Art, photographs, and cartoons are all source material mentioned in the specifications. In addition to the modules assessed via presentations, two further modules were categorised as

having potential development due to optionality in the assessments where visual sources or a visual presentation method could be chosen if preferred.

The explicit development in History was again due to a high amount of visual source material. Development was implied in four modules where presentations were required and visual elements were mentioned, or where the essential reading made is clear that some sources would be visual.

In Languages and Cultures, there was a particularly high number of modules accredited to multiple portfolios and nearly all of the 18% of modules categorised as explicitly developing visual literacy were centred around the study of visual culture – including many joint with History with its interest in visual source materials. In Philosophy, a discipline with a strong history of verbal reasoning, only two modules (4%) explicitly developed visual literacy and a further module (which was actually a sociology module but accredited to the joint BA Philosophy and Religion programme) was categorised as implicitly developing it due to the nature of the assessment and the mention of visual elements associated with this. As with most other subject areas, potential development was primarily due to presentation or poster assessments with no specific reference to visual elements. Within Languages and Cultures, some of these were highly likely to use visual materials without specifically mentioning it, but in Philosophy, with the small amount of development, this was less likely.

When looking at the breakdown of critical and creative ACRL standards, and bearing in mind that the numbers here also include modules accredited to these portfolios from other subject groups, the difference in development of critical and creative standards is pronounced (see Figure 5.10). All four subject areas favoured the development of the critical standards (less so in Philosophy but the number of modules analysed was very low). This is undoubtedly due to the number of modules that used visual source material and therefore required this to be interpreted and evaluated critically. However, it does appear that there were fewer opportunities for students to develop their abilities in using such material themselves and even less opportunity to develop skills in creating their own visual materials.

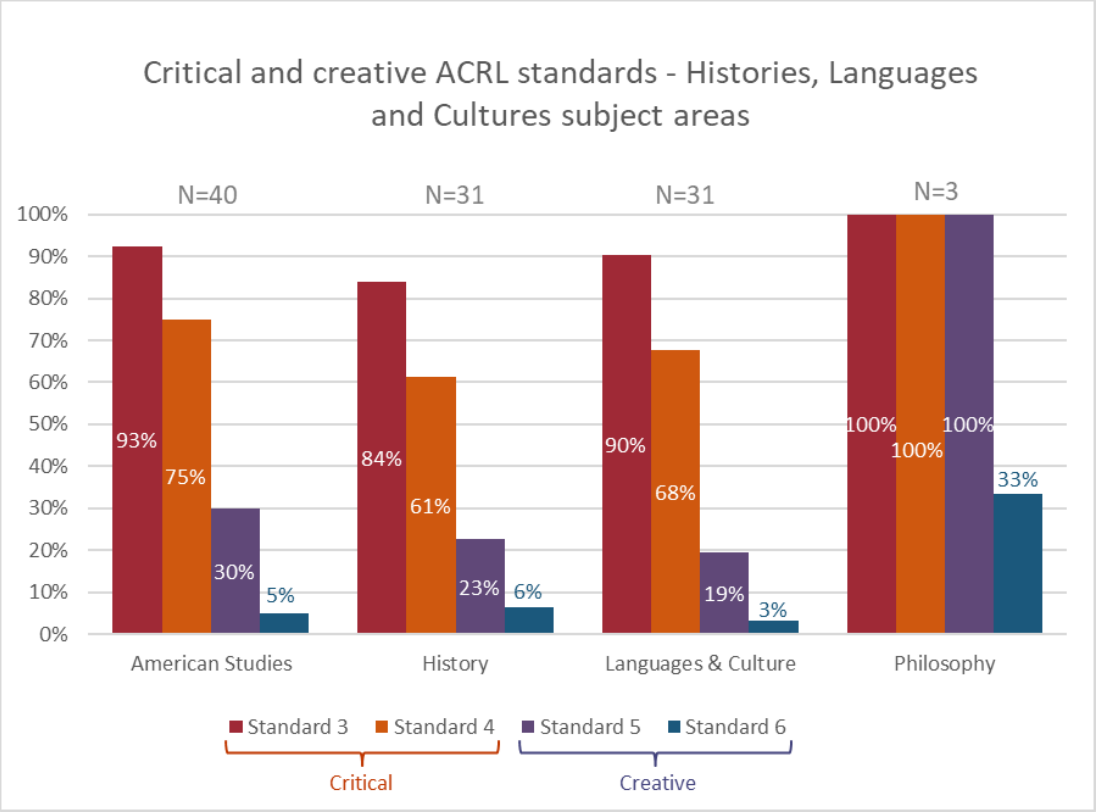

Figure 5.10 Critical and creative ACRL standards: Histories, Languages and Cultures subject areas (showing the percentage of explicit or implicit modules that develop the shown standards)

5.5.4 Life Sciences

Life Sciences comprised the subject areas of Biomedical Sciences; Psychology; and Sports, Health and Exercise Sciences (SHES). None of these areas had particularly high levels of explicit or implicit visual literacy development (see Figure 5.11), with the highest being in SHES with 23%. Explicit development primarily took the form of creating microscopy drawings (Biomedical Sciences), interpreting and creating visual data representations (Psychology) and creating visual material for non-specialist communication (SHES).

Compared to other subject areas, Biomedical Sciences and SHES both had a relatively high proportion of modules categorised as implicitly developing visual literacy (only BES had more). In Biomedical Sciences, this was due to several modules having poster or presentation assessments, and also a statement indicating that 'written and visual' or 'written, verbal and visual' communication was needed. In SHES, there were also a high number of posters and presentations, and these were sometimes described as needing 'strong' or 'a high level of' graphic design. There were also several assessments where students had to produce videos and so some visual literacy development was implied.

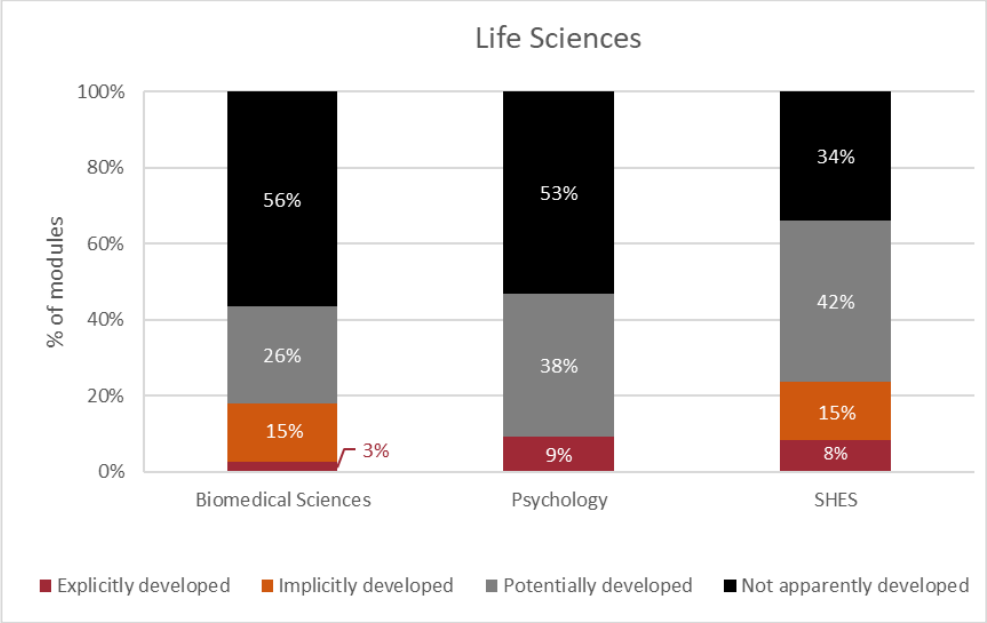

Figure 5.11 Visual literacy development in Life Sciences modules

All three subject areas had a reasonably high proportion of modules that potentially developed visual literacy, these were all poster or presentation assignments with no specific mention of visual elements.

As with the related subject area of BES, the ACRL standards most often explicitly or implicitly developed throughout Life Sciences were the creative skills (see Figure 5.12). The number of modules was small, but this was most notable in Psychology and SHES.

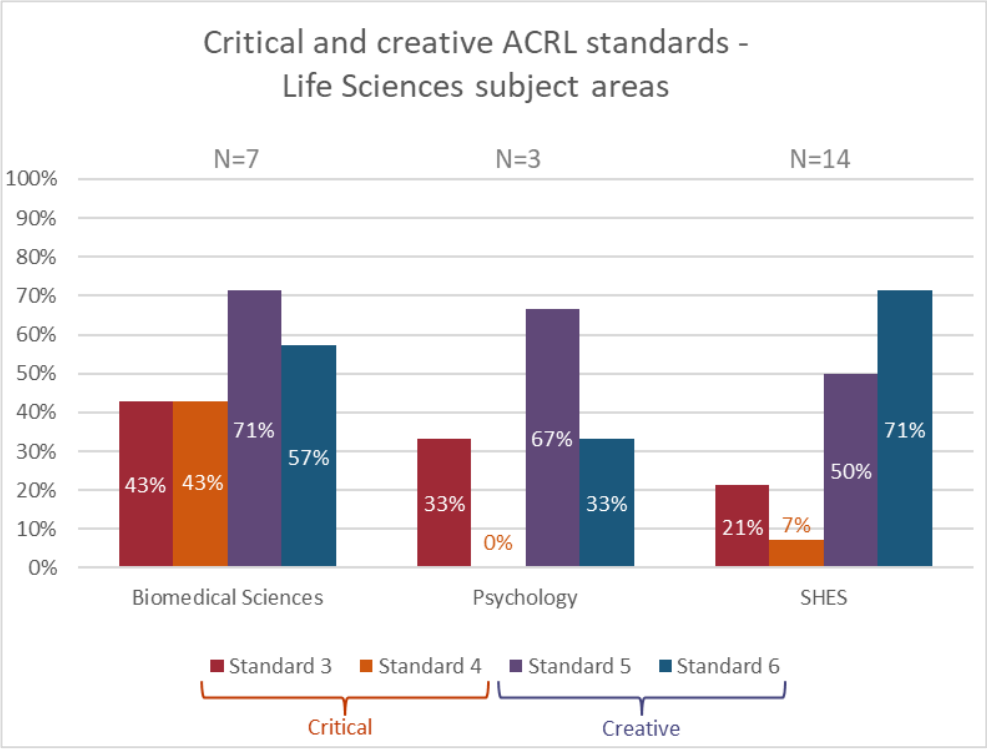

Figure 5.12 Critical and creative ACRL standards: Life Sciences subject areas
(showing the percentage of explicit or implicit modules that develop the shown standards)

5.5.5 Maths and Physical Sciences

Maths and Physical Sciences comprised Mathematics, Chemistry (including Biochemistry) and Physics. It has to be conceded that analysis in these highly specialised fields was sometimes challenging as terminology for what may be visual elements was not always clear. Nevertheless, an attempt was made, and a general overview may still be possible. As can be seen from Figure 5.13, there was a relatively high proportion of modules showing explicit development in this subject group, although the module numbers overall were quite low. In Chemistry, three related modules looking at professional skills in different areas or contexts taught the use of the ChemDraw package to draw chemical molecules and one module required the analysis of other visual models. In Mathematics, three modules looking at geometry all required students to both create and analyse various visual diagrams; and in Physics (the area with the highest proportion of explicit development), the categorised modules were all concerned with astronomy, optics or the analysis of wave forms.

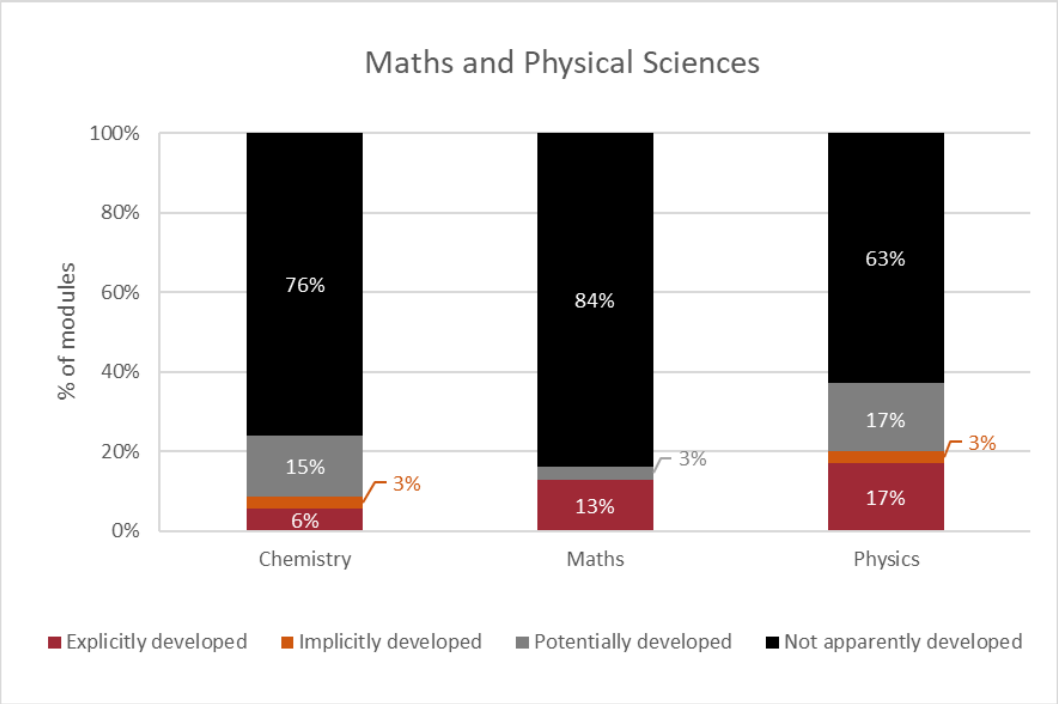

Figure 5.13 Visual literacy development in Maths and Physical Sciences modules

Development was implicit in only two modules (one in Chemistry and one in Physics) which looked at the presentation of data and in all subject areas, potential development was due to poster and presentation assessments.

As has been indicated, due to the technical nature of the subject areas, it was often extremely difficult to know how the images and other visual elements were being used from what was written in the module specifications and the ACRL standards were difficult to assign. For some

it was reasonably clear, for example if ChemDraw was being used to draw images of molecule structures then it was clear that standard 6 (designing and creating meaningful images) was being developed. Likewise, if a specification mentioned ensuring students could usefully bring these drawings or Excel charts into Word or PowerPoint then it was standard 5 (use images effectively) that was assigned. However, some statements were quite difficult for a non-specialist to analyse, for example:

> The cluster behaviour of main group and some transition elements, including the application of Wade's Rules to predict and rationalise thermodynamic polyhedral products. (Topics in Chemistry, Level 6)

In that statement it is clear that visuals of some nature were being used ('polyhedral products' is describing structures most often depicted visually), but the extent that they were being interpreted, evaluated or created cannot be reasonably inferred by a non-specialist like myself. Figure 5.14 is therefore included for the sake of completeness in these results, but it does, to some extent, represent a degree of educated guesswork. What it shows is that, on the few occasions that the modules were considered to explicitly or implicitly develop visual literacy, Chemistry seemed to be creating visual materials more often than critiquing them, Maths appeared to evenly promote the critical and creative skills, and Physics was more likely to be critiquing than creating images (which all came from astronomical sources).

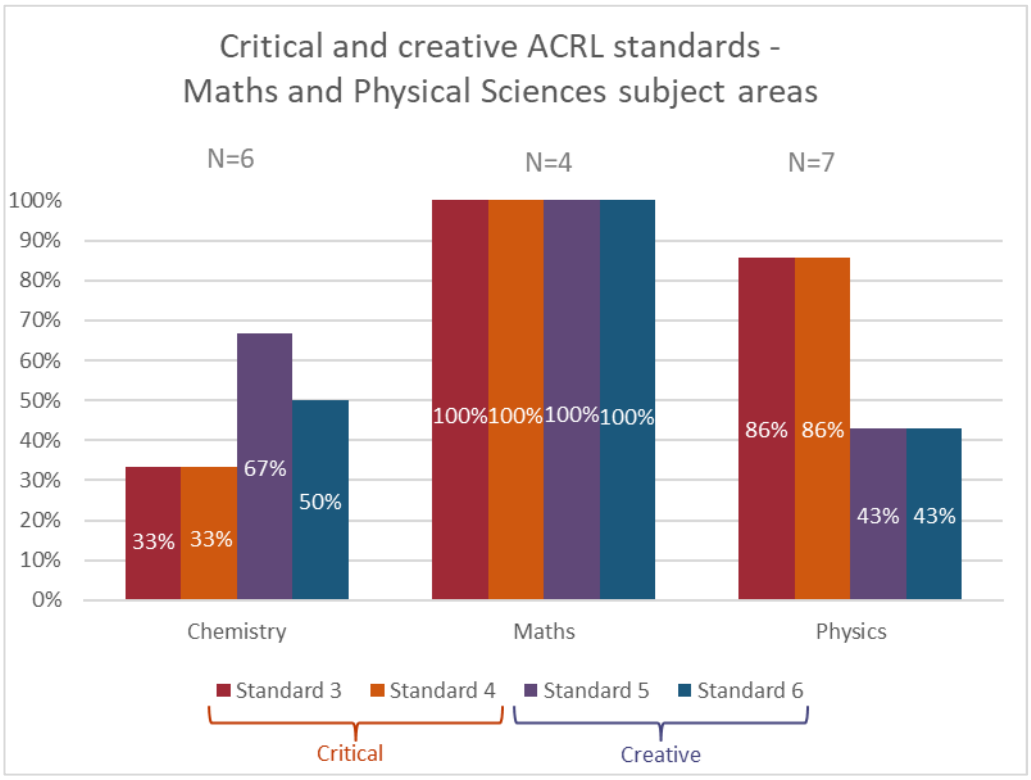

Figure 5.14 Critical and creative ACRL standards: Maths and Physical Sciences subject areas (showing the percentage of explicit or implicit modules that develop the shown standards)

5.5.6 Education and Social Sciences

Education and Social Sciences comprised Criminology; Education; and Sociology. Again, none of these subject areas had particularly high levels of explicit or implicit visual literacy development: Criminology and Sociology both had such development in 21% of their modules, whereas Education had it in only 9% (see Figure 5.15). Having said that, the majority of development in Criminology was actually from Sociology modules accredited to the BA Criminology with Sociology programme. Other than that, only three modules: *Representations of Crime*; *Crime and Media* and *Sex Work, Policy and Crime* explicitly or implicitly developed visual literacy. Visual Criminology is a relatively new, but fast-growing field (Brown & Carrabine, 2019) and it is likely that this may increase naturally in the near future.

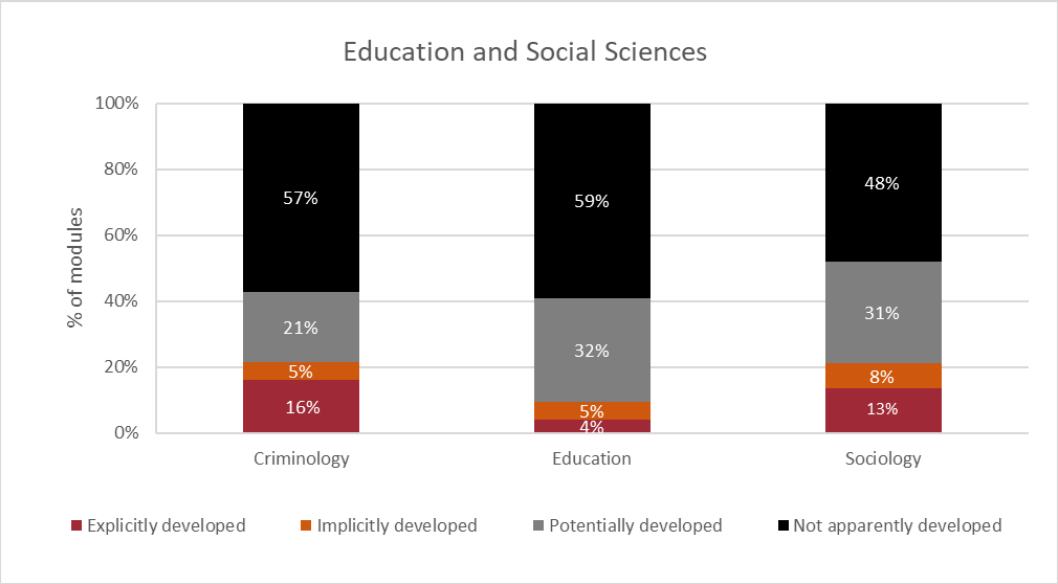

Figure 5.15 Visual literacy development in Education and Social Sciences modules

Although there were only a relatively small number of modules in Sociology (and hence Criminology) that explicitly developed visual literacy, those that did, did so extremely well. The modules *Visual Sociology* and *Visualising the Other* explicitly developed most aspects of all seven ACRL standards. These were the only two modules in the institution to do this clearly. This was because, as well as the more easy to identify skills related to standards 3-6, students were asked to select and curate a collection of images for specific purposes (covering standards 1 and 2) and the specifications also highlighted the ethical issues related to using visual materials (standard 7). Visual sociology is a much more established field than visual criminology: the International Visual Sociology Association was established 40 years ago (Blank et al., 1989) and yet, as will be discussed in the next chapter, it is still an area that students studying Sociology struggle with—perhaps indicating the need for wider visual literacy development to make it more familiar.

In Education, the small amount of explicit visual literacy development mostly occurred in modules focused on teaching children to read via picture books or digital texts or those encouraging more creative approaches to teaching and learning. Explicit and implicit development also occurred in two modules relating to perspectives on disability and how it is portrayed. Other implicit development occurred in modules encouraging creativity in children and when assessment methods were posters or presentations and the visual aspect of these was specifically mentioned. Potential development was almost entirely due to assessments using presentations and posters without reference to visual elements—although two modules were assessed via ePortfolios which allowed for more visual content if appropriate and one module had a negotiated assessment task which could have been a short film.

Education was also an area where several modules specifically mentioned ethical issues relating to using images – almost exclusively related to using images of children and the need for full consent to be obtained.

Analysis of the critical/creative ACRL standards (Figure 5.16) shows that Criminology modules slightly favoured the development of critical skills whilst Education modules encouraged more development of creative skills. Sociology modules were relatively even in the types of skills they developed.

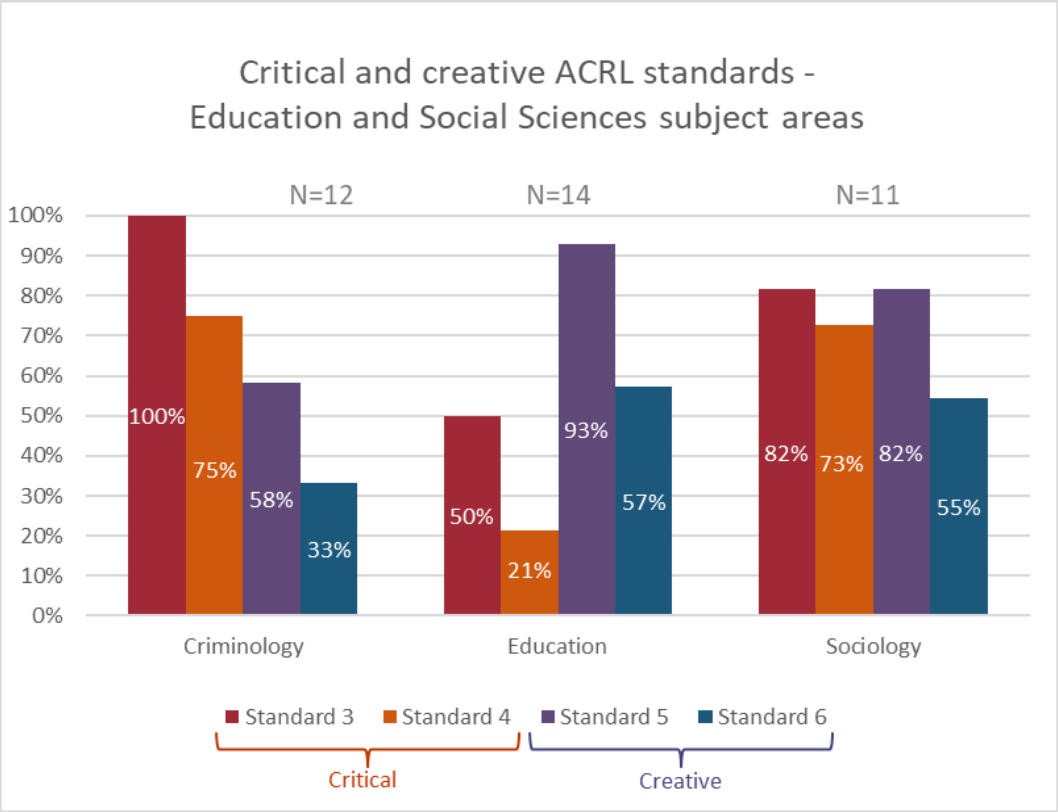

Figure 5.16 Critical and creative ACRL standards: Education and Social Sciences subject areas (showing the percentage of explicit or implicit modules that develop the shown standards)

5.5.7 Engineering and Computer Science

Engineering and Computer Science comprised those two named subject areas. Whilst theoretically Engineering could be subdivided into Chemical Engineering, Mechanical Engineering, Electrical/Electronic Engineering and Medical/Biomedical Engineering, in reality the modules were accredited to so many joint or multiple programmes that it was impossible to split them and so they were analysed as a single subject group. Some modules from Mathematics were also accredited to the Computer Science portfolio. As with Maths and Physical Sciences, analysis was challenging in these subject areas as many of the module specifications were full of highly technical terminology and it was not always possible to tell if some techniques and elements of the module content were visual or not. However, key words like graph/graphical and diagram were often included in the topics covered which indicated interpretation, and sometimes creation was clearly occurring. This meant that in Engineering there was a relatively high proportion of modules explicitly developed visual literacy (32%) compared with other STEM subjects as can be seen in Figure 5.17.

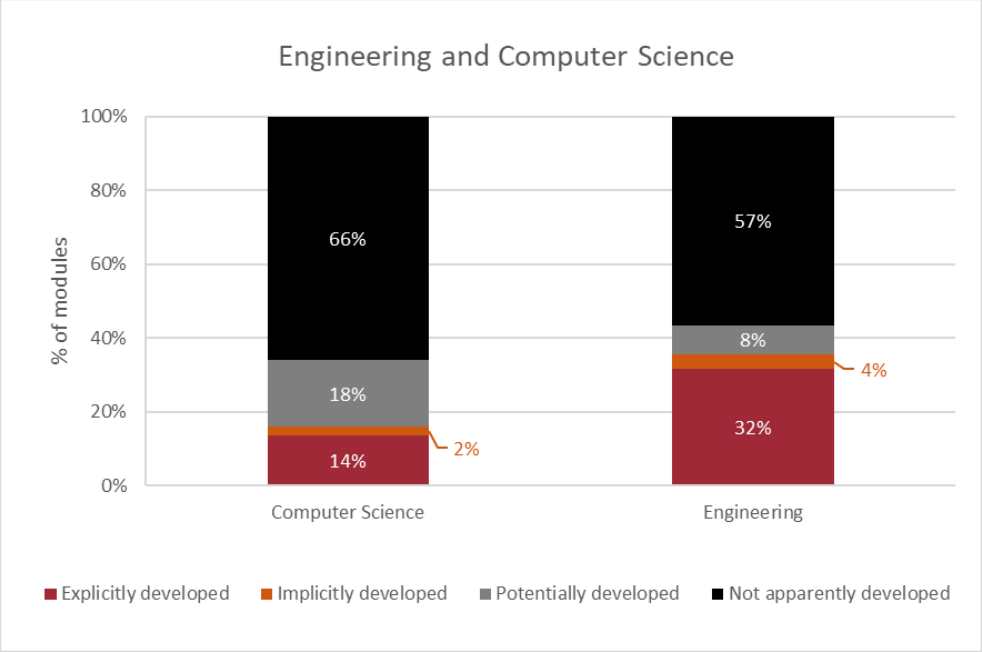

Figure 5.17 Visual literacy development in Engineering and Computer Science modules

In Computer Science, modules categorised as explicitly developing visual literacy involved 2D/3D modelling, graphic environments and computer visualisation. All highly specialist visual literacy skills. The only module categorised as implicitly developing visual literacy used a presentation in its assessments and specifically mentioned format and style and the need for the information to be engaging to a given audience. In Engineering, explicit development was

identified where design projects were undertaken, using both traditional drawings and computer-aided techniques. Some modules also used mathematical diagrams to produce simulations. Again, the one module that implicitly developed visual literacy had an assessed presentation that mentioned visual content.

The breakdown of the ACRL standards (Figure 5.18) shows a fairly even spread between the critical and creative skills. The relatively low percentage of standard 4 development (evaluation of images) in Engineering could be more an indication of the difficulty of analysing the specification than of a genuine lack of development in this area. For example, if certain diagrams were covered in the module's indicative content then it was likely they were being interpreted in order to understand them, but it was not clear that their reliability (or that of their sources) was being evaluated.

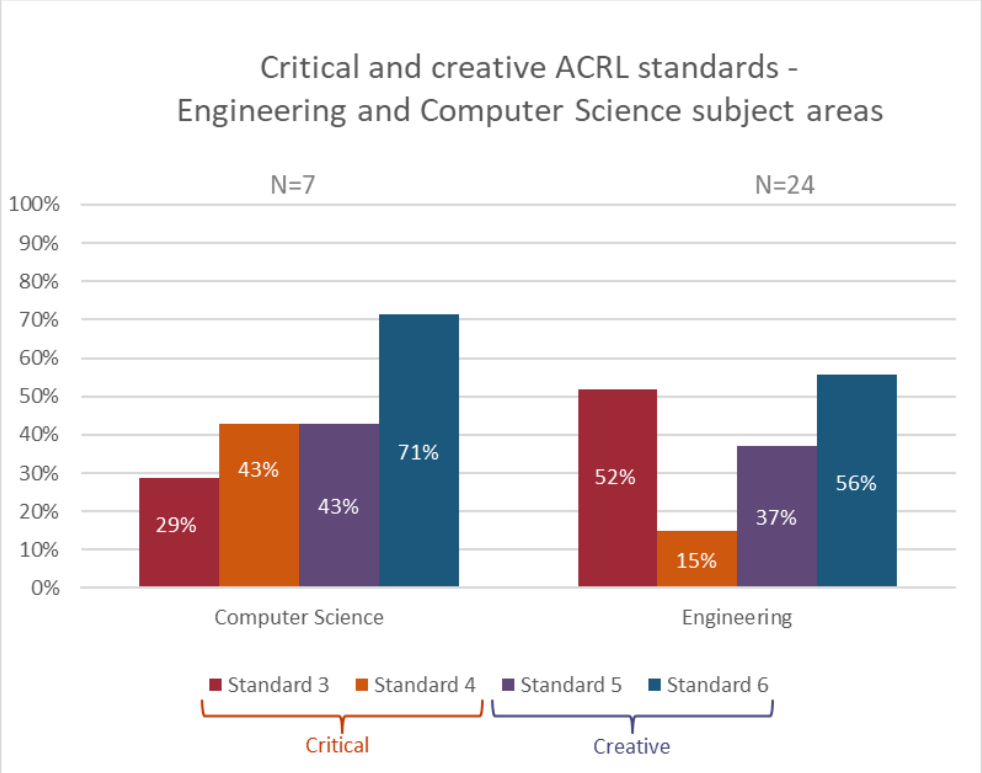

Figure 5.18 Critical and creative ACRL standards: Engineering and Computer Science subject areas (showing the percentage of explicit or implicit modules that develop the shown standards)

5.5.8 Business

The Business School was analysed as a single subject area due to the fact that it uses a common first year regardless of the programme being followed and also has a large number of combined degrees making it impossible to single out specific areas. It is recognised that subjects like Accounting, Economics, Management and Marketing traditionally require

markedly different skills to be developed and to some extent this is noted in the following description of the ways that visual literacy is developed. Explicit development occurred in only eight modules (6%) and was due to three different reasons. Firstly, the production and use of visual representations of numerical data; secondly, the production and analysis of visual materials for marketing; and thirdly, the analysis of visual materials as part of managing equality and diversity. Implicit development was noted in a further six modules (4%) and was always a result of a visual assessment method (videos, presentations or posters) where the visual nature of this communication was acknowledged (see Figure 5.19).

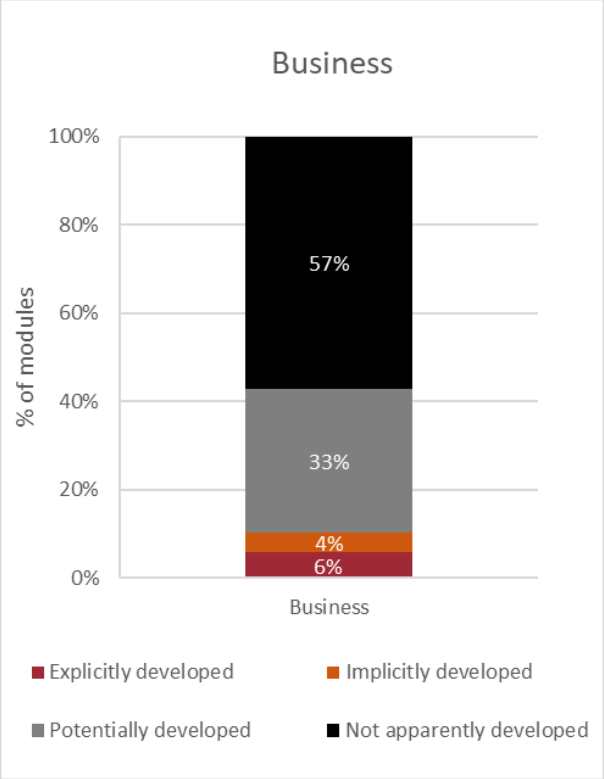

Figure 5.19 Visual literacy development in Business modules

A good proportion of modules (33%) also had potential development due to the high proportion of assessed posters and presentations where visual elements were not specifically mentioned. However, I know from experience that the quality of the presentations produced by most business school students (and indeed lecturers), especially in their use of visual elements, is far from that expected in business settings where skilful use can sell ideas (Gabrielle, 2010) and influence decision making (Knight et al., 2018). It should be noted that some other potential development may not be represented in these numbers as this is a subject where reports are nearly as common as essays and most reports would be expected to contain at least some figures and tables. That said, most visuals in student reports are limited

to Excel charts or imported diagrams which require only basic skills to create or use. Nevertheless, with appropriate assessment and feedback, these could have provided additional potential for some visual literacy development that is not recognised in these figures.

The breakdown of the critical and creative ACRL standards developed in Business (Figure 5.20) shows that where visual literacy development was identified, it was the creative skills that were more likely to be promoted, with all but one of the identified modules clearly including these. There were still opportunities, however, for the critical skills to be developed in around a third of these modules.

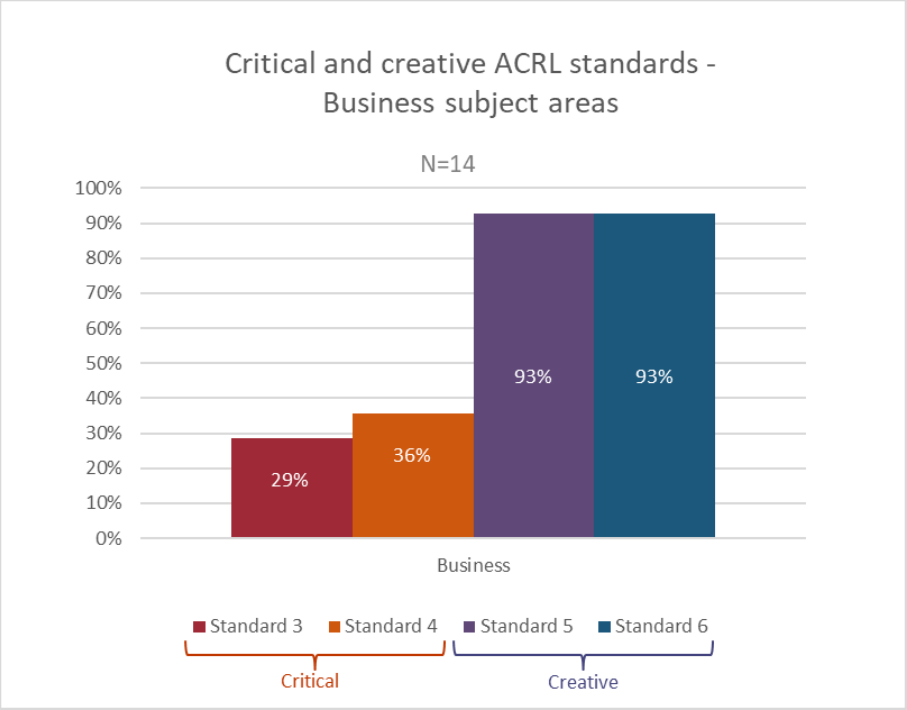

Figure 5.20 Critical and creative ACRL standards: Business subject areas
(showing the percentage of explicit or implicit modules that develop the shown standards)

5.5.9 Health and Social Work

Health and Social Work comprised those two named subject areas. Health is a large and complex field which at that time comprised, amongst others, the various Nursing programmes, Midwifery, Operating Department Practice and Paramedic Sciences. It also included modules on the *Certificate in Practice Skills for Health and Social Care* and *Associate Practitioner* programme which are independent qualifications with modules at Levels 4 and 5. Social work was made up of modules from only two programmes: the *BA in Social Work* and the *Social Enterprise and Creative Care* programme.

Despite being a large field, with over 200 modules, Health had no modules that explicitly developed visual literacy and only eight modules (4%) that implicitly developed it. In addition, only three modules (6%) of the Social Work programmes developed visual literacy explicitly (see Figure 5.21). These modules required students to develop creative ways to communicate the topic at hand including websites, photographic displays, artwork or videos, although only one was a core module and so taken by all. The few modules with implicit development in Health mostly required students to create a poster or leaflet and specifically mentioned visual or creative communication. Potential development came in the form of poster or presentation assignment with no specific mention of the visual elements.

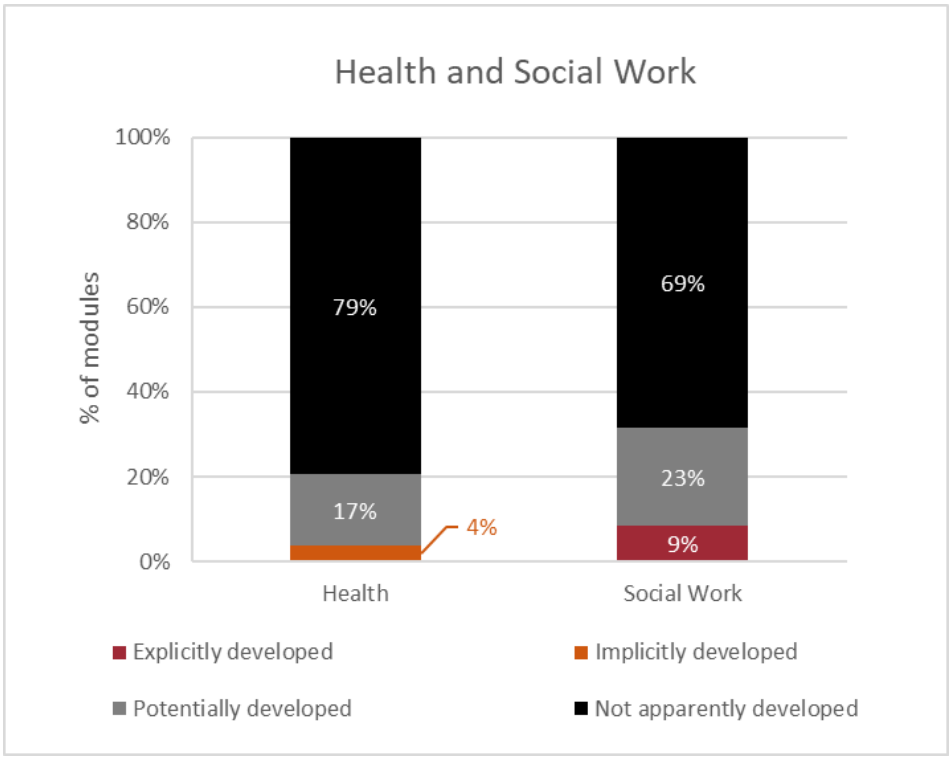

Figure 5.21 Visual literacy development in Health and Social Work modules

In those few modules that did develop visual literacy explicitly or implicitly there was a leaning towards the creative skills as can be seen in Figure 5.22.

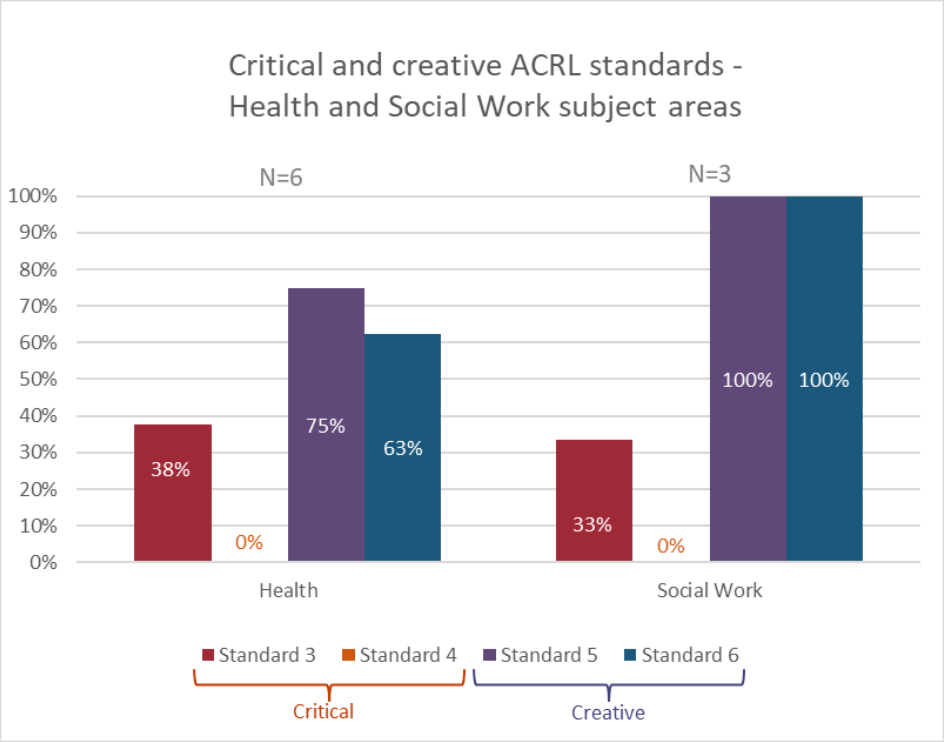

Figure 5.22 Critical and creative ACRL standards: Health and Social Work subject areas (showing the percentage of explicit or implicit modules that develop the shown standards)

5.5.10 Law and Politics

The final subject group is Law and Politics which comprised those two named subject areas. When looking at Figure 5.4, back on page 100, this was the group with the least amount of visual literacy development. However, there were several modules from other subject groups (particularly Histories, Languages and Cultures) that were accredited to joint programmes with Politics and these are included in this analysis. Figure 5.23 shows that when these other accredited modules were included, 15% of 'Politics' modules had explicit development, with a further 3% implicitly developing visual literacy. Without these additional accredited modules there was only a single module which had explicit development and none with implicit. The module that explicitly developed visual literacy specifically used documentary film as a source, with the explicit intention of honing critical thinking skills in this area. Unsurprisingly, given the picture in History, the modules on the combined History with Politics programme also used a large number of visual sources which accounted for most of the explicit development in Politics.

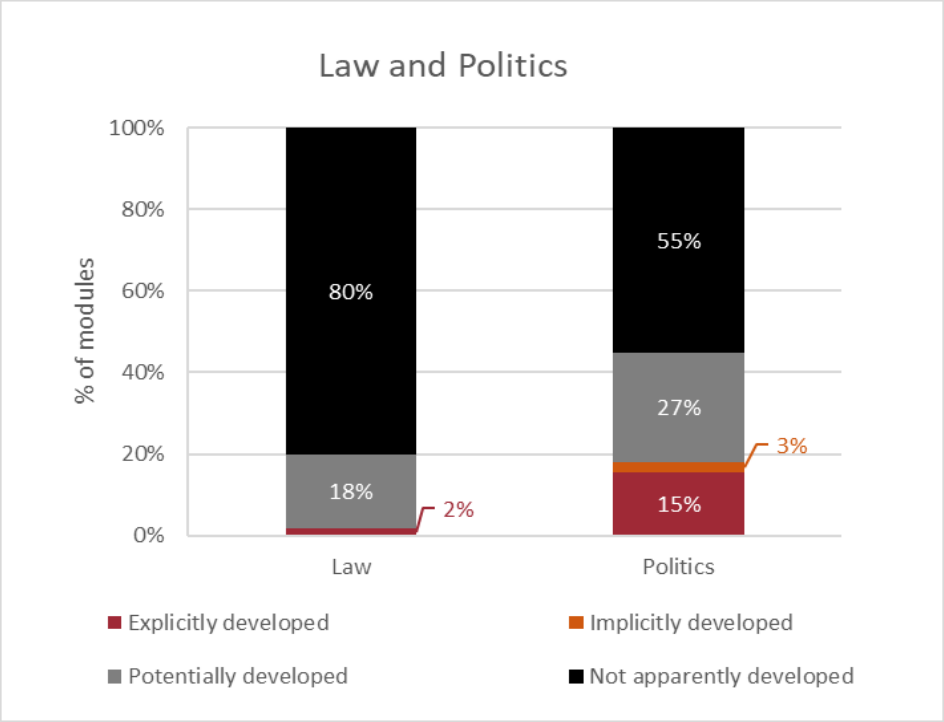

Figure 5.23 Visual literacy development in Law and Politics modules

In Law, there were no additional accredited modules and the single module with explicit visual literacy development (*Law, Self and Society*) specifically drew upon:

> a wide range of media beyond traditional academic sources wherever appropriate, such as film and literature as well as good quality journalism, blogs, podcasts and YouTube content, etc.

This had the laudable intention of widening students' experience of the law by combining familiar non-academic sources with academic information. With that noted aim, it is perhaps surprising that this was Law students' only opportunity to do so.

In both subject areas, potential development was due to presentation assessments that did not specifically mention visual components. In Law, it is likely that many did not include visual aids as presentations were often responses to hypothetical problems and oral argumentation skills were emphasised. In two cases, reassessment methods indicated that the presentation could be submitted via podcast which suggested these were oral only. In Politics, there were more posters and not such an emphasis on the oral component of presentations, even in those modules that were not part of joint programmes with other areas, meaning it is more likely the visual elements were at least considered.

Predictably, with the relationship with History and the emphasis on source evaluation there, the ACRL standards that were most likely to be developed in Politics were the critical ones (see

Figure 5.24). The single Law module that explicitly developed visual literacy was also exclusively looking at source interpretation and evaluation.

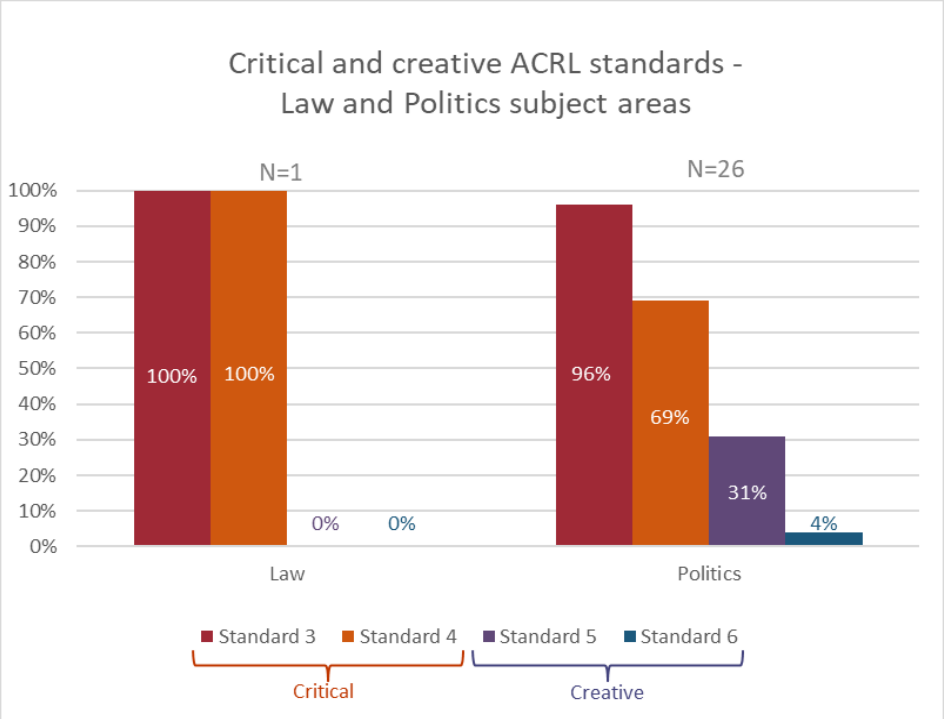

Figure 5.24 Critical and creative ACRL standards: Law and Politics subject areas
(showing the percentage of explicit or implicit modules that develop the shown standards)

5.6 Final comparison across subject areas

Regardless of the subject group, a final comparison can be made across all the subject areas to get a clearer picture of visual literacy development across the institution. Figure 5.25 shows the proportion of modules in each of the assigned categories. It is displayed in order of combined explicit and implicit development. Subject areas on the left, therefore, have the most modules with clearly *identified* development whilst subjects on the right have the least.

The same data, displayed in order of combined explicit, implicit and potential development, is given in Figure 5.26. Subject areas on the left here, therefore, have the most amount of *possible* development and those on the right the least. This does change the position of some subject areas significantly, for example Drama moves to the far left (although this is mostly due to some assessments having an optional visual route related to stage design) and Maths moves to the far right (due to the low number of presentation assessments which is the primary cause of modules being categorised as having the potential for development, this is also true

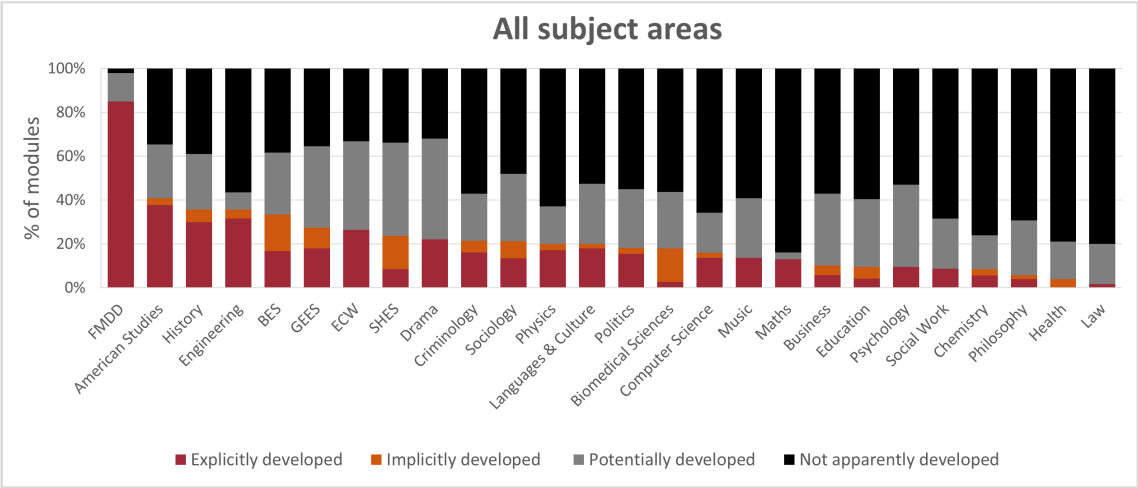

Figure 5.25 Visual literacy development across all subjects – in order of identified development

for Engineering which also moved right). That said, most subject areas do not move notably between the two charts.

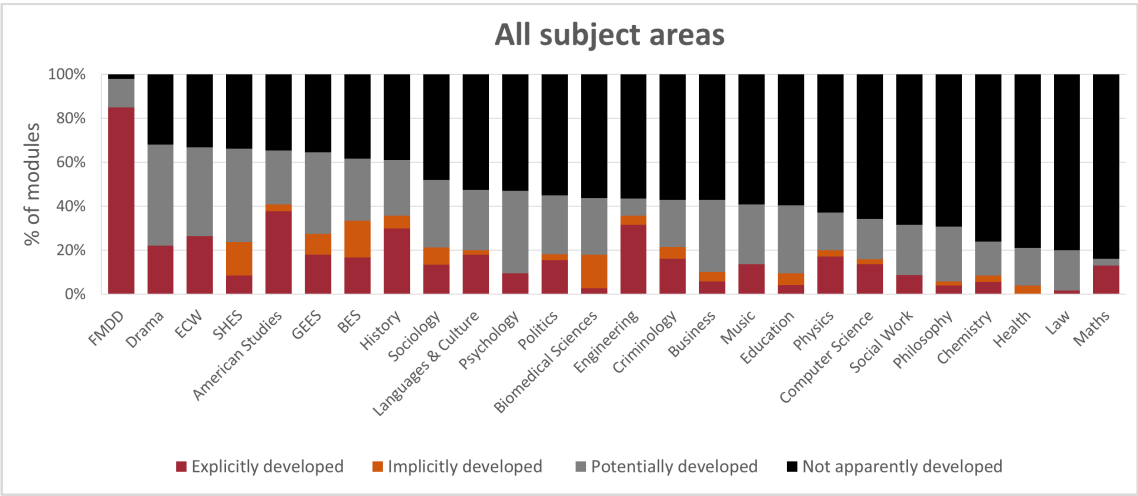

Figure 5.26 Visual literacy development in all subject areas – in order of possible development

Chapter 7 will discuss the implication of these results. It will attempt to explain the variation by comparing them with the expectations of graduates in different subject areas as set down in the QAA subject benchmark statements.

5.7 Chapter summary

This chapter sought to answer the question "*To what extent is visual literacy developed in a higher education institution's curricula?*" It answered this by presenting the results of a visual literacy audit of the case institution's entire module specification catalogue for the academic year 2018-19. From this it found that over the whole institution, 13% of modules specifications

explicitly indicated that aspects of visual literacy were being developed, with a further 4% implying it by acknowledging the visual nature of their choice of assessment method. Although an additional 26% of modules had assessments that could help develop visual literacy, primarily presentations and posters, this was only considered to be potential development as there was no clear indication that visual aspects were either taught or assessed in a significant or developmental way. The following chapter will present findings from the interview data which suggest that this caution may be well placed. There was no indication that any aspect of visual literacy was being developed in over half (57%) of the institution's modules, though as the subject breakdown indicated, for many areas this was considerably higher.

Visual literacy was not more developed at any particular study level in standard three-year degree programmes, although the high number of posters and presentation assessments in foundation level modules meant there was potentially a slightly higher chance of development for students who took this route.

Analysis across subject areas showed there was a wide spectrum of opportunity to develop visual literacy and for some students, opportunities were particularly rare. In some subject areas, the low amount of development was perhaps predictable, whereas for others the low amount of development came as a surprise. To explain, Law and Philosophy both have long traditions favouring written and oral argumentation and therefore their low levels of development were arguably expected, even if this is something that will be challenged in Chapter 7 (see section 7.2.4.2). In contrast, the specifications suggested Health had low amounts of both identified and possible development which was surprising on a personal and professional level as the learning development service sees a large number of student nurses for help with presentations in particular. In addition, as will be argued in section 7.2.3.2, the literature suggests that visuals are particularly important for health communication and the earlier literature review had recognised several initiatives in health and medicine. Similarly, Chemistry had low levels of identified development and yet the discipline of biochemistry (which was included in the Chemistry subject area in this study) was also recognised in the literature review as an area that has acknowledged the importance of visual literacy for its graduates.

Visual literacy skills fall into two main categories, critical (analysing and evaluating visuals) and creative (using and creating visuals) and across the institution as a whole, these skills were relatively evenly developed. However, this hid a more variable and complex picture which can be seen when looking at the individual subject areas.

There were three subject areas where the development of visual literacy was clearly identified in a large proportion of the module specifications *and* where the range of creative and critical skills mentioned was relatively evenly balanced. The greatest amount of development took place in FMDD with its natural disciplinary focus on visual sources and visual output, but GEES and Engineering also showed a relatively high amount of development across the range of ACRL standards analysed. Although much of the development in both FMDD and GEES was very subject-specific, the cultural aspects involved have the potential to make the skills involved more transferable. In Engineering, a considerable amount of development was of a highly technical nature making it potentially less so. This was also true of some other STEM subject areas, such as Computer Science, Physics and Chemistry, where identified visual literacy development was exclusively highly subject-specific. Such specialist visual literacy is undoubtedly needed for the work involved, but significant opportunities to develop more transferable skills are not evident in the module specifications.

For some subject areas, analysis of the specifications indicated that although a large proportion mentioned aspects of visual literacy development, there was a potential imbalance in the range of creative and critical skills involved. In two of these, American Studies and History, the specifications often referenced the use of visual source material, but the creative use of visuals was mentioned far less. Admittedly, they had a good proportion of modules with the potential to develop skills through presentations and given the visual nature of much of their source material these may well have added to some aspects of creative visual literacy—it was just not possible to substantiate this from the module specifications alone. Conversely, in subject areas like ECW, BES, and SHES, their specifications indicated there was more emphasis on the creative skills, though less development overall.

This varied picture regarding which type of skills were developed continued as levels of identified visual literacy in subject areas declined. Some subject areas, like Drama, Sociology, Computer Science and Music had fairly even ratios of critical to creative skills even though development overall was not high. Conversely, other subjects favoured one type of skill over the other: Physics, Politics, Philosophy and Law developing more critical skills; all others slightly or heavily developing more creative ones.

Overall, to answer the research question posed at the beginning of this chapter, the module specifications indicate that the extent of visual literacy development within the case institution varies across a full spectrum of high in some subject areas to low in others and everything in between. In addition, the balance of critical to creative skills also varies considerably. In a few

subject areas the balance is relatively even, but most favour one type of skills development over the other. In some very technical subject areas, the type of visual literacy development is also highly specific with little or no opportunity for students to develop more generic skills that may be needed if students choose to follow different paths on leaving education.

The discussion of these findings in Chapter 7 will consider the wide variation of visual literacy development in different subject areas and compare them to the requirements of their subject benchmark statements. These benchmarks indicate what is expected of graduates in the various subject areas. The discussion will consider whether these could be responsible for the variation seen in visual literacy development between subjects and whether certain interpretations of the statements could indicate a greater need for visual literacy skills to be developed than this audit indicates is happening. Where no such statements appear in the benchmarks, it also argues that the wider QAA framework for HE qualifications implies these skills are still necessary and it may be time for some subject areas to reconsider the needs of their students entering a society and world of employment where being visually literate is increasingly important.

For some students, therefore, disciplinary norms may be a bridge to developing visual literacy, but for many they may be one of the major barriers. By talking with university academics, teaching modules with a variety of levels of visual literacy development, the following chapter will explore whether there are other, perhaps more easily dismantled barriers, that are preventing more use of visual material. It will also seek to identify more bridges, which may make the journey toward a future with higher levels of graduate visual literacy more likely.

Chapter 6: Findings part 2: Identifying bridges and barriers

6.1 Introduction

This chapter will give the findings from the interviews undertaken with academic staff and answer the final two research questions:

Q2 What could be potential barriers to developing visual literacy within the institution?

Q3 What could be potential bridges to developing visual literacy within the institution?

Twelve academic staff were interviewed who were module leaders (or programme leaders) for modules classed under each of the four categories: explicitly, implicitly, potential or not apparently developing visual literacy (see section 4.5.1.1 for criteria). The staff ranged from those in their first academic posts to experienced lecturers who had been at the institution for more than a decade. Throughout this chapter, they will be referred to by gender-neutral pseudonyms and pronouns to ensure anonymity.

In line with the concept of interviews as democratic, data-generating conversations introduced in Chapter 4 (see section 4.3.4), the interview schedule in Appendix 5 was used as a starting point for the conversations only and some interviews added to the question answers in more circuitous ways than straightforward responses to direct questions. None of my questions directly asked about bridges or barriers, though the participant information sheet (see Appendix 3) made it clear that this was the topic of my research and so some participants did bring it up specifically. Instead, questions were asked about some of the key areas that the literature review had suggested, and others that hoped to get a picture of staff awareness of internal and external initiatives to promote generic skills development. Questions covered:

- Assessment of visual literacy related skills
- Teaching of visual literacy related skills
- The importance of visuals in their subject areas
- Staff confidence in teaching and assessing visual literacy
- Awareness of other initiatives to develop 'literacies' (primarily information and digital literacies)
- Opportunities to develop visual literacy skills throughout a programme

Discussing these areas provided opportunities for bridges and barriers to be identified without forcing the issue directly or creating too many opportunities for interviewer or social

desirability bias to come into play or for me to direct participants unwittingly to any answers I may have subconsciously sought.

This interview analysis first looks at whether the potential barriers identified in the literature review were confirmed to be present in the case institution (section 6.2.1). It then identifies some other barriers that were not recognised in the literature (section 6.2.2). This is repeated for potential bridges (sections 6.3.1 and 6.3.2). Whilst some of the identified bridges and barriers were only mentioned by one or two participants, my research values of solidarity and democracy (see section 4.2.3) mean that these are respected and used to widen the consensus and give a richer picture of what can hinder or help visual literacy development. At the same time, the value of modesty means that it is acknowledged that these may not be universally applicable.

6.2 Barriers to visual literacy development

The interview analysis confirmed the existence in the case institution of most of the barriers identified in the literature review and identified five further potential barriers.

6.2.1 Confirmation of barriers identified in the literature review

The literature review identified a number of potential barriers to developing visual literacy in undergraduate students. Some are argued to be ingrained into the fabric of HE; for example, resistance to change, disciplinary silos and logocentricity. Others are more specific to visual literacy such as the lack of experience and confidence of staff in teaching and assessing visual elements, the assumption of organic development in this area and students' lack of understanding about the expectations of more visual assignments. This section will first consider if these potential barriers (which were often only briefly alluded to in one or two papers) were confirmed in the case institution.

6.2.1.1 Ingrained issues

The three ingrained issues identified in the literature review were resistance to change, disciplinary silos and the privileging of communication via words (logocentricity). Whilst the nature of the UK education system means that disciplinary boundaries do exist, the creation of unhelpful silos was not specifically raised by participants, but then, neither was any cross-disciplinary collaboration. Participants were focused on their own discipline, and it is acknowledged that one of my questions was specifically about how visuals are used in their subject area so perhaps this was to be expected. However, resistance to change and

logocentricity were mentioned, primarily by those participants not apparently developing visual literacy.

For example, Kennedy, a lecturer in a discipline with little visual literacy development, suggested that many colleagues were happy to keep doing what they always had:

> There are a large number of people in the unit who've been teaching the same modules for years and years and years and have used the same assessment strategies. And there's a sense that it works. You know, it's not broke. Don't fix it. (Kennedy)

And confirmed that those assessment strategies are logocentric:

> Well, it would be the essay-exam dual package type thing … I'd say the majority of our modules are assessed by an essay of between two and three thousand words … then a timed exam of two hours. (Kennedy)

Wynn, who also does not teach on any undergraduate modules with notable visual content, explained that the essay-exam combination used to be more common:

> When I first arrived, it was essay-exams, essay-exams everywhere. It was pretty much standard. (Wynn)

But there had been a subsequent push to diversity assessments:

> One of the criticisms from external examiners was … 'you need to be including a wider range of assessments.' And I suppose when I came in, that was one of the pushes "Why don't you do, not just a presentation but a peer-assessed presentation" [with] other people doing other forms of assessment. (Wynn)

Though they acknowledged their own assessments remained text-oriented:

> We seem to now be moving away from that ... But yeah, [in my modules] it is very much text-based assessment. (Wynn)

The idea of 'the essay' was very much a fixed and logocentric entity for Wynn who did not think that visuals had any place within one:

> I think another thing to appreciate is that I do say for essays "don't include graphs and images and things" because writing an essay isn't incorporating—it's adopting a position. It's answering a question. It's a different skill. (Wynn)

One other participant, Jamie, who taught modules that both implicitly and potentially developed visual literacy, had found some difficulties in pushing through changes to some

assessments, but this was in the context of a lot of existing change and so was probably not entirely due to entrenched positions:

> I did an assessment audit about three years ago … which was really helpful, but there was no then mechanism for actually actioning anything further on. And to be honest, we had new modules going in and out every year for the last four years. So, it's been very difficult to actually do that. You know, I have spoken and approached people about over-assessment or tweaking assessment. I think particularly trying to reduce exam loads and things like that. And it's not been immensely successful. (Jamie)

Conversely, participants who were explicitly developing visual literacy mentioned that institution-wide agendas to refresh programmes had given them the impetus to try new things which brought more opportunities for visual literacy development into their modules:

> Yes, and it was part of Curriculum 2016 as well to try and move away from essays and exams and could we assess things that would be more practical and more useful. (Morgan)

> …when we rewrote Curriculum 2016-2017, I wanted to do more on visual and material culture. (Glenn)

So, resistance to change and logocentricity could be barriers in those areas where visual literacy development is lower, especially in more traditional subjects. Where visual literacy development is higher, it seems that central agendas for change have actually been the catalyst to bring in topics and assignments that move away from the traditional logocentric essay-exam assessment strategies.

The other six barriers identified in the literature review were all confirmed by at least some participants. These are presented here in the order that they were in that review.

6.2.1.2 Assumption of organic skills development

Two participants confirmed that the assumption of organic skills development could be an issue. When discussing the fact that in some subject benchmark statements students are expected to be able to communicate orally, in writing and visually, Kennedy acknowledged that in their area this may be assumed to happen without specific intervention:

> But as a unit, we've tended to feel that these things will occur as a by-product of our core activities rather than something that we prioritize in and of themselves … they're an externality. Yeah, they'll happen by osmosis or something like that. (Kennedy)

And when discussing the use of visuals in the context of digital literacy, Max also implied that skills would develop naturally:

> I think these are things that we are more likely to be passively picking up as we go through our lives … I think that will become a natural part of [life], like understanding the law, or knowing how to cook or something. We will all know about it. (Max)

Though they admitted that some skills, such as how to correctly cite an image, may need teaching:

> … some of it is common sense—but a lot of them don't know about referencing images. (Max)

The ACRL (2011) argues strongly that visual literacy needs to be taught, and skills development should not be assumed. It is difficult to know how widespread a misconception organic development is, but these two participants certainly indicate that it exists in the case institution.

6.2.1.3 Lack of assessment

During the module specification audit, unless visual elements were specifically referred to, modules with presentations or posters as assessments were deemed to be potentially developing visual literacy. This was because whilst on one level it could be assumed that a presentation or poster is by definition a form of visual communication, without attention and consideration in marking schemes to the visual components, there is no guarantee that visual literacy will be developed. Lack of feedback on visual elements specifically lessens the chance for growth and improvement in this area. Participants who explicitly, implicitly or potentially developed visual literacy in their modules were asked if they considered the visual elements of these in their marking. Of the four that potentially developed visual literacy, the picture was mixed. One acknowledged that visual elements in a presentation may not be assessed at all:

> I don't think so, we were looking more at the maths or the physics that they did. (Pat)

And, in an assignment where there was a choice of topic and some topics were naturally more or less visual than others, it was understandably felt that it would be unfair to give marks to visuals *per se* if some students' presentations did not lend themselves to their use as naturally. In that case, it was only general aesthetic qualities that had marks:

> There is [sic] some optical impression sub-marks, if you like. It is the visuals, but it would also include things like the text size for example. Visual elements in a sense, stuff that goes into the visual area … So the visual stuff also includes aspects that would not just be visual in the meaning of pictures. (Drew)

However, in other subjects (these both in Life Sciences), the visuals were more specifically assessed:

> In the marking criteria that is sent out to the tutors to mark to, there are example graphs on there. There is what they have been taught and that is what we will look for. (Max)

> Half the marking criteria is for content and the other half is for the presentation. But a significant part of the content is … they have to have a graph. So, they must have appropriate visualization of the data that they've collected. And then there is a load of things about the ease of reading, how they break up the text, how they make it eye catching, how they use media that they've collected through the process to enhance the overall poster. (Jamie)

Though Jamie (who also taught on a module with implicit development) admitted that the assessment of some of the visual elements of the assignment does not change as students progress to later levels, indicating there is no expectation that the skills involved develop and grow:

> I think possibly the thing that maybe doesn't fit in here is that our expectation of their visual capabilities doesn't really change. So, the expectation of what is a first visually is the same in foundation as it is in their final year … the thing that we expect to change is their understanding of the subject and their ability to represent that. (Jamie)

A growth in their ability to represent their understanding of the subject is obviously important, and if that is visually then it is also part of visual literacy, but it is notable that student design skills here are not expected to improve throughout their degree.

Conversely, of the other two participants who taught modules implicitly developing visual literacy (which are similar to potential modules in terms of assignments but with visual elements specifically referred to within the specification), the assessment of visual material was more about design skills than the ability to represent things visually. Riley, whose module was partly assessed using a poster presentation, suggested that visual elements were only assessed in terms of the overall balance of text to graphics and the look of the poster as a whole:

> The presentation is marked as a whole, which may be a weakness in terms of the way that we've set it up. But there is … I do a sheet for the markers … and there is a box which looks specifically at the blend of graphics and the images and the presentation and whether it's a professionally developed poster. (Riley)

This was also the case with Chris, who also implied it was the design elements of their students' posters that were assessed:

> If I remember with our posters, you know—'Was is visually stimulating?' or something like that. (Chris)

For participants on modules explicitly developing visual literacy the picture was also mixed. This is because for some of these modules it was the critical elements of visual literacy that were explicitly developed rather than the creative ones. For example, Taylor's students used images as source material (amongst other things) but there was no acknowledgement in the marking scheme of the visual elements specifically:

> It is an overall thing … our marking scheme will talk about 'use of sources' you know, 'accurately representing sources' and things like that [and] I would say that implicitly it is assuming written/text sources … I think that whole assessment thing has been written with a view to correct assessment of written sources not visual … it is interesting to say that in our assessment criteria I doubt there is anything that mentions images. (Taylor)

Morgan's students did create posters and presentations and a percentage of the marking rubric considered the design of these (but again, not specifically about the effectiveness of the visuals in getting a point across or as evidence in an argument). With Sam and Glenn's modules, the analysis of the visual sources was often the main element of the assignment so this, and the way these were presented, was assessed directly.

The picture regarding assessment is therefore variable. There are indeed cases where visual elements are expected but not assessed. In addition, for many students creating posters and presentations (the most ubiquitous forms of visual assessment across the institution), it is only elements from ACRL Standard 6 that are being assessed, for example, the use of design strategies and creativity. Whereas there is a real opportunity to address elements of Standard 5 regarding the use of images for particular purposes and presenting images effectively for rhetorical impact (see ACRL, 2011) which are often missing. Conversely, in some situations where Standard 5 is being assessed and expected to improve throughout a degree programme, the design skills are not expected to develop beyond the initial standards expected at Levels 3 and 4.

6.2.1.4 Availability of appropriate media tools and technology

Whilst technology can be seen as driving the need for more visual literacy (see section 2.4), the literature review recognised that it can also be a barrier. Whilst the institution's teaching spaces had the necessary equipment, Sam had experienced technical problems and felt they could not rely on these to work:

> But the last time I ran this I was in a room and the projector didn't work, and I either couldn't get the image, or I couldn't get the sound. I spent about 20 minutes on the phone to the tech-people about being able to do this. I was like 'I can't do a seminar on analysing the images of the film without the film' … So, the jeopardy, I suppose, of doing visual analysis or visual—those kind of skills-based things within the university still feels problematic, even at a time when the technology should be making it easier than it's ever been. (Sam)

And even where the equipment works, the buildings themselves are not helping:

> And then similarly, I've had issues with running films … so, we when we screened Pride, it was in one of the rooms in the [Name] Building … [where]… you hear the lecturer in the room next door. And when you're screening a film—like the person next door is going to get really annoyed because you're making lots and lots of noise, particularly if it's got really loud 80s' music in. So, the difficulty is that the actual infrastructure of the university imposes on attempts to do this kind of stuff. (Sam)

The lack of availability of suitable media tools was also confirmed as a barrier. The financial constraints that many universities are running under means they cannot afford to make high standard video-editing or augmented reality software available to all who want it. Whilst the case institution does have a top-of-the-range video editing suite, this is often reserved for specific degree programmes and it is not always clear if or how other staff can access them. This means that the majority of other lecturers and students must rely on freely available, less reliable alternatives. Two participants were either attempting to get students to produce films or knew of other colleagues who were. They were both relying on free software that students could use on their own computers or devices, as centrally networked PCs did not have suitable software installed:

> And we didn't really do a lot of editing in class … So, I ran a couple of tutorials where I talked students through the basics of editing using a software package I had on my personal computer… I also explained if you're a Mac [user] there is iMovie on there. It's fairly simple to use. If you want something that's a little bit more advanced on Windows or on Mac, DaVinci Resolve is one option but it has a little bit of a steeper learning curve. But we did all this in a regular lecture room and it would have been much more hands-on had we had dedicated hardware [and software] for these tutorials. (Glenn)

Lack of suitable teaching spaces with appropriate software could therefore be an issue and makes supporting students working on multiple applications more challenging. Some staff would not even attempt this: Riley's colleague wanted to make sure that their students all had access to the same video creation/editing software and had given up and reverted to a traditional presentation instead:

> I was talking to [staff member], who's the module lead in that area, … she was struggling to find the correct software that the students could legally have access to and was free and wasn't going to cause barriers and difficulties, because I think there was something that she used with Google, but that now doesn't work. So, they were looking at going back to PowerPoint. (Riley)

In another module, Glenn asked students to produce an augmented reality poster, but was having difficulty finding appropriate software:

> I need to change things a little bit next year. First of all, because Hewlett Packard bought the app that I was using and since they bought it, they have not invested much, and it's being discontinued. (Glenn)

Glenn is clearly trying some innovative assessment types and is confident enough to try different solutions. Less confident staff would probably need the central support that accompanies having software on university computers to try anything similar.

6.2.1.5 Decreasing levels of visual literacy in schools

This was only alluded to once when Wynn was responding to the catch-all question at the end of the interview. I had mentioned earlier in the conversation that visual literacy was recognised as important in primary education but that it did not appear to have the same status in HE.

> I think it's interesting that they have visual literacy in primary school, but I don't think they have much in secondary school either. (Wynn)

This preceded Wynn's thoughts about students arriving at university without sufficient levels of self-efficacy which is covered in the next section. This is therefore a barrier that may well exist but that was not recognised by other participants.

6.2.1.6 Student expectations and experience

Some potential barriers were identified relating to what students expect of their teaching and assessment and their experiences when taken out of their comfort zone. Lack of experience in dealing with visual material means that they can approach assignments with lower confidence

in their abilities and skills. This is especially true with modules where more visual literacy was needed because these were the ones challenging the students to do more in this area.

Some interview comments indicate that students need to know what to expect from assessments and yet some visually-rich assignments can cause them to query their relevance and to try and find something familiar to latch onto. For example, in a module where students had to create a film as part of their assessment, a proportion of teaching time was given over to how to create meaning using filming techniques and Glenn reported that students initially queried why this was needed as they were not studying a media-related degree. They later explained:

> So, with non-traditional assessment strategies more time [was needed for] explaining the rationale … and how it relates to the discipline and the degree programme.

Confusion over what was needed from the film also made them reconsider the terminology they used to describe it in order to make it seem more familiar:

> So, as the module progressed, I was using the term 'video-essay' … once I started using the term … [a student] was like "Oh so, actually it's almost like an essay". (Glenn)

Confusion was also found in a geography module (referring to an assignment that required them to find sources representing visual and material culture):

> They very much struggle with it. They struggle with finding the right kind of stuff and they struggle with thinking that that's appropriate kind of stuff for geographical study. So, they—and we still have some students when they write their assignments who talk to us about facts and figures and economy—and we say "this isn't quite what we were asking you to do." And then once they've found the right stuff, then really struggle with the analysis of it. (Sam)

Morgan found they needed to explain the visual rhetoric of their infographic assignment in terms of more familiar written equivalents:

> So, I tell them "it's a visual poster. So, just as an essay would have three key sections … before you actually get to your conclusion. The visual poster is 'you've got to give me three answers to this question, and within each of those three answers, you've got to find three pieces of supporting evidence'. So, it's actually a paragraph but visually described". (Morgan)

This echoes Bowen (2017:715) who also found that students struggled to transfer from traditional written assignments to those incorporating visual materials and requiring "diverse

rhetorical strategies". This was also seen in the module mentioned earlier, where students were creating a 'video-essay'. Most students preferred to follow a film format where they could use a rhetorical strategy that was more familiar. Despite the groups having the opportunity to create something with more flexible structure, most chose to use a documentary style approach because:

> that was easier for them to get their head around how to include the research … If you do documentary style, you can [show] that you've done research by saying, whoever did this study or that. (Glenn)

Despite this, it was a film that used a narrative structure that impressed, showing that moving beyond comfort zones can lead to higher achievement:

> We had one video that was not documentary style that was sort of, a narrative, a day in the life of three people ... and that was really, really well made, lots of lots of amazing footage. (Glenn)

Another problem is that the lack of experience that students get with visually-rich assignments means that they can lack the confidence, knowledge or skills to complete them well. As Sam put it:

> I just think they are a bit nervous about including images on a large scale in documents, which is kind of interesting. (Sam)

Even fairly traditional, yet still potentially visual assignments like posters can cause issues:

> Initially, I don't think they enjoyed doing the posters when they first started … I think they were afraid of doing it. (Chris)

> Whether it's creativity or confidence, maybe it is actually about confidence to put ideas or express ideas [visually]. (Riley)

With inexperienced students, this is not necessarily improved by teaching what is expected either. Despite first year science students getting training in what a good poster should be like, many still revert to their text-heavy comfort zone when creating their own:

> They go through a training process of what makes a good poster, what a poster should look, whether a poster should contain this sort of information and how to communicate it to the person that you are trying to present to…

> …[but] I don't think they necessarily applied it. I think there is a disconnect between theory and execution. I think that the students weren't confident

> enough to go with what they thought they had learned – so they almost drop back to a formula to something which isn't necessarily as good as it could be. (Max)

Wynn suggested that the pre-university education system did not develop enough self-efficacy for students to take responsibility for developing the skills they need for more visual assessments. They also implied that this was partially due to students seeing themselves as consumers:

> I feel recently as well, there's been the cohort of students that come through now, from six form, there's an expectation of 'tell me what to write", "tell me what to do", "what's in the exam?". And now in terms of the consumer thing, it's kind of lash out. "I don't like you because you haven't told me the answer". But actually, [with] visual or digital literacy or any of that form of assessment, where you're encouraging people to take on some sort of responsibility, … they don't have the knowledge on how to develop that competency. (Wynn)

This is an interesting point of view indicating that it may not be knowledge or skills *per se* that the students may lack, but the ability to adapt and approach new challenges willingly. If such attitudes do exist in our students then it is perhaps indicative of a wider lack of confidence in their own capabilities, which could indeed be partly caused by an exam-oriented, results-driven school system that is already thought to be affecting visual literacy levels by reducing children's experiences with more creative arts subjects (The New Media Consortium, 2005; Robinson, 2011). Additionally, with students as consumers there is potential tension between keeping them happy and pushing them outside their comfort zone, which many visually-rich assessments may do.

6.2.1.7 Staff experience and confidence

There were many times during the interviews (outside of the specific mapping exercise mentioned herein) that participants expressed a lack of confidence or competence in teaching and assessing aspects of visual literacy. For example, when discussing video assessments, Wynn, who did not develop any aspect of visual literacy, was clear that they would not feel comfortable with doing so:

> And also, I'm not competent necessarily in how to do that, because I've not been trained to do that. There's also kind of a skills gap for myself as an educator in not knowing how to do this and how to necessarily implement it. (Wynn)

And Kennedy, who despite admitting using videos and photographs in their own teaching, indicated that they (and probably their colleagues) would not be as happy to assess their use by students:

> So, probably if I'm representative at all of what colleagues are doing, then we try to use images, videos as well as stills, because we think that that does aid learning. I'm just not sure we've quite got the confidence to make that jump to assessing it. (Kennedy)

Other staff were happy with some parts but not others. For example, Jamie was comfortable teaching how to create observational drawings and data visualisations but despite having devised a blog assignment themselves (to show the importance of public dissemination of science), there were aspects of creating a visual identity that they did not feel they could help with:

> I think that there's definitely some aspects of it that I feel a lot more comfortable with than others. There are definitely parts that I've had lots of training doing in terms of the observations and the graphs, like I feel very comfortable there. But then in terms of trying to teach students how to create a visual identity and brand for their blog, I've never done that, I'm not a marketing person. (Jamie)

They also felt they may not be a good role model when it came to the design aspects of academic posters:

> When I'm teaching them to do the posters, I'm just teaching them to do what I do. Which isn't necessarily an example of good practice, just the socially accepted way of doing it. So, I think that's probably something that's quite difficult. (Jamie)

It was also recognised that younger students may have more technical ability than some staff which may affect staff confidence in assessing some visual media:

> I suppose it depends on the age group as well because a lot of the younger students, they've come through using technology all the time in college and so they might have better skills than us really. (Chris)

Some staff prefer to simply admit their limitations and bring in central staff from my own unit to teach things like how to create an effective presentation:

> [You are the] colleagues with expertise and experience. I mean, being a mathematician, we're very book … we don't really do that. Graphs are about as fancy [as we get]—I'd like to but—it's just not really part of the course. (Pat)

And yet, these same staff are assessing the presentations, so perhaps it is unsurprising if the visual elements are not specifically assessed in a situation like this. Whilst my team appreciate the opportunity to integrate some visual literacy teaching into modules, it could be that without effective assessment in the disciplinary context, opportunities for feedback and therefore deeper and progressive learning may be lost.

As explained in the methodology, staff were also asked to map out, on a large grid, their own confidence in teaching and assessing skills related to each of the ACRL standards. In order to acknowledge that some of the skills may not be as obviously relevant to their own discipline as others, the grid also allowed them to indicate how important they thought those skills were to their own discipline or field. The markers the participants positioned had the standard written in full on the front and the performance indicators on the back so that they could see more information of what the standard involved. An example of a completed grid can be seen in Figure 6.1. These were each transferred to an electronic version of the diagram.

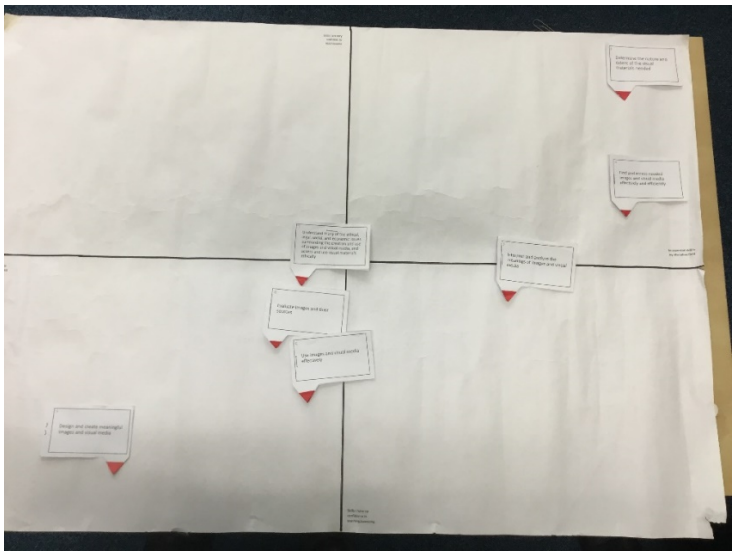

Figure 6.1 Example of a completed confidence grid

The individual grids were colour-coded to indicate whether the participant was teaching modules that explicitly, implicitly, potentially or did not apparently develop visual literacy[10]. When combined, these created the grid shown in Figure 6.2.

The predominance of brighter colours (red and orange) at the top and the right indicates that there seems to be a general correlation between low levels of confidence and lower identified visual literacy development in modules, as well as importance to the discipline and whether it is included. The right side of the grid is also more densely packed than the left indicating that more standards are deemed important to the discipline than not. Indeed, individual grids (given in Appendix 6) show that seven of the twelve participants think that all seven ACRL standards are important to their discipline. Only two participants put more than two standards

[10] The participant who taught on modules that fell into more than one category was assigned to the higher category.

on the less important side of the grid. These were both in subject areas that the module specification audit had identified as having low levels of visual literacy development.

The top half of the grid is also more densely packed than the bottom, indicating that the participants were generally quite confident in teaching and assessing the majority of visual

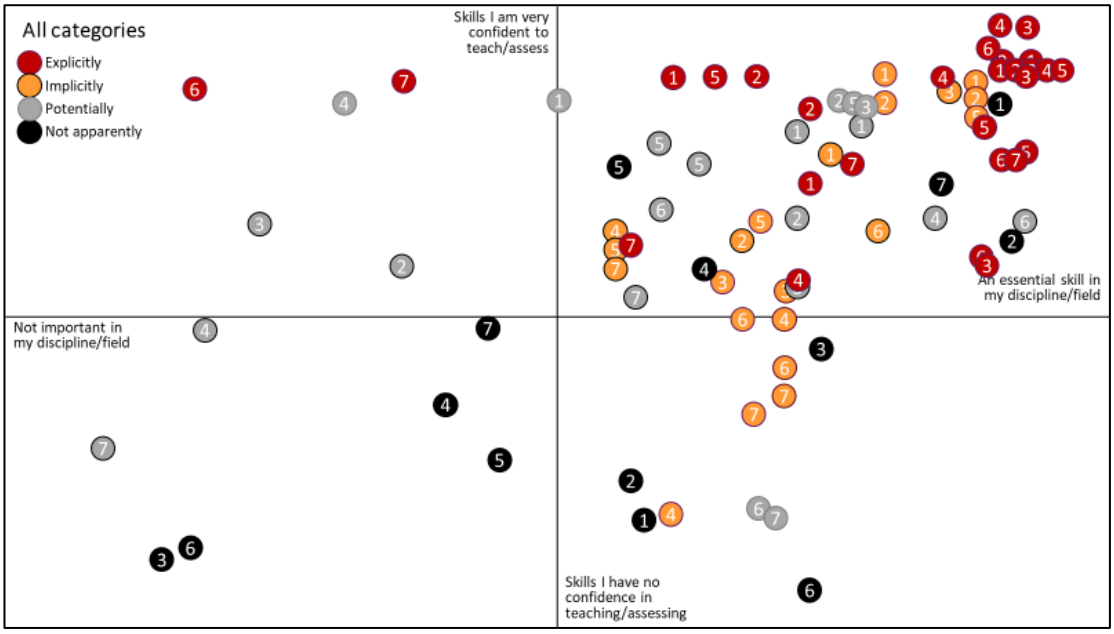

Figure 6.2 Grid showing staff confidence in teaching and assessing skills needed to achieve the seven ACRL standards mapped against disciplinary importance. Numbers refer to each standard.

literacy skills—though it must be remembered that most of these participants were selected due to the likelihood of them developing visual literacy in their modules so they would be expected to have reasonable levels of confidence. Indeed, the two participants who did not develop visual literacy were the only two to place the majority of the standards in the lower half of the grid indicating that this may indeed be a barrier.

Of particular interest are the standards that are placed in the bottom right sector – indicating that although these were considered important in their discipline, some staff had low confidence in teaching and assessing them. The most common standards to be placed here were Standard 6 (relating to designing and creating images and visual media) and Standard 7 (relating to ethical, legal, social and economic issues). Most of the participants who placed these low on the grid were teaching modules that implicitly or potentially developed visual literacy. They were categorised as such due to the use of posters or presentation in assessments (some referring to visual elements, some not), it is therefore surprising that some participants felt they lacked confidence in assessing skills relating to designing and creating

images and visual media. This could be because they over-focused on the term 'creating images' rather than the more general term 'creating visual media' (of which posters and presentations are examples) or that they felt the word 'design' made it sound more like it was specific graphic design issues that they would be teaching or assessing. I do personally cover elements of design when I am asked to provide integrated or central teaching on creating posters and presentations (for example the use layout, colour and typography to make points more understandable) and it would be helpful if these were also being assessed confidently beyond an 'it looks appealing' or 'there is a good mix of text and graphics' approach. The need for more effective assessment rubrics to help academics with this is discussed in section 7.5.1.

6.2.2 Further identified barriers

As well as confirming most of the barriers identified in the literature review, five other potential barriers were identified from the interview data. These were large cohort sizes; the predominance of partnering with oral assessment; beliefs about the nature of argument; the perceived difficulties of assessing innovation; and the lack of central assessment rubrics. Some of these are related to aforementioned barriers but have a slightly different or more specific focus.

6.2.2.1 Large cohort sizes

Larger cohort sizes could make marking visual materials more challenging. Wynn, who is not currently developing visual literacy made this point:

> …that's a very large module—there are 150 students on that module. So, if I was going to digitally assess 150 videos or people … producing stuff—it's difficult. (Wynn)

And Kennedy, who also does not currently develop any visual literacy, suggested that this was a problem that had increased relatively recently, leading to the removal of many smaller, formative assignments that may have contributed:

> In the past, there was more of a tendency towards having class presentations … that were not assessed. That's fallen out of a lot of modules as the cohort changes, the sizes have changed. So, I think politics traditionally was very proud that it had small groups. And you see, that's not cost effective anymore. The collateral damage is that these little class presentations have fallen out. (Kennedy)

It was not necessarily the marking load that worried Wynn, it was more about the other issues that go with using any assessment method beyond the standard, expected ones. Admittedly, these can be exacerbated when, in order to slightly minimise marking load, group tasks are

assigned and more staff time is involved with explaining what is needed, and dealing with general logistics:

> And certainly, one of the frustrating things I find in teaching is that when I have encouraged students to use different types of assessments … you end up spending a lot more time dealing with petty things that are not to do with [the assessment itself]. Like I don't know what I'm doing, these people aren't turning up to my group. I don't understand – the kind of thing that isn't about teaching, it's more sort of like general babysitting. (Wynn)

Wynn indicated that they would find this easier to do with Masters students due to smaller class sizes—although acknowledged that some similar issues may still arise:

> So, visual literacy I think does work best when it's in Masters modules which are much smaller. And even then, I know from colleagues, there are a lot of questions like 'I can't work out this video. I can't do that'. (Wynn)

And Morgan, who championed visual communication, admitted that even on a somewhat smaller cohort, the time involved to mark infographics was high and their ability to give the level of effective formative feedback they would prefer was prevented by other workloads:

> So, I need two screens to mark—45 minutes per one of these. There is—how many students—50 students on this module. It still takes a lot of time, it's more interesting than marking an essay, but it's still a considerable amount of time to give back … I'd love to give formative feedback a lot along the way, but it's too time consuming with all the teaching and everything. (Morgan)

It seems that large cohorts are potential barriers but perhaps only in as much as they amplify other barriers. This is discussed further in section 7.4.1.2 in the next chapter.

6.2.2.2 Partnering visual with oral assessment

Oral assessments are a cause of much stress and anxiety for students (Huxham et al., 2012; Nash et al., 2016; Ireland, 2020) and yet Riley pointed out that, for her students, visually-rich assessments are invariably linked to an oral element, be that giving a presentation or defending a poster:

> And I suppose because they're always—that's interesting—because they are nearly always linked to an oral element as well, where you've got something visual there is never anything standalone … and our students get horrendously anxious about the oral presentation … but we seem to have got into the habit of connecting the two skills together (Riley)

This point was only made by Riley but sometimes a single comment is enough to start a chain of thought and an investigation. After the initial interview analysis, when I recognised the

potential significance of this comment, I went back to the module analysis data and looked at those modules that were possibly developing visual literacy (explicitly, implicitly or potentially) to see what proportion were using posters or presentations. I knew it would be high, given the fact that part of the initial criteria for categorising the modules was whether they had such an assessment; but, at nearly 89% (665 of 749) it shows the possible significance of this as a major barrier to developing visual literacy. Admittedly, not all of the 'potential' modules will be assessing visual elements (as I suggested when looking at presentations in subjects like Law) and there will be some posters that do not have oral defences. In addition, 18% (119) of the modules that used these assessments also developed other areas of visual literacy by analysing visual sources and the like. However, that still means that the majority of opportunities to develop the creative elements of visual literacy are tied to oral assessments. To predominantly bind the chance to develop visual literacy to assessments with potentially stressful oral components does raise questions and these will be discussed further in the next chapter.

6.2.2.3 Difficulties in assessing innovation

With more visual assignments, it is potentially harder to assess innovation. With written work, it is relatively easy for a well-read academic to spot when a student is bringing in an innovative argument that is 'going beyond the reading list' (as many assessment rubrics state) and so move into higher grade brackets. However, with more visual assignments 'going beyond' is less clear cut. Jamie acknowledged a difficult balance between having a fair and transparent marking scheme for their blog assignment (to encourage good practice and provide more learning opportunities) and keeping things more equivocal (to avoid directing students too much and potentially stunting idea generation and innovation). They said:

> … for the blog, one of the things I try and do is assess innovation. But then it's very difficult. And also, if a student has come up with a really good idea that I haven't told them, but I know it would be a good thing to include, how fair is that on the marking criteria - for me to withhold information from them to see if they'll come up with it themselves? Am I stunting their learning opportunities by hoping that they'll show some innovation when actually I could just tell them to do it? (Jamie)

In itself, this dilemma could be resolved by acknowledging the role that ambiguity in assignment instructions has in developing key skills such as problem solving and self-directed learning (Bratslavsky et al., 2019). However, it has already been acknowledged that the current model of UK HE, with students as customers, can mean students are less satisfied with teaching and assessment that may result in lower marks, even if they are developing important skills (Clayson & Haley, 2005; Guilbault, 2016). Whilst Jamie may be able to pedagogically

justify the decision to leave things out of the marking scheme, the students may not be as happy. This may be a barrier that can be overcome by having clearer central guidance on rubrics for assessing such assignment products which is considered in section 6.2.2.5.

6.2.2.4 Beliefs about the nature or existence of visual argument

This barrier is a difficult one to precisely define. On one hand, it is synonymous with entrenched beliefs and logocentrism and on the other is a far deeper philosophical construct. It was implied in the earlier comment made by Wynn about visuals having no place in an essay which, as mentioned, is a common belief. There are, however, different types of essay and different reasons for writing them, there is no fixed 'blueprint' and no clear reason why this assumption that the arguments within one need to be text-only exists.

The philosophical issue is about whether visuals can act as argument in their own right. This is a huge topic and not one that can be answered within this thesis, but it is highlighted here as it formed a key part of the conversation with Taylor, a lecturer in philosophy and may be an underlying issue that adds to the logocentric dominance that has already been identified as an important potential barrier. Taylor was not sure that it was possible for an argument to be entirely visual:

> I don't know whether you can talk about something being a visual argument. You can talk about the visual in terms of providing evidence for argument, being used in support of an argument but…the argument is always going to be propositional. (Taylor)

Without getting into a long explanation of philosophical logic and argument, it is sufficient to say that argument in a philosophical sense means something specific, it is a more abstract form of that which we refer to when we discuss academic arguments. By 'propositional', Taylor is referring to the need for an argument to be made up of a series of statements (propositions) that can be either true or false. Taylor believes that such statements cannot be images as images themselves have no truth value (they can intrinsically be neither true nor false). Taylor did, however, concede that this was something they may need to reconsider; one of their parting remarks was:

> Yes, I am going to have to think about this idea of visual argument as well, there does seem to be something of an oxymoron there, I think. You know, in a way. Possibly, maybe I have just got that wrong. As I say, you can be persuasive with an image, you can convince, you can compel, you can persuade …but whether you can argue… (Taylor)

Taylor is clearly happy with the notion of images being used to persuade, but if images are not arguments in their own right, *how* are they influencing the viewer? Arguably, it is the task of philosophers to try to identify the mechanisms by which this happens, but if they have low levels of visual literacy, philosophy graduates may not have the skills and knowledge to help them do so.

6.2.2.5 Lack of suitable assessment rubrics

Only two participants were teaching on modules that were not developing visual literacy, and accordingly they were not asked the standard question in the interview schedule (see Appendix 5) about whether they assessed the visual elements of assignments directly. However, it is notable that in other parts of the conversation, they both mentioned the need for clear guidance on how to assess visual work:

> So, I mean, if there was a way for visual literacy to be included in assessments that are clear, and where there are examples of good practice elsewhere, if that could be built in, then you'd be much more likely to incorporate it. (Wynn)

> I think colleagues are perhaps not confident that we have a really robust and reliable framework for assessing that kind of work. (Kennedy)

The development of suitable assessment rubrics was identified in the literature review as an important bridge to developing visual literacy. Some example assessment rubrics are provided centrally at the institution (for essays and presentations – see Appendix 7 for the latter) but none are provided for any other type of assignment and the lack of such rubrics could therefore be a real barrier for those who are less confident or experienced in assessing visually-rich material.

Further bridges, both those already identified in the literature review and newly identified from the interview data, are provided in the next section.

6.3 Bridges to visual literacy

Again, the interview analysis confirmed some of the bridges identified in the literature review and identified three further potential bridges.

6.3.1 Confirmation of bridges identified in the literature review

As well as assessment rubrics, the literature review identified three more bridges to developing visual literacy: Creative Commons licensing; academic libraries; and inclusive assessment. Creative Commons licensing was only mentioned by one participant who ran a

module that focused on photography. Whilst this may be a bridge moving forward, it is likely that this will only really become apparent if more opportunities to use photographs and other visuals in more authentic, real-world situations are provided. This is because most academic use of images for learning, teaching or assessment is covered by 'fair dealing' rules in the UK regardless of their copyright status and finding 'legal' images is not normally an issue (HM Government, 2014). Evidence for the existence of the other two bridges is given below.

6.3.1.1 Academic libraries

Two of the participants, who work in areas that the module specification audit recognised as having low levels of visual literacy development (beyond highly discipline-specific examples) but who had presentations as assessment methods, confirmed that staff from the University Library were asked to provide integrated teaching of presentation and related visual literacy skills. Both felt they did not have equivalent proficiency in this area. Pat suggested that library staff were the "colleagues with expertise and experience" and Drew confirmed that teaching the effective use of visuals was "where we bring you guys in"—though stressed that they did themselves teach when visuals may be appropriate and when not, as they felt that was a more disciplinary skill.

In addition, Chris regularly points students to generic workshops that the library provides on creating effective posters and presentations, conceding that they could do it themselves, but time constraints may be a factor:

> No, if someone—one of my AST groups did ask, and I didn't have the time, I would refer them to the library, to the session … on that. (Chris)

And Morgan, who was explicitly developing visual literacy and confident in teaching and assessing most of the standards, conceded that the library staff were still more expert in this area. They did however indicate that communication between the University Library and academics could be improved so that more staff knew of the help available:

> I think there needs to be a better connection between the Skills Services in the library…what you're doing and what we're doing. Because you are ahead of us. And I think, as a staff, people don't know what you have to offer. (Morgan)

Poor communication from the University Library could therefore be added to the list of potential barriers. The removal of the Academic Liaison librarians may have left a gap in this area that needs to be more specifically addressed. Academic libraries as a potential bridge to developing visual literacy is nevertheless confirmed at the case institution.

6.3.1.2 Inclusive assessment

The case institution has a new *Inclusive Assessment, Marking and Feedback Policy* which emphasises the need for "equity of opportunity for all students to achieve to the best of their ability whilst maintaining academic standards" (Lawrence & Nabb, 2020). This was not in place at the time of the interviews but even then, participants recognised that more visual assessments are a way of providing such equity as it allows different students to excel:

> But it's also, acknowledging that some students are doing better in essays and some students are not doing so great at essays, but are doing great, absolutely fantastic in other stuff, you know. It doesn't take away from like the academic nature. So, it's a little bit about diversifying assessments. (Glenn)

> And you do see some different patterns where some students who can excel orally and visually, but the written part falls down. So, I think it does give a wider opportunity … and actually they can articulate what they want to say, but when it goes pen to paper, it's not coming across. And [on posters] some really succeed in making those connections … explaining something quite complicated in a very interesting and eye catching way. (Riley)

Even in subject areas where assignments with visual elements are not common, moves towards more inclusive assessments are already being discussed. When specifically asked about it, Kennedy acknowledged that although it wasn't yet significantly impacting decisions, it was on the agenda:

> It hasn't massively yet, but it is on the agenda. And we've talked about it in Learning and Teaching committee meetings … we've a number—I can think of one or two colleagues in particular, who are very interested in designing inclusive teaching or are aware of those sorts of issues in their practice. (Kennedy)

The inclusive assessment policy is one institutional driver that can act as a bridge due to its focus on equity in assessment. Another is the move to a competence-based portfolio which highlights the need for "authentic/real world assignments" (Lawrence et al., 2021) which is the first of the additional bridges discussed next.

6.3.2 Further identified bridges

Three bridges that were not notable in the review of literature were identified from the interview analysis. These are that visually-rich assessments can be more 'real'; students themselves are choosing more visual topics when they have the opportunities to do so; and visual material can be more interesting to mark.

6.3.2.1 Real-world assignments

This bridge is actually made up of three related themes: authentic assignments, non-specialist communication and employability, which can be visualised as a three-arched bridge (see Figure 6.3). They are bound together because those assignments that are designed to be authentic and more 'real' are inevitably developing the skills that make students more employable in the 'real-world', and assignments that focus on communicating to non-specialist audiences naturally move away from academic conventions and into real-world scenarios.

Figure 6.3 The three related arches of the bridge of real-world assignments

As mentioned, a move to more authentic, real-world assignments is a key strategy in the case institution's move to a competence-based portfolio which is part of an ongoing initiative of programme transformation. Whilst there is a push for these to be actually real, with local partnership involvement, many of the visually-rich assignments are already acknowledged as being and feeling more 'real' than purely text-based assignments.

Glenn explained this particularly well when describing the moment of submission for students who had created a web-based assessment:

> … and then they were like "Should I hit publish? Should I hit publish?" Once they had hit publish and reloaded the module WordPress site through, they were like "this feels real". You know it is more real than writing in Word and then just submitting it. (Glenn)

A WordPress site, with its presence in the world beyond the institution, is an example of a communication tool that can reach non-specialist audiences. Many other visually-rich assignments are the same. Two participants highlighted assignments to create leaflets as an example of such real-world communication:

> We were creating a leaflet … with images included in that … previously they'd have an exam, which went down like a lead balloon. So, I said, well, let's look at presenting this in a different way. So, I said, "let's use a leaflet … so, how do you … present your knowledge to another audience? So, it's still got the academic content, but you've got to use terms that Joe Bloggs is going to understand. (Riley)

> But also remember as health professionals, we do health promotion and things like that. So, we give information to patients and design pamphlets and health promotion leaflets and things – so, it's all part of it, depending where they're going to go, to be employed. (Chris)

And, Drew said simply "If you are communicating to non-specialists then I always use visuals". By doing so, Morgan argued that employability is also improved. They tell their students:

> In your job, you may be asked to communicate very, very complicated technical information to coaches and athletes ... If you know how to knock up an infographic very, very quickly and provide that information, athletes and coaches are going to listen to you … You'd think 'I can't give them an essay—2,500 hundred words, but do you know what, I can knock up an infographic, which I can beam to their phones', … and things like that can make you stand out in a job interview. (Morgan)

Jamie also acknowledged that being able to communicate in a wide variety of formats boosted employability:

> With my employability hat on, when we're thinking about, well, what is what is special about a biology degree? What do biologists do that really separates them from the rest of the sciences? I think it's that broad communicative experience, So, our students write essays, they do presentations, they do posters, they do blogs, we do video science communication. So, our students are relatively capable of communicating in a really nice broad range of ways, and I think that's a really valuable thing. (Jamie)

It is interesting that Jamie considers this to be something that separates biologists from other scientists as there is a push for more science graduates to able to communicate their field to non-specialist audiences as will be discussed in the following chapter.

6.3.2.2 Student choice of more visual topics

For some participants, it was acknowledged that the best examples of how visuals were used in their subject area was in final year projects, when students themselves have the opportunity to choose their topics. When asked about whether an increasingly visual society had impacted their discipline, Pat suggested that to some degree they had "remained separate", but that "the projects are definitely where you know, there are changes" and in referring to choosing more visual topics said "individual students will do that". Kennedy brought to mind an interesting example, despite their subject area having little staff-generated visual literacy development:

> It does make me think actually ... we had a student at the People's History Museum in Manchester, and their project was about these old style 1930s banners that we used in trade union politics. (Kennedy)

There is a lot of visual material around politics dissemination and political campaigns and with a little encouragement, it is easy to imagine more students choosing similarly visual projects.

Furthermore, on a project where a student wanted the views of participants with low verbal and written literacy, Riley was impressed that their student had found a visual alternative for data generation:

> One student did self-portraits. So, it was with children with—so post 16, but with SEN very, quite severe learning difficulties, challenges, emotional behavioural issues. So, she wanted to try and get a sense of what they thought inclusion was. So, rather than doing an interview with … the carers or the parents she wanted *their* idea. So, she got them to draw images. And it was amazing from that data of how a) They felt empowered because they were being asked. And b) the images were really interesting. And she was able to analyse those. (Riley)

In a subject area where there are significant issues with using visual source material due to ethical considerations, encouraging students to think of such creative ways of generating data may open up interesting avenues of research.

Whilst these are only two specific examples, they show that a potential bridge would be to encourage students to think about using visual sources and visual methodologies more in final year projects when there is not the pressure of teaching and marking large cohorts. Some disciplines like geography do introduce visual research methodologies early, and even if, as Sam indicated earlier, they do struggle a bit at that stage, it still means they are more aware of these as options when it comes to their final year choices. Research methods modules typically take place at Level 5 in order to prepare students for projects in their final year; there are 19 such modules occurring in seven of the ten wider subject groups at the case institution. However, only one of their module specifications referred to using visual source material or visual methodologies. Introducing visual methods into more modules of this nature would undoubtedly act as a bridge to some interested students, even if the majority of the cohort chose more traditional methodological routes.

6.3.2.3 Visual assignments can be more interesting/enjoyable to mark

Marking essays and reports can be dull and repetitive compared to marking more visual assignments. This was clearly acknowledged within the interviews. For example, Morgan admitted they had chosen their infographic style assignment because they are “bored out of

my brain marking seventy 2,500 word essays. It's too much, and it's incredibly dull as well" and Jamie had chosen a poster assignment because "the idea of marking 120 individual project reports probably would have driven me insane". Wynn also acknowledged that they found presentations more interesting to mark and other participants were honest that marking visual work was simply more enjoyable and had in some cases, partly included such an assignment for that reason:

> Oh yeah, I enjoyed it more. Yes. Plus, you can see all the work that they have put in. Let me see if I have an example—some of the posters were absolutely brilliant… (Chris)

> So, I was trying to think 'What could I do that would be more "this is fun to mark" [and] this *is* fun to mark, and the students put so much into it. (Morgan)

Although, it was also to make it more interesting for the students:

> We said, we've got to be more up-to-date and more exciting. And I think the visual stuff makes it more exciting. (Glenn)

> I think the rationale was to make it fairly interesting. (Riley)

Even when not specifically referring to their own enjoyment, participants used positive words like "fantastic", "amazing" (Glenn); "lovely" (Morgan and Riley), "brilliant", "stunning" (Morgan); and "beautiful" (Riley); when referring to visual work the students had produced. This, and the acknowledgement that many students appear to put in extra effort as Morgan and Chris both stated above, implies a potentially more emotional connection to the assignments by both students *and* staff than may be seen towards written equivalents. This adds another dimension to the emotional connection by students that was noted by Archer (2006) and Milkova et al. (2013) in the literature review.

6.4 Chapter summary

Analysis of the interview data confirmed the existence within the case institution of nearly all the potential barriers and bridges to developing visual literacy identified in the literature review. Accordingly, for barriers, ingrained issues like logocentric attitudes and some resistance to change were present, though not in all areas; some staff assumed that students would naturally pick up many of the visual literacy skills they needed without intervention; and whilst some assessment was taking place, in many cases it was not adequately assessing the range of visual literacy skills that the assessments had the potential to develop. Additionally, the participants confirmed that students often struggle to understand the expectations of

visual assessments and some lack the confidence to create visual media and use images extensively in their work. Lack of confidence in staff was a confirmed issue in those areas with less visual literacy development and some staff admitted to not being very confident in teaching and assessing some elements of visual literacy that they nevertheless thought were generally important in their discipline. Similarly, with bridges, the use of the University Library to support visual literacy development was confirmed (though it was thought this could be expanded) as was the role of visual assignments in making the overall assessment load more equitable. That these bridges and barriers to developing visual literacy were noted in both the literature review and independently confirmed by participants amongst the relatively small number interviewed goes some way to justifying the findings of this part of the research. Literature review is a process that I returned to regularly throughout this research project and the part of the review identifying bridges and barriers was not completed until after the interviews were undertaken. It was therefore unlikely that I could have unwittingly or subconsciously directed my participants to confirm the bridges and barriers identified therein.

In addition to confirming some of the findings of the literature review, the interview data suggests a further five potential barriers and three bridges. These newly identified barriers include larger cohort sizes, which made assessing visual work more challenging; the predominance of partnering most visually-rich assessments with oral components, which adds anxiety to the assessment process; and difficulties in assessing innovation when this is more difficult to define and there is a call for assessment rubrics to be more transparent. A potential barrier about the nature of visual rhetoric and visual argument was also noted, though it is acknowledged that this is complex and may be an underlying aspect of the already confirmed logocentricity of academic communication. Nevertheless, unpicking the cause of that logocentricity may be useful in beginning to challenge it. The final additional barrier identified is actually the converse of one of the bridges recognised in the literature review – that suitable assessment rubrics for visually-rich assignments are not freely available. The institution provides one for presentations, but this has limitations as will be discussed in the following chapter. Rubrics for other assignments types, including ones that do not require oral elements are not provided centrally.

The newly identified bridges include the ability of visually-rich assignments to more accurately represent real-world communication. This may seem obvious given a key premise of this thesis is that we are living in a more visual society where visual communication is increasingly prevalent; however, it is only now becoming a notable bridge due to an institutional move to a competence-based portfolio which calls for assessments to be more relevant to real-world

situations in order to improve student employability. Many examples of such real-world assignments take the form of communicating with non-specialist audiences which is called for in several subject benchmark statements and discussed in the next chapter. A further identified bridge was that students themselves, given the opportunity, encouragement and guidance, may choose to work more closely with images in their final projects and therefore develop visual literacy skills without staff being overwhelmed, as they may be when working with larger cohorts. This bridge will only help those students that choose such projects, but it may at least provide equal opportunity for such choices to be made. The final bridge may seem like the most superficial but, as such, it is one that is perhaps easily overlooked and yet may be one of the most important. Marking visually-rich assignments is simply more enjoyable than marking essays. Staff use language that indicates they may be connecting more with such assignments and are excited and impressed when students excel—perhaps because, as indicated in the literature review, students themselves connect more emotionally with such work and that is recognised. If other barriers can begin to be dismantled and bridges built, then more staff may be encouraged to set assignments that develop both visual literacy and a deeper personal connection to the 'amazing' and 'beautiful' work that is produced.

The following chapter will discuss these findings and those of the previous chapter. It considers the significance of the barriers identified and how the bridges could work to overcome the most surmountable of these.

Chapter 7: Discussion

7.1 Introduction

This chapter will discuss the findings presented in Chapters 5 and 6: the audit of the module specifications and the bridges and barriers to developing visual literacy confirmed and identified by interviewing academic staff.

There are two main discussion points rising from the findings related to the first research question: *To what extent is visual literacy developed in a higher education institution's curricula?* These are:

- The significant amount of variation found between subject areas in the audit of module specifications and the unequal mix of critical and creative visual literacy skills found in many, meaning it is likely that many graduates cannot be classed as visually literate (covered in section 7.2).
- The highly specialist nature of many of the developed visual literacy skills which may lead to graduates having a lack of transferable skills in this area (covered in section 7.3).

The further research questions: *What could be potential barriers/bridges to developing visual literacy within the institution?* identified several barriers and bridges and the main discussion points from these are:

- The significance of many of the recognised barriers and how easily they may be overcome (covered in section 7.4)
- How the identified bridges can begin to negate these and encourage visual literacy to be developed more widely (covered in section 7.5).

7.2 Variation in opportunities to develop visual literacy skills

The module specification audit found that the number of opportunities that students had to formally develop visual literacy varied significantly depending on the subject area they were studying. A few subject areas had a relatively high number of modules with opportunities for development, but many had low numbers of such modules. In addition, where visual literacy was identified as being explicitly or implicitly developed (see section 4.5.1.1), there was often an imbalance in the range of skills involved, with some subject areas developing more critical skills, and others encouraging more creative skills. Far fewer subjects gave students equal opportunities to develop both type of skill and only three subject areas were identified as clearly doing this in a high proportion of modules.

Chapter 2 provided evidence and presented the case that all graduates need to develop visual literacy, regardless of the subject they study. Being visually literate means having abilities in both critical and creative aspects of visual communication and these abilities need to be taught; they are not automatically acquired through exposure to images and visual material (ACRL, 2011). The audit shows that only students studying a small number of subjects are likely to have graduated with anything like the balanced and advanced skills in this area that would merit the description of being visually literate.

In addition to the arguments made in Chapter 2, there is a further strong argument that the UK Quality Assurance Agency for Higher Education (QAA) expects graduates to develop many visual literacy skills and this discussion will consider whether making this expectation explicit in subject benchmark statement (SBSs) can explain any of the variation seen in the audit of module specifications at the case institution.

7.2.1 Expectations for graduates

In the UK, what is expected of graduates in a given subject area is set out in a benchmark statement published by the QAA. As well as the knowledge that graduates in a subject are expected to gain, each SBS provides information about the skills, both subject-specific and generic, that students in that subject area are expected to possess by the time they graduate (QAA, 2020b). Universities in turn are expected to use these statements when designing and reviewing their programmes and the QAA's own academic review process checks that each institution does this (QAA, 2015). Some SBSs cover wider subject areas than others and their lists of knowledge, understanding and skills are therefore more flexible and not expected to be definitive checklists. However, programme designers are expected to choose those that are appropriate for their field of study, and justify their choices during the academic review process. In addition, what is appropriate for a field of study can change in light of new directions in the wider discipline (such as visual criminology as mentioned earlier) or in society (as communication methods themselves change) and SBSs are regularly reviewed to ensure they remain appropriate. Not all SBSs map exactly onto subject areas at the case institution: some areas are covered by more than one statement and some statements cover more than one subject area, However, all subjects have at least one SBS that is applicable to their area.

Several SBSs have statements that directly relate to visual communication/data visualisation or using visual source material (see Table 7.1). Such statements can be generic or subject-specific. For example, the *Early childhood studies* SBS (which covers some of the Education subject area) states graduates should be able to:

> communicate ideas and research findings by written, oral and *visual* means [emphasis added] (QAA, 2019k:19)

and the *Area studies* SBS (which covers the American Studies subject area) has a generic skill indicating graduates should be able to:

> present materials orally *and visually* in a clear and effective manner, using information technologies where appropriate [emphasis added] (QAA, 2019b: para 4.4)[11].

Even if statements are listed under subject-specific requirements, they can still be fairly generic. For example, graduates in *Area studies* should have:

> the ability to use research techniques to identify, record, read and critically analyse and interrogate a range of primary and secondary written and/or oral and/or *visual sources* [emphasis added] (QAA, 2019b: para 4.3).

Though others can be more obviously subject-specific, as can be seen by this statement from the *Communication, media, film and cultural studies* SBS (which covers FMDD) which states its graduates should:

> demonstrate the ability to … initiate, develop and realise distinctive and creative work within various forms of writing or of aural, *visual, audio-visual*, sound or other electronic and digital media [emphasis added] (QAA, 2019f: para 5.4 iii)

and this one from the *History* SBS which states courses should foster:

> the ability to read and analyse texts and other primary sources, both critically and empathetically … Primary sources include *visual* and material sources such as topographical evidence, *paintings, coins, medals, cartoons, photographs and films* [emphasis added] (QAA, 2019u: para 3.1).

For one or two statements, the word 'visual' was not included but the materials addressed were clearly visual, as in this one from the *Geography* SBS (which partly covers GEES) which indicates a geographical education should develop skills in:

> critically evaluating, interpreting and combining different types of geographical evidence (for example, texts, imagery, archival data, maps, digitised and laboratory data) (QAA, 2019s: section 4.7)

[11] For ease of reference, where a statement in an SBS has a specific paragraph number that is given rather than a page number. Where no paragraph number is available, the page number is provided.

Table 7.1 Indication of which SBSs relating to subject areas offered at the case institution have *specific* mentions relating to visual/graphical material

Subject Benchmark Statement	**Visual communication or data visualisation (creative skills)**	**Visual source material (critical skills)**
With specific mention of visual material		
Archaeology	Yes	Yes
Area studies	Yes	Yes
Biomedical science	Yes	Yes
Biosciences	Yes	Yes
Communication media, film and cultural studies	Yes	Yes
Criminology	Yes	Yes
Dance, drama and creative performance	Yes	Yes
Early childhood studies	Yes	-
Earth sciences, environmental sciences and environmental studies	Yes	-
Economics	Yes	-
Education studies	Yes	-
Forensic science	Yes	-
Geography	Yes	Yes
History	Yes	Yes
Languages, cultures and societies		Yes
Mathematics, statistics and operational research	Yes	-
Music	-	Yes
Physics, astronomy and astrophysics	Yes	-
Politics and international relations	Yes	-
Psychology	Yes	-
Sociology	Yes	Yes
The following SBSs have no specific mention of visual material Accounting, Business and management, Chemistry, Creative writing, Computing, Engineering[12], English, Events, hospitality, leisure, sport and tourism, Finance, Health studies, Law, Paramedics, Philosophy, Social work. This table produced by analysing all relevant SBSs (QAA, 2012; 2014a; 2019a-ai; 2020a)		

The following section will compare the information in Table 7.1 with the results from the audit to see if this may explain the level and types of visual literacy being developed in a subject as suggested by the module specification analysis.

[12] As all engineering degrees in the UK are accredited by the Engineering Council, the *Engineering* SBS contains no statements of its own and instead points the reader to their website (Engineering Council, 2020) for the necessary standards. These do not mention visual material directly either.

7.2.2 Level of visual literacy development and SBSs

Overlaying Figure 5.25 (showing subject areas in order of identified visual literacy development) with information from Table 7.1 gives the diagram in Figure 7.1. Darker dots indicate that visual communication or data visualisation (creative visual literacy skills) are mentioned in the SBS and the lighter dots indicate that the analysis and evaluation of visual source materials (critical visual literacy skills) are mentioned in the SBS. The dotted line indicates the centre point. Of the thirteen subject areas that sit to the left of this (with 20% or more module specifications identified as developing visual literacy), ten of them refer to visual materials in the associated SBSs and seven of these refer to both critical and creative skills. Of the thirteen subject areas that sit to the right of the middle point (with <20% of module specifications developing visual literacy), six (and a half[13]) refer to visual materials and only one refers to both critical and creative skills.

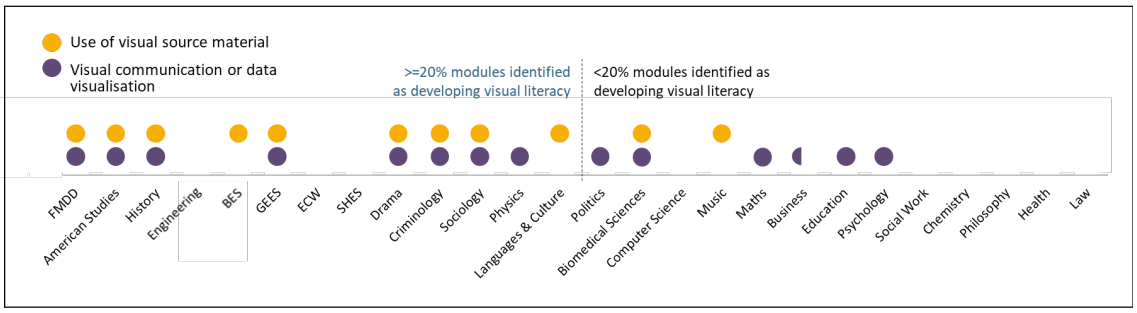

Figure 7.1 Subject areas in order of identified visual literacy development (L>R) indicating which refer to visual material in their related SBSs

There is clearly a difference between the two sides of the chart that indicates there may indeed be a relationship between the amount of visual literacy development and the fact that visual material is recognised in the SBSs. Such statements could therefore potentially act as a further bridge to visual literacy development. In addition, there is some indication that when looking at the types of skills developed, those subjects that refer to both visual communication/data visualisation *and* visual sources in the SBSs are indeed more likely to have more balanced levels of creative and critical skills referred to in their module specifications. Of the eight subject areas that have both mentioned, only History and American Studies had significant imbalances. Though, as has already been acknowledged, presentation assignments in those areas were more likely to develop the creative visual literacy skills than many other areas due to the nature of the topics involved. This was also confirmed by a participant in one

[13] Business is covered by three different SBSs and only Economics mentions data visualisation so only a fraction was assigned.

of my pilot interviews who taught History and explained how the use of visuals in presentations was indeed assessed. If those 'potential' modules were included in the analysis, then this imbalance would be less emphatic (unlike in most other subject areas with imbalances where it was the critical skills that were under-represented). Admittedly, for those subject areas where only visual communication/data visualisation *or* visual sources were mentioned in the SBSs there seems to be no relationship to the findings of the audit. Also, some subjects with low levels of overall development, like Business, Education and Psychology, do lean towards the type of skill mentioned in the SBSs but others with higher levels like BES, Physics and to some extent Politics, appear to favour development of the other skills group.

It is difficult to say if the relationships that do exist are because programme and module designers are being influenced by the SBSs or if the panels writing the SBSs are acknowledging the importance of visual material to their subject. However, several of the subject areas with lower proportions of modules developing visual literacy are increasingly associated with visual material (see upcoming sections 7.2.3.2, 7.2.4.2 and 7.3.2), which implies the former could be more likely. In addition, the *Inclusive Assessment* policy at the case institution states:

> we must commit to only assessing the learning outcomes/competencies that are set out in QAA subject level benchmarks or stipulated by Professional, Scholarly or Research Bodies (PSRB) (Lawrence & Nabb, 2020).

This suggests that programme and module designers should be using the SBSs and PSRBs as their guide. This policy did not come into effect until September 2020, and the module specifications audited were for the 2018/19 academic year, but it is clear that the direction of the relationship is certainly expected to be that the SBSs influence module designs.

That said, the fact that there are discrepancies in what could be a straightforward relationship (for example the relatively high levels of visual literacy in ECW and SHES despite there being no mention of visual materials in their SBSs and the relatively low levels in Education and Psychology despite mentions in theirs), suggests that other factors may be coming into play. For example, some statements could *imply* the use of visual material is required even if this is not stated directly, and how these have been interpreted could explain the discrepancies. This is discussed next.

7.2.3 Implied expectation for visual communication

With reasonable interpretation, multiple statements in the SBSs imply visual communication would be needed even if it is not referred to directly. These fall into two categories: ones that

suggest communication should be through a range of media and ones that suggest graduates should be able to communicate with a range of audiences.

7.2.3.1 Range of media, formats or strategies

Nearly half the relevant SBSs (15 of 33) refer to the need to be able to communicate with a range of media, formats or strategies. For example, the *Business and management* SBS states that generic skills needed include:

> Communication and listening, including the ability to produce clear, structured business communications in a variety of media (QAA, 2019d:7).

And the *Biosciences* SBS states its graduates should be able to:

> communicate about their subject appropriately to a variety of audiences, including the general public, using a range of formats and approaches (QAA, 2019c: para 4.4 i).

Such statements clearly imply the need for multiple communication strategies, and it would be difficult to argue that these would not include visual communication of some form.

As well as communicating in a variety of media and formats, nearly half the SBSs (N=14) suggest that assessment should or could include multimedia or web-based communication which in most disciplines would also include visual material or some design skills. For example, the *History* SBS states that students should develop abilities which give them "the capacity to design websites" (QAA, 2019u: para 6.4) and the *Area studies* SBS states that courses *could* include:

> assessments focused on digital literacy such as the creation of websites, or carried out using blogs, wikis, or other tools (QAA, 2019b: para 5.6).

These examples show that for some subjects this is an expectation whilst for others it seems more optional. Regardless, the fact that it is even suggested implies that the importance of such web-based, multimedia communication is beginning to be recognised which in turn would support a move towards the inclusion of more visual material.

The statements above relate to History and American Studies which both had relatively high levels of identified visual literacy development, and the statements indicate that development of skills involved in creating web-based multimedia outputs are expected or at the least encouraged. Despite this, in History, only two modules were identified that required students to create web-based multimedia projects. One was an optional L4 module and the other a core

L5 module. In American Studies, there were only three modules requiring multimedia web-based material to be created, none of which were core and one of which was one of the History modules already mentioned due to joint accreditation. The core module indicates all students studying History at the case institution got a chance to create a multimedia, web-based resource, with its inherent need for elements of visual literacy, but it does imply that there was little opportunity to allow for the skills involved in doing so to grow beyond this one assignment.

Interpreting the SBS statements as something that can be 'ticked off' rather than looking at the *development* of the skills involved could contribute to fewer and less advanced visual literacy skills being developed rather than the full range and higher levels possible. Whilst some of the visual literacy skills will be similar to those used when creating more ubiquitous posters and presentations, creating web-based resources requires additional technological, design and legal knowledge that are further elements of visual literacy. Indeed, there is a recognised skills gap between graduate creative digital skills and those needed by employers (Wilson et al., 2017; Somerville, 2019) and it is unlikely that these can be developed via a single project or that students will learn how to adapt those skills to different audiences if such assignments are so limited. The literature is clear that feedback and opportunities to act on it are essential to students' academic development (see for example Hattie & Timperley, 2007; Watling & Ginsburg, 2019; Cohen & Singh, 2020) but with only one or two opportunities to gain such feedback, it is difficult to see that it could be anything like as effective as the feedback given in order to improve more common academic practices such as essay writing. This is despite findings that what employers really want is graduates who are able to adapt the way they communicate disciplinary knowledge to a range of different tasks and audiences, rather than those expert in communication styles (such as essays) that are rarely used beyond academia (Moore & Morton, 2017). This is of course, true of all students, not just those studying history or American studies.

The earlier analysis regarding the prevalence of posters and presentations shows that for the majority of subjects these were the 'go to' visual/multimedia option and students may not be getting many opportunities to develop visual literacy skills in less academic, more real-world contexts. Additionally, the interview data suggests that the visual elements in commonplace assessments like presentations may be only partly assessed (for example, concentrating on design rather than how visuals are used as part of a persuasive argument), meaning opportunities to develop additional skills are lost. An SBS requiring students to be able to communicate using a range of media/multimedia is therefore providing a lot of room for

interpretation that may or may not be benefiting students. It does, however, leave enough leeway for institutions to drive through their own agendas such as providing more real-world assessment tasks (as was recognised as a bridge in the previous chapter) whilst still keeping within the bounds of the SBS requirements as suggested by the *Inclusive Assessment* policy mentioned earlier.

7.2.3.2 Variety of audiences

The Biosciences statement quoted on page 159 also includes the need to communicate to 'a variety of audiences, including the general public' and just under three-quarters of SBSs (N=24) also mention the need to either communicate to range of audiences or to communicate with non-specialist audiences. For example, the *Economics* SBS states its students' attainments generally include:

> An ability to articulate, communicate and present economic arguments to both specialist and non-specialist audiences (QAA, 2019m: para 4.3 vi).

Communicating with non-specialists typically involves visual materials, as was confirmed by the interview participants (see section 6.3.2.1) as well as by the literature. For example, concentrating on just one subject area, there is considerable research showing that images improve the effectiveness of health communication messages (Brookey & Graham, 2008; Rawlings & Tieman, 2015; Mackert et al., 2016; Mbanda et al., 2020; Niu et al., 2020), including in the current COVID-19 pandemic (Hamaguchi et al., 2020; King & Lazard, 2020) and such messages have been shown to be more effective when visual materials are created by health professionals themselves (Houts et al., 2006). Indeed, this is recognised in the *Health studies* SBS which states graduates should be able to:

> communicate with others in a clear and articulate manner, within [sic], a wide variety of audiences through a range of media (QAA, 2019t:7).

Furthermore, communication is a two-way process and visual techniques such as photovoice (where participants' own photographs, taken to illustrate issues from their personal perspective are analysed and discussed) have been shown to enable conversations about health topics with people who otherwise find it difficult to speak out, such as adolescents (Laholt et al., 2019; Marim & Partelli, 2019), dementia sufferers (Evans et al., 2014) and their families (Guerra et al., 2013). Images have also been shown to help when communicating through language and cultural barriers (Pratt & Searles, 2017) which is commonplace in nursing, midwifery and other health professions. A higher level of visual literacy could therefore enhance the effectiveness of public health communication and interpreting the SBS

statement in this way would imply that developing it should be a key part of any communication skills training in this field.

Beyond health communications, there are many more examples of the importance of using visuals to communicate disciplinary information to non-specialists. This is particularly notable in science subjects (see for example Frankel & DePace, 2012; Rodríguez Estrada & Davis, 2015; Scite, 2019; Vandemeulebroecke et al., 2019) and also in areas like business where there are countless books aimed at a general audience that by their design show the importance of visuals when explaining complex concepts; for example in marketing (Doherty, 2015), economics (Wolfe, 2011; Kishtainy, 2012), accounting (York & Robilliard, 2020) and management (Rossiter, 2019). Also, infographic-style data visualisations are increasingly used to engage with the general public in every subject and on every topic, (Figure 7.2 shows examples representing A-Z). Research suggests such infographics can be highly effective for both recall and changing behaviours (Egan et al., 2021). It would therefore be difficult to argue against the need to use visuals when fulfilling the needs of such statements in the SBSs.

Figure 7.2 Infographics A-Z: Aardvarks to Zygotes
(sources Cincinnati Zoo (2018) and allposters.com (2020) respectively)

The discrepancy noted earlier: that some subject areas with higher levels of identified visual literacy development (such as ECW, SHES and BES) either do not have statements in their SBSs specifically relating to visual materials or have only one type of skill mentioned, may be explained by statements like those identified above. All the SBSs for those subjects do include statements that fall into one or more of the above categories. This could mean that programme and module designers in those areas are indeed interpreting the statements as I have suggested, and their interpretation could itself be acting as a bridge to increased visual literacy development. This was partially confirmed by the interview participants from BES and

SHES who both acknowledged the importance of gaining a wide range of communication skills and the usefulness of visual methods for non-specialist audiences. However, any subject areas that include these statements that have low levels of identified visual literacy development, may be interpreting them differently. In order to increase visual literacy in these areas, other bridges may be needed.

7.2.4 Visual literacy expected in *all* subject areas

It is worth noting that whilst specific requirements in SBSs may act as bridges as programme designers consult these when developing new programmes and modules, there is another document that should also be taken into account at that time. The *Framework for HE Qualifications* (FHEQ), sets out the requirements for *all* degrees awarded in England, Wales and Northern Ireland. Statements therein relating to the same areas as above also need to be considered.

7.2.4.1 Visual communication (creative visual literacy skills)

Section 7.2.3 has argued that visual communication methods can improve the effectiveness of communication with non-specialists and that a range of media also suggests increased use of visual methods. That being the case, all degree programmes should arguably be developing the associated visual literacy skills as the FHEQ states that at L5 students should:

> effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences (QAA, 2014b:23).

And, at L6 they should be able to:

> communicate information, ideas, problems and solutions to both specialist and non-specialist audiences (QAA, 2014b:26).

Nevertheless, the data in Figure 7.1 suggest that more precise interpretations of these statements in individual SBSs, to highlight the visual elements, may encourage programme designers to specifically recognise visual communication skills and articulate the need for these in module specifications.

7.2.4.2 Visual analysis (critical visual literacy skills)

An increase in the use of visual communication will naturally involve some degree of visual analysis in order for the appropriateness of using particular images or other visuals to be determined or the effectiveness of design choices to be evaluated. Beyond this, however, analysis of visual source material is not mentioned specifically in the FHEQ. Although, at L6 it does state that students must have demonstrated:

> the ability to … make use of scholarly reviews and primary sources (for example, refereed research articles and/or original materials appropriate to the discipline) (QAA, 2014b:26).

What is 'appropriate to the discipline' is of course up to the writers of the individual SBSs and programme designers to decide, but with the increasing use of visuals in society there is a case for most disciplines to need to approach them critically as well as use them within their communications.

Take, for example, law. This is unique in being the only subject with a standard SBS[14] that has no statements at all that could be interpreted as requiring some visual literacy. It is perhaps, therefore, unsurprising that it had the least identified development of any subject area. As aforementioned, this could be due to its long history of verbal and written reasoning. Law is a profession where the right or wrong word or phrase can have huge impact, and it could be argued that images do not possess the same level of precision. Possibly as a result of this, there is no mention of communication other than written and oral in the *Law* SBS (QAA, 2019x). However, the FHEQ statements mean that law graduates also need to be able to communicate with non-specialists and in a variety of forms and use 'original materials' relevant to the discipline of law. Law specialists may argue that the nature of their profession means that visual communication or sources are not appropriate and are not needed to fulfil these requirements. However, not all law graduates will go on to enter the legal profession, and, as can be seen from the examples below, those that enter the profession do increasingly need to work with visual materials. It is therefore surprising that so little about visual or multimedia communication has made its way into the SBS or the curriculum. Whilst law does have its own unique forms of discourse, there are calls for it to adapt and embrace visual and multimodal forms of communication in order to reflect the culture in which it operates (Sherwin, 2006).

To illustrate, visual images now "dominate" today's courtrooms (Golan, 2008:7); examples include DNA profiles, CCTV images, and video testimony to pick out just a few. Legal professionals need to be able to deal with them both sensitively and critically—both aspects of visual literacy. A narrative running through *Beyond Bullet Points* (Atkinson, 2008), a seminal book about effective PowerPoint presentations, is the story of how a presentation with powerful imagery was used to help win a major litigation case against tobacco companies in the US, showing that the ability to create effective visual media is also a growing area within

[14] Engineering has a different style of SBS as explained in footnote 12.

the profession. As with health, visuals can also be crucial in cases and situations where there are potential language and cultural barriers (Murray, 2014). Legal minds are struggling to find ways to ensure that justice is served effectively when images can over-emphasise issues, make things seem more real, be manipulated, and just fail to 'fit' with a legal infrastructure dominated by words (Feigenson, 2014). All these concerns mean that it is now essential that law graduates are visually literate in order to navigate what is a potential professional minefield.

Murray (2014:65) claims that

> The law books, office memoranda, and legal briefs of tomorrow will likely have color, graphics, photographs, embedded videos, active links, depictions, and diagrammatical elements; the instruments of legal practice will, in short, be highly visual. This "tomorrow" is in the very near future.

And yet, Sherwin (2018:55) admits that legal education has already "not kept up" with the move to the digital forms of communication present today. The lack of attention to visual materials in the current Law curriculum may be failing to prepare graduates for a further potential explosion of visual materials entering the legal domain indicating that such material is therefore 'appropriate to the discipline'.

Similar cases can be made about the increased use of visuals in areas relevant to every subject area, including those others with relatively low levels of identified development; the cases within health and business given earlier are but two of many.

7.3 The need to balance specialist and generic visual literacy skills

Recognising how visual material is relevant to a specific subject area, as in the examples above, is an important step in making a case for the development of visual literacy skills in that area. However, when that material is so specific and technical, such as was recognised in the module specifications for some STEM subject areas, there is an increased chance that graduates will be less able to transfer these skills to other situations or even use them to communicate disciplinary knowledge to non-specialists. This is perhaps what the interview participant from BES was implying when they said that the broad communicative experience was what separated biology from other science degrees, as the module specifications did not suggest this was happening significantly in other STEM subjects. The QAA requirements and those of employers and HE institutions, who value public engagement activities (Turner, 2020) would imply that more needs to be done in this area. Visual communication in STEM subjects should

therefore include using both the specialist visualisations needed for the discipline but also an understanding of how to simplify these and produce other more effective forms of visual communication for non-specialists.

7.3.1 Visual communication of STEM subjects

More than two decades ago Trumbo (2000) recognised that new media technologies were opening up previously unforeseen ways to visually depict and communicate scientific information, both to other scientists and to the public. She went on to warn that this made it "more important than ever to ask questions about what and how these fascinating images of science communicate" (page 380). In other words, she was calling for scientists and science communicators to be visually literate by making "visual science communication … an important component of both scholarly research and professional practice" (pages 380-81). This type of communication needs both the highly specialist types of visual literacy mentioned in the module specifications for STEM subjects *and* more generic visual literacy to communicate with non-specialists. This latter needs addressing specifically because it can be more difficult than communicating with other knowledgeable scientists (Sosdian & Coullon, 2019). As with other fields, STEM students need to learn how to adapt communications to different audience needs.

For most subjects, presentations and posters are a good starting point for developing visual communication skills (though as was pointed out earlier, skills in using other media such as web-based formats also need developing). However, in STEM subjects, posters and presentations are often specifically focused on scientific or academic audiences, for example:

> Present their research work using a poster format, and articulate their findings with clarity to an academic audience (Chemistry specification)

> … covering oral communication approaches, such as scientific presentations (Biochemistry specification)

> in such a way to enable understanding and engagement of an academic audience. (Engineering specification)

There was an acknowledgement in Engineering in particular that communicating with non-specialists was important as there was a recurring learning objective of:

> Choose appropriate formats and styles to communicate complex topics to academic, specialist and *non-specialist* audiences [emphasis added].

This, or very similar statements occurred in 17 Engineering modules; however, ten of these were categorised as “not apparently developing visual literacy” as nothing within them indicated that visuals were being used. Of the other seven, only three were assessed using presentations or posters. Admittedly, the nature of the other assessment tasks was not particular clear (often described simply as ‘Assignments’), but this could mean that the connection between visual communication and non-specialist audiences has not been sufficiently recognised in this area.

Several presentation assessments in STEM were explicitly referenced as being about communicating to peers; however, these tended to highlight the oral elements only and teaching I have undertaken in presentation skills with some STEM students has confirmed their discomfort with oral communication. Both tutors I worked with acknowledged the high proportion of introverted students in their subject area and one admitted that some students have such difficulties that they simply do not attend the assessment and prefer to forego the associated marks—a point recognised more widely by Nash et al. (2016). Concentrating on the oral elements invariably disproportionately disadvantages such introverted students. This is returned to in section 7.4.2.1.

7.3.2 Wider perspective needed in STEM subjects

Focusing on subject-specific visual literacy skills can also limit the perspectives that STEM graduates can bring to analysing visual materials. On occasion, the boundaries between physical science and social science are not clear-cut and a wider set of visual literacy skills is called for. For example, in Forensic Science (which in the case institution was part of the Chemistry subject area which had the least identified visual literacy development of any STEM subject) the only explicit and implicit development of visual literacy was highly subject-specific and the potential development was in the form of two modules partly assessed by posters (for stated ‘academic audiences’) and two by oral presentations. However, forensic science is an area that, like law, is endemic with different forms of visual evidence, much of which would need explaining to non-specialist audiences, often for extremely high stakes. Visual evidence is mostly in the form of photographs: either of crime scenes, material evidence or of scientific results such as DNA analyses. Porter (2007) argued that analysing forensic photographs needs more than just scientific skills, it also needs the type of cultural analysis used by sociologists to look for underlying meaning as well as purely scientific ‘facts’; that is, to use wider visual literacy skills.

Forensic scientists also need to notice small details when observing crime scenes which calls for a type of visual intelligence that can be learned through looking carefully at artworks and other imagery (see Herman, 2016). Herman works with the police and uses similar, though slightly different technique to the VTS approach used successfully in health education initiatives described earlier and is a highly transferable form of critical visual literacy.

Many of the highly subject-specific visual literacy skills identified in the STEM module specifications may not, therefore, prepare students for roles within or beyond those traditionally associated with their subject areas.

To summarise the discussion so far, in the highly volatile employment market that graduates are now entering, with multiple career paths likely, the ability to adapt communication to different circumstances and to understand the multimodal messages that surround us are key employability and indeed life skills. Almost certainly because of these recognised societal needs, there is an implicit requirement from the QAA that graduates are able to critically engage with a wide variety of sources and communicate using multiple methods adapted to different audiences. For many students at the case institution there seems to be a lack of sufficient opportunity to develop the understanding and skills to appreciate the role that visual materials play in this, and they are not developing sufficient visual literacy to engage with visual media with the confidence and fluency needed to excel in careers and a wider society dominated by visual messaging.

The interview process in this research identified a number of barriers that could be preventing many subject areas from developing this visual literacy in their students. The significance of these and how identified bridges can work to overcome them is discussed next.

7.4 The significance of barriers and overcoming them

A number of potential barriers to visual literacy development were identified in the literature review and these were confirmed as present at the case institution whilst others were uniquely identified by this study. These barriers may help to explain some of the variation seen in the amount of visual literacy development across the institution. The pragmatic approach to this research puts the emphasis on developing useful and useable knowledge and so the purpose of identifying barriers is to help with the process of overcoming them. However, not all of the barriers are easily tackled, nor is there necessarily a need to address them directly in order to see them fall. This section considers the significance of the identified barriers and which it is worth focusing initial restorative efforts upon.

7.4.1 The most insurmountable barriers

7.4.1.1 Resistance to change – logocentrism and disciplinary silos

The identification of some resistance to change is expected is a large institution, and the commitment to logocentrism, potentially due to beliefs about the effectiveness of visuals in or as arguments, is one of the things that is hard to change, especially in disciplines with backgrounds steeped in the importance of words such as law and philosophy. The very nature of the UK HE system creates more disciplinary silos than is found in some other countries. The institution has in the past offered 'free-elective' modules allowing students to gain credits by taking modules offered by other departments, but this was a short lived experiment and is no longer an option. In the year the module specification audit took place, only some L3 modules or those assigned to joint programmes had any cross-disciplinary focus and these were limited in their scope. The *Inclusive Assessment* policy mentioned earlier also states students should not be assessed in skills not required by their SBSs or professional bodies which implies that interdisciplinarity is even less likely to be promoted. Advocating an interdisciplinary concept like visual literacy is therefore challenging in such a system.

Chapter 4 explained the pragmatic nature of this research which primarily seeks information that *can work* to increase levels of visual literacy development in undergraduates. Tackling ingrained issues is a long and sustained process and will, to some extent, be a fruitless exercise if attempted directly. Instead, finding useful ways to use the identified bridges to overcome some of the other barriers may be more profitable and could in-turn gradually erode these more entrenched issues. For the time being then, these ingrained issues will be put to one side in order to focus on the others.

7.4.1.2 Large cohort sizes

Large cohort size is another issue that is unlikely to be easily tackled. Growth in the number of students attending university, alongside changes to how UK HE is funded has led to an inevitable rise in university class sizes as funding-per-student decreases (Bandiera et al., 2010; Huxley et al., 2018). Whilst some research suggests a negative correlation between large class sizes and achievement/outcomes (see for example Arias & Walker, 2004; Bedard & Kuhn, 2008; Kokkelenberg et al., 2008; Bandiera et al., 2010; Monks & Schmidt, 2011) the more recent research shows that this is by no means a universal finding and the effect of class size is more nuanced than some of that earlier research suggests. The effect varies between subjects (De Paola et al., 2013; Huxley et al., 2018; Kara et al., 2021), between students of different race and gender (Ake-Little et al., 2020) and between type of university (Huxley et al., 2018). Many of these variations are also found in online classes (Thomas & Stritto, 2021) indicating a variety

of factors are at play. In addition, many issues with increased cohort size can be mitigated by changing teaching and assessment methods (Kumar, 2013; Shi, 2019). As visually-rich assessments potentially take more staff time to assess, making them the type of assessments more likely to be abandoned as cohort sizes rise (Phillips & Ahrenhoerster, 2018) this could still be a concern. However, in this research, it was only those participants with the lowest levels of confidence in teaching and assessing visual literacy that suggested large cohort sizes affected the number of visually-rich assessments they may set, and this may have been a contributory reason. One confident participant did mention it as a factor in not being able to offer as much formative feedback as they would prefer but they nevertheless still chose to set the assignment. It was also recognised that setting group work (often assessed by presentations) to partly counteract marking large numbers of assignments caused other issues with group logistics and student queries that ate into staff time—though the benefits to both staff (reduced marking) and students (development of teamworking skills etc) would usually offset such concerns.

Large cohort sizes may not be a barrier in their own right, therefore—they may just be emphasising other issues such as some staff's lack of confidence in this area and students' lack of experience. It is also a reasonable assumption that they may exacerbate issues with some other identified barriers. For example, issues related to the stress caused by partnering visual work with oral assessment may be increased, especially if this was in the context of groupwork which may cause issues for other group members as well as those students most affected. Also, supporting multiple software platforms for visual work would be even harder with more students—although there is a counterargument that more use can persuade more investment which is explained further in section 7.4.3.1 below. Nevertheless, addressing these other barriers is probably a more useful course of action that could at least ameliorate the problems that larger cohorts create.

7.4.1.3 Decreasing levels of visual literacy in schools

If there is a decrease in the level of visual literacy taught in schools (this was not tested directly as it is beyond the scope of this research), then it would be a barrier that needed addressing pre-tertiary education and so it is addressed directly in this discussion. However, this does not mean that it is something that the recommendations from this research have no possibility of influencing. With the provisos on generalisability provided in Chapter 4, there is the potential that increasing the amount of visual literacy development in Educational Studies and Teacher Education could eventually have an impact in schools. There is increasing interest and a growing body of literature around visual pedagogies, not least the creation five years ago of

the *Association of Visual Pedagogies* (AVP) with its *Video Journal of Education and Pedagogy* (AVP, 2020). Introducing potential teachers to this area may make them more interested in using such pedagogies in the school classroom. In addition, there are examples elsewhere of student teachers studying social justice through art (Giorza, 2016) and photography (White & Murray, 2016) and using visual storytelling in their portfolios (Rifà-Valls, 2011). Photo-elicitation is used to help teachers understand the life experiences of their students (Mount, 2017) and visual methodologies are being used to study curriculum reform (Moss, 2011). Generally increasing the visual literacy of students studying education disciplines could eventually impact visual literacy levels in schools, but the modest expectations of this research accept that there are many other factors that may play a bigger role.

7.4.2 The most surmountable barriers

There are some barriers than have the potential to be relatively easily overcome and where initial efforts should be focused. Before looking at *how* these barriers can be overcome by building bridges, this discussion will first briefly consider the significance of each in turn and why they act as barriers to developing visual literacy.

7.4.2.1 The predominance of partnering visual and oral assessments.

After a comment made during the interviews, a return to the module specifications confirmed that for many students there were few opportunities to develop creative visual literacy skills that were not partnered with an oral element. Whilst the sheer number of presentations and posters could be seen as an important bridge to developing visual literacy, and acknowledging that oral skills are important, the anxiety and stress that they cause for many students (Nash et al., 2016; Ireland, 2020) could mean that students fail to recognise the importance of the visual elements of the assessment. Consequently, the opportunity to develop visual literacy may also be lost. Indeed, it was confirmed in section 7.3.1, that some students are known to avoid assessments involving public speaking completely, as was suggested as a possibility by Nash et al. (2016), preferring to miss out on module marks to avoid embarrassment. For others, anxiety acts as a demotivator (Pekrun et al., 2002:97) reducing the use of "flexible, creative learning strategies such as elaboration, organization [and] critical evaluation". As such, opportunities for learning and developing important skills, some of which are often association with aspects of visual literacy, are potentially reduced.

When undertaking an assessment with an oral element such as a presentation, students have been found to vary in their cognitive approach which can influence levels of anxiety. McCarthy and Hatcher (2002) reported that speakers occupy a scale of 'cognitive orientation' with ends

represented by 'performance orientation', where speakers are most concerned with the quality of the listener experience, and 'communication orientation' where the speakers are more concerned with the message itself (see Figure 7.3). Communication oriented speakers experience less anxiety. It would therefore be advantageous for assessments to be designed to increase the likelihood of students developing a communication oriented approach. There is no argument that the ability to give an effective presentation, containing both strong visual components and persuasive oral explanations is a useful employability skill. However, there is little scaffolding to help students develop that ability that does not involve both elements. Breaking the partnership may be one way to help students focus on the message rather than their role in performing it.

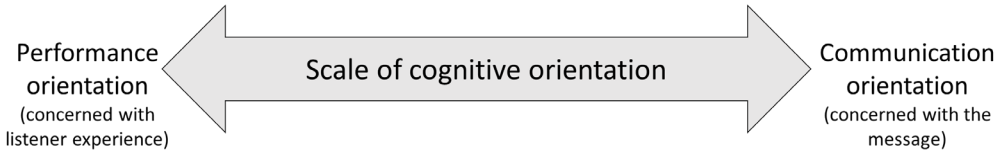

Figure 7.3 Scale of cognitive orientation when delivering a presentation
From McCarthy and Hatcher (2002)

Skills in oral communication are clearly important and being able to verbally explain visual information is incredibly useful; however, there are many occasions beyond academia when visual communication is independent of a verbal commentary. Or at least, in the case of video production, the opportunity to add a verbal commentary does not come with the same one-time chance. Encouraging academic staff to provide opportunities to develop these skills independently could be an important step in breaking down this barrier.

7.4.2.2 Difficulties in assessing innovation

Higher level skills in university assessments are often associated with students' demonstrating a degree of innovation; be that 'going beyond the reading list' (Williams, 2009), unique solutions to problem solving tasks (Tan, 2003) or producing particularly creative presentations or posters (D'Angelo, 2010). Moving away from traditional assessments to more visual, multimedia assignments can move teaching staff beyond their area of expertise and assessing innovation can become challenging. A particular aspect of this was raised during the interviews: a tension between having a transparent marking scheme that indicates to students how they can achieve higher marks and enough ambiguity for them to be able to demonstrate innovation. The staff member involved recognised a student's original approach to a blog task was something they had not themselves considered, meaning it was not acknowledged in the

marking criteria. They wondered if adding something to the rubric to encourage such good practice would represent greater transparency or whether it would prevent future students from being able to show similar innovation.

Assessing innovation encourages creativity which is acknowledged to be key to employability as we enter what is known as the 'Fourth Industrial Revolution' (Wilson et al., 2017). This is characterised by changeable and unpredictable graduate employment paths constantly reshaped by technological advancement. In addition, acknowledged attributes of creative individuals are a "tolerance for uncertainty" and an "openness to new experiences" (Matraeva et al., 2020). However, it was suggested by one participant that an ability to deal with such uncertainty may be increasingly lacking in students whose previous school-based assessment experiences have been primarily exam-oriented. Sadler (1989:139) acknowledged over forty years ago that a certain "fuzziness" may be needed in the criteria for assessments that require creativity which indicates that some degree of uncertainty in rubrics is needed. Paradoxically, this may make students more dependent on the teacher to clarify expectations, leading to less originality and less self-regulation (Balloo et al., 2018); whereas clear rubrics can enable students to work independently and self-assess performance (Jonsson, 2014). Another important consideration is that less explicit rubrics tend to disproportionately disadvantage students from non-traditional backgrounds who can have less inherent understanding of academic practices (Balloo et al., 2018) or those who commute to university and have fewer opportunities to discuss assessment tasks outside the classroom with peers (Thomas & Jones, 2017). There is a possibility that this could be extended to include those working distantly or remotely, as during the current COVID-19 pandemic, though this would need confirming by further research.

There are, however, bridges that can at least partly overcome the difficulty of balancing transparency with ambiguity and these are considered in section 7.5.1.2.

7.4.2.3 Lack of assessment/suitable assessment rubrics

For staff who are inexperienced in assessing visually-rich material, or indeed for staff who are experienced in assessing some aspects, but not others, example assessment rubrics may be important for promoting good practice and encouraging them to embrace the development of visual literacy in their students. The lack of suitable rubrics could also account for the finding that some academic staff do not specifically assess visual elements in assignments such as presentations, or that they only assess limited aspects.

It is worth noting here some issues in terminology. The word rubric has multiple meanings in education (Dawson, 2017) and so it is necessary to define what I and the institution mean when referring to an assessment rubric. As can be seen from the example in Appendix 7, in the case institution it is a framework that breaks down an assessment into required criteria (which can have different weightings assigned) and provides statements that define what is needed in terms of quality at different academic grades (1st, 2:1, 2:2 etc.) and/or percentage marks.

The case institution does provide guidance on planning and designing assessments and gives two example rubrics: one for essays and one for presentations. Surprisingly, the presentation rubric (see Appendix 7) is actually more about the presentation design, delivery and the student's ability to answer subsequent questions than about the content or argument made. Whilst the design elements are important aspects of visual literacy, and it is to be applauded that these are recognised, the lack of anything that addresses other visual literacy skills could be seen as a significant omission. For example, the only mention in the rubric of visual content (rather than design) is 'informative diagrams' which is itself included within a section titled 'professional design principles'. There is no mention of the effective use of visuals as evidence or to help an audience understand points made, which come under ACRL Standard 5. And indeed, there is nothing about their place within a critical academic argument (though, as mentioned, content and argument is completely lacking, visual or not). Whilst it is not clear how much this rubric is used, it could either be a cause or a symptom of experienced academics not assessing the range of visual literacy skills that their existing assignments *could* assess.

How the bridges can address these three most surmountable barriers are explained in section 7.5, but first, some barriers that may be indirectly overcome are explained.

7.4.3 Indirectly surmountable barriers

Some significant barriers can be both a cause of visual literacy underdevelopment and a symptom of it. As such, increasing visual literacy development by removing other barriers can indirectly overcome these barriers by alleviating symptoms. In addition, some barriers could be described as personal beliefs and attempting to address them directly could go against the value of solidarity as it would be failing to acknowledge these as recognised viewpoints within the consensus. Nevertheless, they can still act as barriers and the only way to ameliorate them is to create an environment where individuals are encouraged to challenge their own beliefs. These barriers are explained here along with the reasons for placing them in this category.

7.4.3.1 Media tools and technology

The lack of central access to certain types of technology (such as video editing software) can be a barrier, as staff need to use a range of free alternatives, with the inherent difficulty of being unable to support numerous pieces of software on different platforms on a range of student-owned devices (with the assumption that all students have access to devices that support such software). In addition, when software is provided centrally, assistance in using it is generally provided by specialists from the University Library who can help less confident staff and students—but such central services do not have the capacity to provide such support for all other software and applications.

The issue here is not that universities are unwilling to provide software for these sorts of projects, but that many companies ask such high prices for educational licensing that it can be prohibitive for all but elite and/or very large institutions, especially if few courses require it. Even Jisc, who work on behalf of HE to broker procurement deals, suggest using free online systems for video editing (Jisc, 2015), although that advice was archived in 2017 and no further advice seems to be available. Whilst free software may enable students to undertake simple editing tasks, and be an effective way to develop some initial skills, it does not introduce students to the industry standard software that they are more likely to use for these tasks in future employment.

However, this barrier is placed in this category because if enough staff make a case for needing to use such software, the institution is more likely to favourably consider the investment required to make it available on central computers despite the cost.

7.4.3.2 Student expectations and experience

The relatively small number of visually-rich assignments beyond presentations and posters, means that such innovative assessments can challenge student expectations and leave them unsure of what is required of them. In addition, it has already been mentioned that previous experiences in schools appear to make students less willing to cope with new challenges positively. If such attitudes do exist in our students then it is perhaps indicative of a wider lack of confidence in their own capabilities, which could indeed be partly caused by an exam-oriented, results-driven school system that is already thought to be affecting visual literacy levels by reducing children's experiences with more creative arts subjects (The New Media Consortium, 2005; Robinson, 2011). Additionally, with students as consumers, there is potential tension between keeping them happy and pushing them outside their comfort zone, which many visually-rich assessments may do (Bowen, 2017).

As mentioned above, the case institution cannot directly change the experiences of students before they arrive at university; however, expectations whilst at university can be managed. Students not expecting assignments requiring visual literacy is itself a symptom of students not being set such assignments. Introducing more visually-rich assignments to L4 modules, making them more commonplace, would be a simple way to ensure that they are less of a surprise in future years. In addition, providing rubrics can increase the transparency of marking schemes so that the expectations of the markers are clarified.

7.4.3.3 Staff experience and confidence

The literature, interview data and confidence mapping exercise undertaken during the interviews suggested that a lack of confidence in teaching and assessing visual literacy skills can reduce the number of opportunities that students get to develop these. Some staff are naturally more cautious than others and indeed, some disciplines are themselves more cautious in adopting change, wanting reassurance that standards can be maintained. However, it was also recognised in the interviews that institutional agendas can provide a catalyst for such change. The current strategy within the case institution for transforming programmes to be competence-based, with the inherent need for authentic, real-world assignments, has the potential to encourage more development and assessment of multimedia and multimodal communication skills. By encouraging more staff to set visually-rich assignments, and providing more help to assess them, then the levels of staff inexperience would naturally diminish, and confidence should increase. This research has identified several bridges that can act to encourage staff to set such assignments and help with their assessment.

7.4.3.4 Scepticism about visual arguments

This is a barrier that could be described as an individual belief. I initially thought to place it within the 'least surmountable' section above as the issue of whether or not an argument can be wholly visual seemed too complex an issue to be easily surmountable and therefore tackling it was impractical (though Blair [1996] and Roque [2015] have tried, with some success to do so). However, the other aspect of this barrier goes beyond the purely technical, philosophical question and relates to the role of images within rhetorical, academic arguments. One element of this concerns whether there is a place for images within essays. If advice is given at all, it is usually not to use them, that essays should be written in continuous prose (see for example University of Hull, 2021a), although most essay guides simply do not mention images at all, with the unwritten assumption that they are not wanted. At university, longer pieces of written work that require images are usually in the form of reports. However, a report has a specific function, that is to report on something that has been done and state

what was found out as result. This is distinct from an academic essay. There are different types of essay and different reasons for writing them; nevertheless, there is general agreement that they need to involve argument which contains an element of persuasion (Duffin, 1998; Kennedy, 2021). Effective argument relies on “the best evidence you can marshal” (Duffin, 1998), and if the best evidence is visual, then there is no obvious reason why it should not be included in an essay. Equally, visuals are accepted to be very persuasive and to remove these from the rhetorical toolbox could also hamper effective argument.

Furthermore, essays are only one form of communication that needs effective argument. Common forms of assignments such as presentations and posters need to include argument and communication aimed at non-specialists needs to be particularly persuasive, especially if challenging unsubstantiated beliefs. For example, the ongoing COVID-19 pandemic has highlighted a real need for accessible dissemination of science to the general public but it has also generated huge amounts of pseudoscience that equally need convincingly debunking (Caulfield, 2020)}. Employers and the QAA alike want graduates who can adapt how they communicate disciplinary knowledge to different platforms and audiences (QAA, 2014b; Moore & Morton, 2017) and regardless of whether visuals can be arguments in their own right, there is no dispute that they play unique and important roles within the multimedia arguments (Roque, 2015) that such communication commonly uses.

I have categorised this barrier as something that may be indirectly overcome as bridges employed to directly address other barriers, such as the provision of effective assessment rubrics, can highlight the role of visuals within multimedia arguments which may in turn encourage individuals to reflect on their own assumptions of the role of images and hopefully address any scepticism that persists.

7.4.3.5 Assumption of organic skills development

Another individual belief, the assumption of organic visual literacy skills development, is a hard barrier to address, other than to contradict it or argue against it. Dismissing individual beliefs is against the underlying values of this research, however, as with the scepticism mentioned above, the best way to address it will be to address other barriers, such as providing assessment rubrics which require the use of visuals to be assessed. The need to help students to develop the skills they need to excel in such assignments should become apparent without challenging the assumption directly. Feedback is an important part of the teaching process in itself and repetitively giving the same remedial feedback can also encourage reflective practitioners to address issues in the curriculum (Ramsden, 2003). This could include teaching

skills themselves, directing students to other support or bringing in experts. As such, the assumption could be 'organically' challenged without the need for direct action to do so.

7.5 How bridges can overcome many barriers

Identified bridges, both from the literature and this research, have the potential to effectively overcome the surmountable and hence indirectly surmountable barriers identified above. The specific recommendations from this research are given in the next chapter, but it is acknowledged that this part of my discussion could be described as a recommendation. However, I include it here because my pragmatic research approach, with its intention of creating knowledge that could be put to use, means that recognising specifically how identified bridges can be used to address barriers is the ultimate aim of the research and merits further explanation and discussion.

7.5.1 Provision of rubrics

Assessment rubrics were identified as a bridge in the literature and lack of them at the case institution was identified as a barrier by this research. Here I explain how the provision of a range of adaptable rubrics for visually-rich assignments could be the main bridge to overcoming the majority of the surmountable barriers recognised herein—although other bridges need to be leveraged to create them and ensure effectiveness. Specifically, to ensure rubrics are valued, they need providing within a narrative that fits within sector and institutional drivers such as the recognised bridges of inclusive assessment and competence-based, real-world assignments. Within the case institution, drives to promote these fall under the remit of educational developers in the Teaching Excellence Academy (TEA) with support from the Pro Vice Chancellor Education and Student Services (Lawrence & Nabb, 2020; Lawrence et al., 2021), and there are existing strong collaborative relationships between the TEA and the University Library. The expertise within academic libraries was recognised as a further bridge and as a direct result of this research there is now official acknowledgement within the University Library that visual literacy development falls within its remit. Recent restructuring has created a number of *Academic and Library Specialists*, of which I am one, and I have argued successfully that my acknowledged specialism is visual literacy. As such, with some impetus from library staff, collaborative work with the TEA could both develop rubrics and encourage their adoption. The University Library can also ensure that students have the resources and support they need in order to undertake the wider range of assignments that the new rubrics will cover.

Literature about the creation of successful rubrics was presented in Chapter 3 but the main focus of those rubrics was to *specifically* assess visual or multimodal literacy, and many were developed in education systems where interdisciplinary modules that allow for that to be the primary focus are more common. For most UK university assignments, the focus is on assessing disciplinary knowledge, skills and (more recently) competencies. These can include generic skills, as required by the appropriate SBS, but these are invariably still developed and assessed alongside disciplinary content. The ability to communicate disciplinary knowledge in a particular format may be assessed, but the audit of the module specification indicates that this is unlikely to be a specific learning outcome of the module, and if it is, there will usually be other learning outcomes that need assessing as part of the same assignment. Whilst it contains some valuable concepts relating to the role and impact of visuals within stories and arguments, the focused VLC rubric developed by Bowen (2017) would need considerable modification to be used within the UK context that goes beyond simply adapting it to different disciplinary contexts. The multimodal assessment framework developed by Ross et al. (2020) is nearer to the structure of institutional rubrics described in section 6.2.2.5 but it would still need work to expand the grade-specific criteria to more than simply 'not met', 'met' or 'exceeds'. Although it was only hinted at in the interview data, university staff have heavy workloads and time is a precious commodity (Williams et al., 2017) which could be an additional barrier. Therefore, any work that the University Library and TEA can do to reduce the amount of adaptation that a rubric needs to be readily useable will increase the likelihood of it being adopted.

If such rubrics are created, and successfully promoted, there is the possibility of a domino effect (see Figure 7.4) that could see the more easily overcome barriers given in section 7.4.2 removed (or at least reduced) which in turn could cause those other barriers in section 7.4.3 to be diminished.

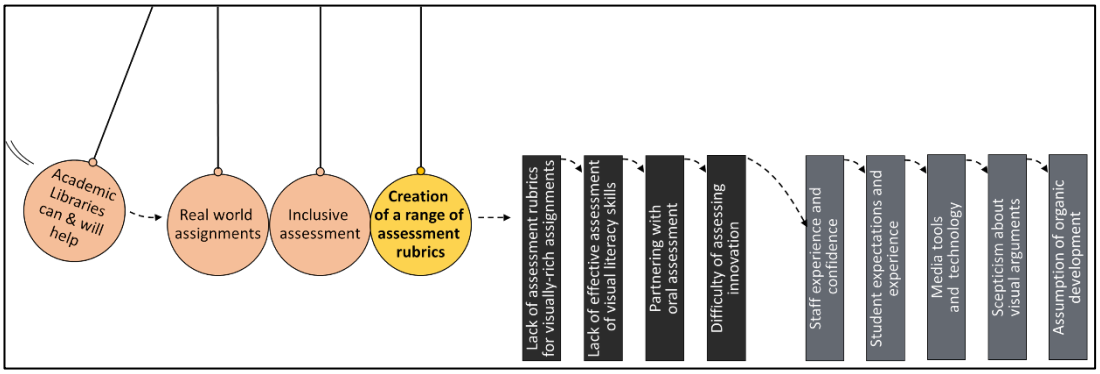

Figure 7.4 A domino effect could see bridges working together to topple a large number of barriers

7.5.1.1 Breaking the link between visual and oral assessment

Given the ubiquity of presentation assessments, improving the existing central rubric to reflect more of the ACRL standards would be a priority. However, this would not address the issue of repeatedly partnering opportunities to develop visual literacy with oral assessments. Although, removing the oral element from some poster and presentation assignments—perhaps requiring it, but not assessing it in early assessments, to scaffold skills development and promote content-orientated cognitive approaches (McCarthy & Hatcher, 2002), could be considered.

There are many options for assessment tasks that develop visual literacy without partnering them with live oral communication. Multimedia communication such as blogs, websites or short videos (which may have oral elements but provide opportunities to pre- and re-record these to reduce anxiety) develop both digital and visual literacy. Leaflets, magazine articles, newsletters and non-academic posters all provide opportunities to incorporate images and tailor communication to non-specialist audiences, as required by the QAA (2014b) and employers (Moore & Morton, 2017) alike. Providing example rubrics for all these assessment artefacts could encourage less confident staff to use them with the understanding that they have been centrally endorsed and meet necessary academic standards. Students would also have the necessary transparency to ensure they are aware of what they need to achieve to perform well in such assignments.

7.5.1.2 Ensuring transparency whilst encouraging innovation

Having enough “fuzziness” (Sadler, 1989:139) to encourage innovation whilst providing transparency is a challenge. However, there is a partial solution to this dichotomy in the form of student-generated assessment criteria. The University Library has a long history of working in partnership with students (see for example University of Hull, 2021b), and working alongside students to develop rubrics has been found to create criteria that are free from expectations of tacit knowledge (Meer & Chapman, 2015), support student independence (Balloo et al., 2018) and can clarify assessment requirements including what innovation or originality may entail. It has also been found that the effectiveness of rubrics can be improved by in-class discussions and comparison with exemplars enabling more students to develop an understanding of what markers are looking for, that is, to develop ‘assessment literacy’ (Smith et al., 2013), which could be suggested alongside the rubrics. However, there is a concern that providing exemplars of good work can lead students to follow these too closely and not create original, creative and innovative solutions of their own (Sadler, 1989; Bell et al., 2013) which could defeat that objective. A potential solution is that where such innovation is prized, a number of exemplars, showing a range of approaches to achieving high grades, can provide

students with an appreciation of the *underlying* concept of quality in that context and empower them to develop original solutions of their own (Sadler, 1989).

The provision of rubrics to assess assignments at different levels of study (so growth can be achieved), that promote multimodal communication, emphasising the role of visuals, with the flexibility to be aimed at particular audiences, promoted under a banner of being more authentic, real-world, inclusive assessments could, as seen in Figure 7.4, overcome most of the barriers identified in this research. It is acknowledged that I may be presenting these as *the* panacea to a lack of visual literacy development and I concede that that may be seen as simplistic. However, as a pragmatist looking for practical solutions, it is an achievable first step.

7.5.2 Maintaining momentum

Two newly identified bridges have not been mentioned yet in this discussion: visual assignments can be more interesting/enjoyable to mark and students themselves choosing more visual topics. These two bridges are ones that I see working to maintain the momentum that earlier bridges have developed. From the testimony of interview participants, it would seem that academic staff taking a tentative step into setting a visually-rich, multimodal assignment are likely to find the experience rewarding. Not only did some participants confirm that they found them more interesting/enjoyable to mark than standard essays and project reports, but they, and others, reported that they felt students engaged more. This is perhaps due to the affective potential of images which allows students to connect emotionally with their work (Archer, 2010) in a way that is actively discouraged in many forms of traditional academic writing, where objectivity and neutrality are advised (see for example Textbook and Academic Authors Association, 2020; Walden University, 2020). This in itself could be enough reason for staff to consider setting more such assignments as they could realise they enjoy them more and their experience and confidence in assessing them increases. It is recognised that some staff who are not as comfortable with assessing more visually-rich work may initially find it stressful rather than interesting. For them to move beyond this and appreciate the potential for enjoyment, they would need strong support from other professionals such as educational developers in the TEA and learning developers in the University Library. In addition, the experiences students have with visual and multimodal projects should encourage them to engage critically with the visual media associated with their discipline, and the reported high levels of student engagement may encourage more students to consider engaging with visual methodologies as part of their final year research projects when they are encouraged to exercise more personal choice. Staff would then get even more experienced with assessing such work which would further increase confidence levels and encourage them

to set still more visually-rich assignments. And so, momentum is increased and maintained (see Figure 7.5).

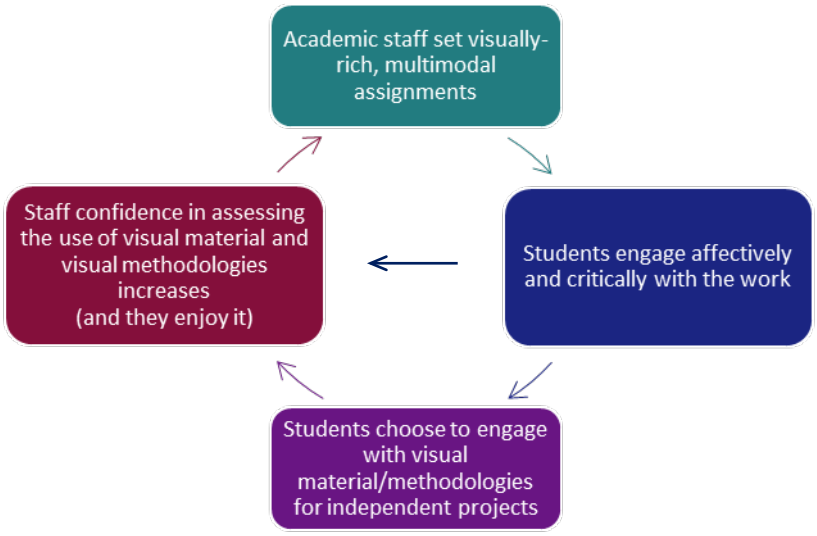

Figure 7.5 Maintaining momentum in setting visually-rich assignments

If such momentum is maintained, and visually-rich assignments become the norm rather than the exception, all the remaining barriers, including those ingrained into HE may gradually be eroded (though accepting the limited impact of this piece of research within the overall field necessarily acknowledges that it will only play a small part in this process). This could mean graduates leave university with the skills they need to communicate knowledge, disciplinary or not, in a flexible and adaptable manner, more suited to the visual society we increasingly inhabit.

7.6 Chapter summary

The variation in opportunities for students to develop visual literacy within the case institution, identified in the audit of module specifications, indicated that disciplinary practices may act as bridges or barriers depending on the subject area studied. Comparing the results of the audit with the presence of statements referring to visual material in SBSs indicates that such statements appear to act as bridges to development as their inclusion correlated to a higher proportion of modules with identified developmental opportunities. In addition, the opportunities were more likely to be balanced between critical and creative visual literacy skills in subject areas with SBSs containing statements referring to both working with visual source material and communicating visually.

However, there were anomalies, and these may be explained by the way that some subject areas are interpreting statements regarding the need to communicate using a range of media and to both specialist and non-specialist audiences, both of which can be reasonably interpreted as needing elements of visual communication. These statements did not appear in all SBSs, but they were present in the few subject areas that did not mention visual material directly but still had high levels of identified development. This discussion argued that subject areas with relatively low levels of development should be looking to increase this as even if their SBSs do not themselves state the need for a range of communication formats aimed at different audiences, the FHEQ does, and this is applicable to *all* degrees awarded at the institution. Examples were given of specific subject areas with lower levels of development and how the rise of visual materials in their associated real-world professions would imply a greater need to interpret the QAAs statements to embrace visual media.

Subject areas where the visual literacy skills developed were highly specialist, such as STEM subjects, also need to consider developing more generic skills in order to give their graduates more ability to communicate their disciplinary knowledge to non-specialists which will provide more transferable skills that may prove invaluable in the highly uncertain employment journeys their future may hold. Wider visual literacy skills can also allow them to bring other perspectives to scientific discourses.

There are many reasons why some subject areas have lower levels of visual literacy development and not all of these are grounded within the individual disciplines. Interviewing staff enabled several barriers to be identified that could explain reluctance or difficulties in developing the skills needed to be visually literate. Some of these barriers will be more surmountable than others and the pragmatic nature of this research identified those where initial efforts to overcome them should be most effective. Such efforts take the form of a number of bridges that can work together to tackle the most obvious issues. Institutional strategies to increase the inclusivity of assessments and encourage more authentic, real-world assignments can be leveraged to promote a range of more diverse assessments. Collaboration between learning developers, educational developers and students could produce a range of transparent, adaptable, assessment rubrics to help staff who may lack experience to confidently set assignments requiring multimodal and multimedia communication. The wide range of options and careful development of criteria would help to address several identified barriers: non-existent rubrics; under-assessment of visual literacy skills; the widespread partnering of visual communication with stressful oral components; and difficulties in assessing innovation. By addressing these barriers, others can be indirectly alleviated such as staff inexperience and

confidence in assessing visual or multimodal artefacts; student understanding of what is expected of them and willingness to engage with less traditional assessments; and the lack of provision of some types of software due to low demand. In addition, some personal beliefs relating to the role of visuals within academic arguments and assumptions of organic skills development can be indirectly challenged by the content of the rubrics. The research further suggests that staff and students alike may, with experience, find such assessments more engaging and enjoyable, which may encourage them to engage with visual materials more widely moving forward.

The following final chapter will summarise this study, highlight its unique contribution and acknowledge its limitations. It will also provide specific recommendations for the institution, the QAA and future research.

Chapter 8: Conclusions and recommendations

8.1 Introduction

This study was undertaken to answer three research questions:

Q1 To what extent is visual literacy developed in a higher education institution's curricula?

Q2 What could be potential barriers to developing visual literacy within the institution?

Q3 What could be potential bridges to developing visual literacy within the institution?

The first question was asked to get an indication of the existing situation regarding opportunities to develop visual literacy during a university education. I needed to test assumptions and get a broad picture of which subject areas, beyond those where analysing or producing visual material is their primary focus, were producing graduates who could be described as visually literate. Suspecting that the picture would be mixed, the second two questions were asked in order to identify ways to encourage more subject areas to consider taking steps to improve the visual literacy of their graduates and to make that process easier by removing barriers and extending bridges.

This chapter explains how the questions were answered (section 8.2) and summarises the main findings of the study (section 8.3) and the main discussion points they raised (section 8.4). It also suggests what new knowledge and contribution to practice the study has provided (section 8.5) whilst acknowledging the limitations of the research (section 8.6). It makes recommendations for steps that can be taken within the institution to promote the development of a wider set of multimodal communication skills that will both rely on and promote improved visual literacy (section 8.7.1) and within the wider sector by initiating conversations about practice in other institutions (section 8.7.2) and removing some of the ambiguity within subject benchmark statements (section 8.7.3). Recommendations for further research suggested by the study are also given (section 8.7.4).

The chapter finishes with a short reflection on the research process (section 8.8) which acknowledges the 'messy' nature of qualitative research and re-iterates how undertaking this research has contributed to my professional practice.

8.2 How the questions were answered

8.2.1 Question 1

An audit of the full set of module specifications for the academic year 2018-19 was undertaken to develop a picture of where and how visual literacy was being developed across the institution. Depending on descriptions in the module design and assessment, modules were categorised as explicitly, implicitly, potentially or not apparently developing visual literacy. All modules in the first two categories also had indicative phrases coded to the ACRL (2011) standards for visual literacy. This provided an indication of whether critical and/or creative skills were developed within each module. It was then possible to compare the amount of visual literacy development at different levels of study and across different subject areas. It also provided information about the balance of critical vs creative skills developed in each subject area.

8.2.2 Questions 2 and 3

The search for answers to the second two research questions began with the literature. Only one report from the New Media Consortium back in 2005 addressed these questions directly and only in a short section. Other literature related to visual literacy was therefore analysed to identify further potential bridges or barriers that were included, implied or alluded to indirectly.

Initial analysis of module specifications provided information about suitable members of academic staff to interview in order to help answer these two questions. Structured conversations with staff acting as module leaders for modules in each of the identified categories helped recognise potential bridges and barriers that could be acting to enable or prevent visual literacy being developed more widely within the institution. The interview data was also used to confirm or refute the bridges and barriers identified in the literature.

8.3 Summary of the answers

8.3.1 Question 1

The development of visual literacy across the institution was found to be extremely mixed. Whilst there was no notable variation between the amount of development at different levels of study, there was a great deal of variation between subject areas. Only subjects with a primary or heavy focus on visual materials such as Film, Media and Digital Design, Geography, Earth and Environmental Sciences (especially within Geography itself with the study and production of visual representations of topographical data and culture), and Engineering (with

the need to understand and produce technical drawings) had both high/relatively high amounts of visual literacy development *and* a fair balance of critical and creative skills. It may also be possible to include History and American Studies in this group due to the visual nature of much of their source data and the high number of presentation assessments which are known to be visually-rich. All other subjects had modest or low amounts of development, or the skills developed were skewed in favour of critical *or* creative skills. This indicates that only a small proportion of students could be classed as visually literate on graduation as this requires both critical and creative abilities. Table 8.1 summarises the findings of the module specification audit.

Table 8.1 Summary of findings of the module specification audit

Amount of identified development	**Subject areas with balanced development**	**Subject areas with imbalanced development**	
		More critical	More creative
High (>25% of modules)	FMDD Engineering GEES	American Studies[15] History[15]	BES ECW
Modest (15-25% of modules)	Drama Sociology Computer Science	Physics Language and Culture Politics Biomedical Science	SHES Criminology
Low (<15% of modules)	Music Maths	Law Philosophy	Business Education Psychology Social Work Chemistry Health

From this it can be seen that the audit also began to answer the second two research questions as it appears that the choice of subject may be the first barrier or bridge to developing visual literacy that students encounter.

[15] With the explained acknowledgement that these may be more balanced given the visual nature of the data used in presentation assignments.

8.3.2 Question 2

Several barriers were identified in the literature review and by interviewing academic staff. The literature suggested the following barriers may be preventing visual literacy development:

- Resistance to change
- Privileging words (logocentricity)
- Disciplinary silos
- Assumption of organic skills development
- Lack of assessment
- Availability of appropriate media tools and technology
- Decreasing levels of visual literacy in schools
- Student expectations and experience
- Staff experience and confidence

The interviews confirmed that most of these barriers did apply to the case institution. In addition, the interviews identified some further barriers:

- Large cohorts
- Partnering visual with oral assessment
- Difficulties of assessing innovation in visual work
- Beliefs about the nature or existence of visual arguments
- Lack of suitable assessment rubrics

8.3.3 Question 3

The literature review identified the following bridges:

- Creative Commons licensing
- Academic libraries
- Inclusive assessment
- Development of frameworks and rubrics for assessment

Creative Commons licensing was not mentioned in that context during the interviews, but the other three were all confirmed as useful bridges in the case institution. The interviews also identified the following additional bridges:

- A move towards real-world assignments
- Student choice of more visual topics
- Visual assignments can be more interesting/enjoyably to mark

8.4 Main discussion points

The main discussion points from the audit of module specifications focused on trying to understand the reasons for the variation in amount and type of visual literacy development and whether this could be attributed to the requirements of the subject benchmark statements (SBSs) for each area.

It appears that specific mention of the use of visual source material or visual communication within an SBS does increase the likelihood of visual literacy skills being developed in that subject area. However, other statements within several SBSs regarding communication formats and intended audiences, could be reasonably interpreted as suggesting graduates should be visually literate in order to be able to adapt their communications as necessary. It seems that for some subject areas, these statements are indeed being interpreted in this manner but in many others, this is not the case—as the statements are present, but the identified amount of visual literacy development was low. Even where such statements are not present in SBSs, the wider framework for HE qualifications, which applies to all degrees awarded at the case institution, has similar statements. This suggests that the claim made in Chapter 2, that all graduates, regardless of their degree subject, should be visually literate, is endorsed by the QAA and those subject areas with lower levels of visual literacy development may be failing to address this sufficiently.

With this in mind, the significance of the identified barriers is made clearer. Barriers were categorised by their surmountability in order to focus attention on those that can be most easily overcome and therefore more readily promote change. Some ingrained barriers such as resistance to change and logocentric dominance, along with those controlled by exterior factors such as large cohort sizes and potential low levels of visual literacy development in schools, have been essentially 'parked' in order to concentrate on addressing other barriers over which more immediate influence can be applied. The main barriers that can be addressed directly are the predominance of partnering visual and oral assessments, the difficulties in assessing innovation, the lack of assessment rubrics and the lack of effective assessment this causes. These can all potentially be addressed by the institution providing central rubrics for a wide variety of visually-rich assessment types. This would include many that did not require stressful oral elements and could include an indication of how to assess innovation should that be a needed outcome. There is a strong possibility that the remaining barriers could naturally weaken if these other barriers are addressed by leveraging the identified bridges. That is, the lack of some media tools may be redressed if more modules needed them; students would

gain more experience with visual communication tasks and their expectations would adjust accordingly; and staff experience with and confidence in working with visuals should increase if they find the rubrics sufficiently easy to follow and enough support is given in using them. In addition, beliefs such as the scepticism around visual arguments may be less prevalent if the rubrics address their role within academic rhetoric and the need to assess and provide feedback on the way visuals are critiqued and used should counter the assumption that the skills involved are developed organically—as it should become clear that they are not.

Identified bridges can be used to help drive the creation and use of the rubrics. Academic libraries are one such bridge and my role in our University Library is well placed to suggest the formation of a working group to work on a project creating them as well as be part of that process. The existing strong relationship with my team and the University's team of educational developers will also help as they would need to be involved. The Academic library can also work to ensure the students have the appropriate resources and support they need to tackle the assignments if and when they are set. A further identified bridges was the real-world nature of many visually-rich assignments and an institutional move to competence-based assessment, which values such real-world assignments in order to increase student employability in an uncertain future is well timed to provide top-down encouragement to use more such assignments.

Once the rubrics are in place and should they start to be used, this research suggests staff are likely to be encouraged to set more visually-rich assignments as they realise how enjoyable they can be to assess compared to traditional alternatives, which should in turn increase their confidence in using them and maintain momentum in increasing the number of such assignments that are set. Also, more students may be encouraged to choose to use visual methodologies in their own projects as they become more comfortable with working with visual material and realise how engaging it can be.

8.5 Unique contribution to practice and knowledge

To the best of my knowledge, no previous research has mapped the extent to which visual literacy is developed in undergraduate degrees across a whole HE institution. There have been underlying assumptions that visual literacy may not be sufficiently developed in many subject areas; this is the first research to test those assumptions and confirm them.

In addition, whilst previous research has recognised or alluded to the existence of some barriers to developing visual literacy, this is the first to assemble these, acknowledge their

existence within a UK university and identify some that have not been hitherto recognised (as given in section 8.3.2 above). It is also the first to specifically seek and find a range of bridges (as given in section 8.3.3) that can be leveraged to overcome many of these barriers and suggest a course of action that can begin to challenge the lack of development and work to create more visually literate graduates, regardless of their choice of degree.

8.6 Limitations of the study

It is acknowledged that whilst module specifications were the only documents publicly available that covered all undergraduate teaching and learning in the institution, they were limited in the information they provided which made assigning the full range of ACRL standards impossible. Also, whilst some module designers may have thought to specifically mention the visual nature of some sources and assignments, others may have omitted this information despite it being present. Further, they only represented intended rather than delivered outcomes. The results of the audit of these specifications are therefore only a general overview providing an indicative, comparative picture, rather than a forensic examination of visual literacy development across the institution.

In ideal circumstances, analysis of the module specifications would have been completed before commencing the interviews so that some questions that arose from that analysis could be asked directly of staff in relevant subject areas. Unfortunately, due to the timings of ethics approval, the non-linear nature of research and the lengthy process involved in the documentary analysis, this was not possible. The interviews took place after initial categorisation of the module specifications but were concluded long before the final analysis of the specifications was complete. Nevertheless, they did build on some of the initial findings of the documentary analysis as the participant selection process had been dependent on that.

Additionally, it would have been useful to have been able to interview more members of staff, and have at least one, if not more, representative from each of the subject groups. However, staff time is a premium commodity, and I was incredibly grateful to the twelve members of staff who responded positively to my invitations and made the identifications of the bridges and barriers presented here possible.

Further, as explained in Chapter 4, the data and findings are specific to a single institution and, as suggested by Bassey (1998) generalisation to other institutions and situations can be fuzzy at best. In addition, the module specification data used is indicative of the planned curricula for the 2018/19 academic year only and does not represent the current modules offered at the

case institution. The experiences of my participants, and my interpretation of them are not put forward as representative of the wider university community. Although I have used them to make specific recommendations within my own institution, elsewhere, I would suggest following Donmoyer's (2009) advice that they should just be used as a starting point for thoughtful conversations.

8.7 Recommendations

8.7.1 Within the institution

This and the previous chapter have made it clear that the first step in addressing the lack of visual literacy development is recommended to be the formation of working groups within the institution who can devise and provide adaptable, level specific, rubrics for a range of visually-rich, multimodal assessment types. It is proposed that these groups comprise learning developers (to bring expertise in visual literacy), educational developers (to bring expertise in developing rubrics and promoting good practice in teaching and learning) and students (to bring expertise in their own needs and ensure needed transparency). Academic staff known to be using such assessments should also be approached to determine if they would like to be involved or to provide examples of their existing assessment rubrics as starting points. In the first instance, I recommend central rubrics should be provided for:

- Presentations (replacing the existing one)
- Academic posters
- Posters for public dissemination of disciplinary knowledge
- Reports
- Infographics
- Web pages
- Blogs
- Vlogs/videos
- Magazine articles
- Leaflets
- Podcasts (acknowledging that not all non-specialist communication uses visuals)

Once these are created, it is recommended that they be promoted as part of the move to competence-based assessment, highlighting the real-world and hence employability skills that they would develop.

This promotion, and indeed the formation of the original working groups would require raising awareness of the importance of visual communication (and hence visual literacy) in meeting the needs of the FHEQ and SBSs with both academic staff and other institutional decision-

makers. There are a number of routes for this and my role as an Academic and Library Specialist with an acknowledged specialism in visual literacy is well placed to initiate the process. For example, my team are already discussing changes to our staff-facing web pages to highlight the importance of visual literacy and the help already available, and I will be putting forward a paper for the institution's next Learning and Teaching Conference to further raise awareness.

In addition, we are lucky enough to have an on-campus art gallery with an extensive university art collection. It would be an interesting project to explore ways to use these as a resource to develop visual observation skills such as those developed with VTS. These would be especially useful for our medical, nursing, social work, policing and forensic science students.

8.7.2 Beyond the institution

Although the findings of this research cannot be generalised to other institutions or situations directly, they provide a useful catalyst for some important conversations. This research was undertaken as part of a professional doctorate with the pragmatic aim of providing *useful* information to influence practice. As such, my initial recommendations beyond the case institution are to those whose working practice is informed by research, whether or not they are research active themselves.

I recommend that the finding that visual literacy is not developed equitably across the disciplines in this case institution, should persuade those in other institutions to consider if the same is true of theirs. In addition, I would recommend that all programme designers should reconsider the way that some statements within the SBSs are interpreted to take into account the wider QAA HE framework and what constitutes effective communication to non-specialist audiences in today's visually oriented society.

Many of the bridges and barriers to developing visual literacy identified in this research are unlikely to be unique to this institution and I would recommend that where they resonate, they can be used to promote a review of practice elsewhere. This is especially true of those bridges that relate to sector-wide areas of interest such as ensuring inclusive and diverse assessment methods, and preparing students for the fourth industrial revolution, which can both provide leverage to support decisions to set more visually-rich assignments.

Finally, the findings can be used by researchers to trigger further research into visual literacy in higher education. A number of recommendations for further research are given in section

8.7.4 below and most of these are not specific to the case institution and indeed would need that wider perspective.

8.7.3 Changes to wording in subject benchmark statements

Considering the SBSs have a common template, there is a surprising amount of variation in the way they are laid out and the nature of the statements they contain. It is hard to understand why graduates in Chemistry should develop skills in "both written and oral communication" (QAA, 2019e: para 5.7) whereas graduates in Psychology need to communicate via "written, oral and visual means" (QAA, 2019ae: para 6.5). If those creating the Chemistry SBS made a specific decision to exclude visual communication, that should perhaps be explained. It could, however, just be a case of it not being considered. Disciplinary silos may therefore be contributing to a lack of visual literacy development at a higher level than within the institution itself.

The relationship found when comparing the findings of the module specification audit with the existence of statements specifically relating to visual material in SBSs suggests that there is value in providing more specific statements in SBSs rather than leaving things open to interpretation. For example, rather than stating students should be able to "communicate in a range of formats/media", statements could be more specific, such as suggesting students "communicate in written, oral, visual and multimodal formats using a range of traditional and web-based media". This could prompt programme and module designers to diversity their assignments to ensure all these areas are covered.

8.7.4 Further research

Like any piece of research, this project suggested further questions that it would be useful to answer in order to 'keep the conversation going' as Rorty suggested. Some of these are related to the recommendations or address the limitations above. For example:

- Will the provision of rubrics increase the amount and range of visually-rich assessments used within the case institution and hence contribute to increased development of visual literacy in our graduates?
- Are the full range of ACRL standards developed in particular programmes of study?
- How closely to module specifications and learning outcomes resemble the delivered experience?
- Do other institutions have similar variation in opportunities to develop visual literacy across the disciplines?

- Is visual communication purposefully omitted from some SBSs or is this just an historical oversight?

There are also a number of questions that could help us understand how visual literacy differs across the disciplines. For example:

- What does visual literacy look like from different disciplinary perspectives?
- Are bridges and barriers different across the disciplines?
- How is visual literacy perceived, valued and developed by academic staff across the disciplines?
- How do students in different disciplines perceive the importance of visual literacy?

Other questions could arise from or challenge some of the findings of this research:

- How do staff feel about marking visually-rich assessments? (This could consider and compare different backgrounds/disciplines etc).
- What support to inexperienced staff need to enable them to feel confident assessing visually-rich assignments?
- What is the effect of removing oral components from presentation assessments?
- How do students react to the provision of new assessment rubrics?

And finally, there are some wider questions:

- Can different types of assessment be considered equivalent? Can a video replace an essay?
- How much do UK employers value visual literacy/visual communication skills in graduates?

These are just some possibilities to continue the never-ending research journey. Some could take place within the case institution, others within and between the wider UK HE sector and still more in the world-wide visual literacy community.

8.8 Final reflection on the research process

This study was approached as a pragmatist, but it was nevertheless grounded in constructionism requiring personal interpretations of the data to construct my own picture. However, this was not done in isolation; I am lucky enough to work alongside other learning developers and have been able to discuss issues of interpretation of non-privileged data, such as the literature and module specifications, to help ensure I was making reasonable inferences and maximise the trustworthiness of my findings.

It has been a challenge converting a complex and non-linear experience into a clear and linear report. Issues with ethical approval, false starts on chapters, interview scheduling and the length of time needed for, and complexity of, the analysis of module specifications have meant that the processes involved have taken place in an overlapping and sometimes circular order. Whilst this did mean some opportunities to further explore data were missed (as admitted under limitations) it has made me acknowledge the reality of what Mellor (2001) describes as ‘messy method’. For example, justifying decisions whilst editing explanations of my methods made me query some and readdress them, meaning further analysis was needed which influenced findings, which in turn required the discussion of findings to be adjusted. Initial

impressions from interview analysis encouraged me to revisit the literature and see if I had missed others noting potential barriers and acknowledge if these were being confirmed rather than being newly identified. As Sinkovics and Alfoldi (2012) also found, using NVivo to navigate this messiness and non-linearity was invaluable: analysing literature within the program enabled me to search whole tranches of literature for indicative phrases; using the memo feature helped me keep track of my decision-making and storing queries enabled me to rerun some of the automated analysis after coding had been adjusted. However, every effort has been made not to misrepresent the processes and make sure decisions, inferences and conclusions are justifiable.

Whilst this represents my first steps as a researcher, and there have been difficult times, exacerbated by the not-insignificant issue of an ongoing global pandemic, completing this thesis has not only increased my confidence in this new fledgling researcher identity but has also increased my confidence in supporting others undertaking research in my role as a learning developer. It has also enabled me to brand myself as a specialist in visual literacy and persuade my institution to recognise that specialism and the need to promote its development as part of the remit of the University Library. As such, the decision to undertake a professional doctorate, with its focus on contributing to practice, has been fully justified.

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Appendix 1 ACRL standards and performance indicators

For the full standards, including learning outcomes for all performance indicators, please follow this link Full list of ACRL standards.

Standard One

The visually literate student determines the nature and extent of the visual materials needed.

1. The visually literate student defines and articulates the need for an image.
2. The visually literate student identifies a variety of image sources, materials, and types.

Standard Two

The visually literate student finds and accesses needed images and visual media effectively and efficiently.

1. The visually literate student selects the most appropriate sources and retrieval systems for finding and accessing needed images and visual media.
2. The visually literate student conducts effective image searches.
3. The visually literate student acquires and organizes images and source information.

Standard Three

The visually literate student interprets and analyzes the meanings of images and visual media.

1. The visually literate student identifies information relevant to an image's meaning.
2. The visually literate student situates an image in its cultural, social, and historical contexts.
3. The visually literate student identifies the physical, technical, and design components of an image.
4. The visually literate student validates interpretation and analysis of images through discourse with others.

Standard Four

The visually literate student evaluates images and their sources.

The visually literate student evaluates the effectiveness and reliability of images as visual communications.

1. The visually literate student evaluates the aesthetic and technical characteristics of images.
2. The visually literate student evaluates textual information accompanying images.
3. The visually literate student makes judgments about the reliability and accuracy of image sources.

Standard Five

The visually literate student uses images and visual media effectively.

1. The visually literate student uses images effectively for different purposes.
2. The visually literate student uses technology effectively to work with images.
3. The visually literate student uses problem solving, creativity, and experimentation to incorporate images into scholarly projects.
4. The visually literate student communicates effectively with and about images.

Standard Six

The visually literate student designs and creates meaningful images and visual media.

1. The visually literate student produces visual materials for a range of projects and scholarly uses.
2. The visually literate student uses design strategies and creativity in image and visual media production.
3. The visually literate student uses a variety of tools and technologies to produce images and visual media.
4. The visually literate student evaluates personally created visual products.

Standard Seven

The visually literate student understands many of the ethical, legal, social, and economic issues surrounding the creation and use of images and visual media, and accesses and uses visual materials ethically.

1. The visually literate student understands many of the ethical, legal, social, and economic issues surrounding images and visual media.
2. The visually literate student follows ethical and legal best practices when accessing, using, and creating images.
3. The visually literate student cites images and visual media in papers, presentations, and projects.

Appendix 2 Example module specification showing coding

CODED

A GENERAL INFORMATION

Please complete a module specification for each module included in this application for validation of provision.

1	**Module Title**	
	Removed for confidentiality	
2	**Module Code** *(enter code or NEW)*	
	Removed for confidentiality	
3	**Module Level**	
	5	
4	**Portfolio/Programme** *(the host portfolio/programme for this module)*	
	GEES	
5	**Credit Value**	
	20	
6	**Module Leader** *(name and email)*	
	Removed for confidentiality	
7	**Total Number of Learning Hours** *(normally 10 hours per credit)*	
	200	
8	**Pre-Requisite** *(where applicable)*	
	n/a	
9	**Co-Requisite** *(where applicable)*	
	n/a	
10	**Post-Requisite** *(where applicable)*	
	n/a	
11	**Number Attending Module** *(anticipated)*	
	60	
12	**Trimester** *(please tick as many as appropriate)*	

Trimester 1 – T1	x
Trimester 2 – T2	
Trimester 3 – T3	

13 **Module Delivery Mode** *(please tick as many as appropriate)*

Face to Face	x	Online		Collaborative	
Blended		Distance Taught		Placement	
				Year/Trimester Abroad	

14 **Mandatory Constraints** *(e.g. Disclosure and Barring Service Check)*

This module may involve field work.

To be eligible to participate in fieldwork, all students must meet the following requirements:

1. Provide personal details (such as next of kin, allergies and dietary requirements) and complete a medical disclosure form.
2. Sign and agree to uphold the code of conduct as described in the Departmental Fieldwork Policy.
3. Comply with any necessary medical requirements. Specific details will be made available before module choices are made.

Details and dates of the field work, if appropriate, will be provided at the start of Trimester 1. Students must be available for fieldwork.

15 **Other portfolios/programmes this module is validated to** *(please include Portfolio Name/Programme Name)*

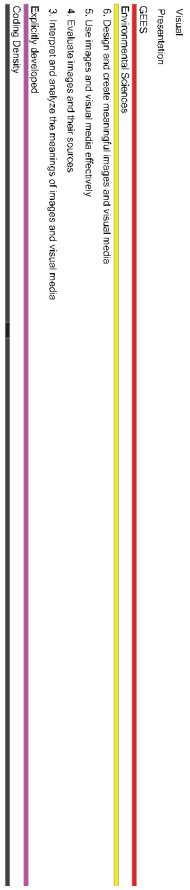
n/a

B MODULE DESIGN

16 **Module Aims**

As a guide you should include 3 – 4 module aims. Please see A Guide to Writing Programme and Module Level Learning Outcomes at the University of Hull for further information.

1. To introduce students to key ideas and approaches in cultural, historical and social geography.
2. To examine case studies of people and places from a range of spatial and temporal contexts and scales.
3. To introduce students to a range of visual, aural, documentary and participatory methodologies.
4. To encourage students to think critically about the world around them, specifically the contested nature of diverse cultural productions, landscapes and political discourses and how these processes constitute our human worlds.



17	**Module Learning Outcomes** *As a guide you should include 3 – 4 module learning outcomes. Please see A Guide to Writing Programme and Module Level Learning Outcomes at the University of Hull for further information.*

On successful completion of this module, students will be able to:

	Module learning outcome description
LO1	Analyse and apply key theories, developments and ideas in cultural, historical and social geography.
LO2	Explain with comprehension a number of case studies drawn from across different spatial and temporal contexts.
LO3	Evaluate and apply a range of visual, aural, documentary and participatory methodologies to a research topic.
LO4	Critically analyse diverse forms of cultural production, texts and landscapes and their roles in constituting human geographies.

18	**Module Indicative Content** *Please provide up to 200 words which outline the key themes and topics to be included in this module.*

Drawing on case studies from Britain and beyond over the last thousand years, this module introduces students to key ideas and approaches from the sub-disciplines of cultural, historical and social geography. It will demonstrate how cultural, historical and social processes constitute our human worlds in the past and the present. In doing so, the module also encourages students to engage with a range of visual, aural, documentary and participatory methodologies, developing skillsets and critical thinking they will use later in their degree programmes. Indicative themes for the lectures include: landscape; representation; space and power; gender and difference; place and territory; bodies; identity; memory; rural and urban; visual geographies; moral geographies; colonial and postcolonial geographies; aural geographies; and experiential geographies.

19	**Module Learning and Teaching Methods and Rationale for Selection** *Please provide up to 200 words which outline the teaching and learning methods and your rationale for their selection.*

Students can expect to participate in approximately:

10 x 2 hour lectures
1 x 3 hour group presentations session
4 x 1 hour small-group seminars and group project planning sessions
1 x 2 hour essay surgery (offering formative feedback on essay plans)1 x 2 hour feedback session (which will help students to reflect critically on their essays and research diaries/blogs, thinking about what went well and what didn't, and where they might improve in the future).

There is also potential for the module to include a guided fieldtrip to the Hull History Centre. Alternatively, Hull History Centre staff may deliver an archives workshop at the University.

The module utilises a mixture of interactive lectures (to foster different styles of learning these will incorporate both lecture-style teaching and hands-on learning activities, group work, practical workshops etc), large-group workshops (including hands-on teaching activities and seminar-style discussions), and small-group seminars. There are also opportunities for formative assessment, feedback and critical reflection on assessed work.

0	*Please refer to QAA Explaining Contact Hours guidance for further information.*

Student time associated with the module	%
Guided independent study including online	84.5
Placement/Study abroad	0
Scheduled learning and teaching activities	15.5
Total	100

21	**Ethical Issues, Risk and Inclusivity** *Universities research and develop modules which deal with issues that may be sensitive or involve ethical considerations. As with research, the duty of care extends to all involved in learning and teaching. Please highlight any relevant issues that relate to content, teaching methods and assessment and state how they are to be addressed (include evidence of support from relevant ethics committees and relevant risk assessments as appropriate).*

Please refer to the GEES Geography Programme Specification sections 38 and 41. This module conforms to GEES policy on ethical issues, risk and inclusivity.

C MODULE ASSESSMENT

22	**Rationale for Assessment Methods Chosen** *Maximum 200 words.*

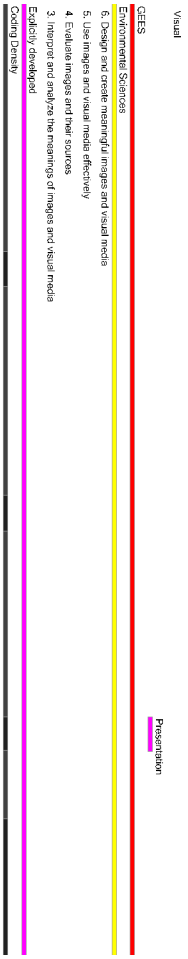
Essay (50%). The assessment aims to get students to think critically about key developments and relevant literature in one or more of the sub-disciplines explored in the module (e.g. cultural, historical or social geography). Writing the essay will help students to develop critical analysis and thinking as well as improve their written communication skills, all important for any student going forward with cultural, historical or social research at Level 6 and beyond.

Group project. Groups of between four and six students research a topic from a list provided by teaching staff (potential topics include urban landscape of Hull; regeneration; community histories; City of Culture etc). Their work is assessed in two ways and the mark split as follows.

1. A **group presentation** (25% of module mark) where each group presents to the staff and their peers and takes questions from the floor. This will be held towards the end of the module.
2. A reflective report / **research diary / blog** (25% of module mark) consisting of 2-3 entries. Each entry provides a critical evaluation of one source or methodology used in the group project. The 2-3 entries must each reflect on a different source or methodology.

23	**Formative Assessments for this Module**

	Assessment type and title (where relevant)
FA1	Essay surgery – feedback on essay plans
FA2	Group project planning sessions – formative assessment of choices, progress and aims



24	**Summative Assessment for this Module**

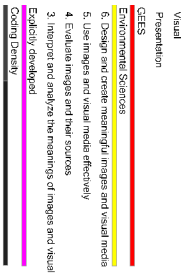
	Assessment type and title (where relevant)	%	Module LOs addressed
SA1	Essay	50	1,4
SA2	Group project presentation	25	2,3
SA3	Research diary/blog	25	1,2,3,4

25	**Module Re-assessment Method** *(if different)*
	SA2 replaced by a report on a local historical or cultural geography topic.
26	**Explanation for the Re-assessment Methods Chosen** *Maximum 200 words.*
	Students will be unable to take part in group project work during the reassessment period.
27	**Summative Re-assessment for this Module**

	Assessment type and title (where relevant)	%	Module LOs addressed
SA1r	Essay 1	50%	1,4
SA2r	Report	25%	2,3
SAr3	Research diary/blog	25%	1, 2, 3, 4

D MODULE RESOURCES

28	**Indicative Reading List** *(Please refer to the University guidelines for Reading Lists.)*	
	Essential	Module reading lists will be available at readinglists@hull.
	Recommended	
	Background	
29	**Other Resources Required** *(Please list any further resources that may be required for the successful delivery of this module.)*	



Appendix 3 Participant information sheet

UNIVERSITY OF HULL

University of Hull

Hull, HU6 7RX
United Kingdom
T: +44 (0)1482 346311 | E: j.bloggs@hull.ac.uk

Participant Information Sheet

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

Title of study:	Bridges and barriers to developing visual literacy in undergraduate students
Department:	School of Education and Social Science
Researcher	Jacqui Bartram
Contact details:	Email and telephone numbers provided

1. **Invitation**
   You are being invited to take part in this research project which is part of a Doctor of Education (EdD) thesis. Before you decide it is important for you to understand why the research is being done, what participation will involve and how your data will be secured. Please take time to read the following information carefully and discuss it with others if you wish. If anything is not clear or if you would like more information, feel free to ask.

   Take time to decide whether or not you wish to take part. Thank you for reading this.

2. **Purpose of the project:**
   This is a doctoral project undertaken as part of an EdD. Its aims are:
   (1) To construct a general picture of how visual literacy is developed in undergraduate students in this institution.
   (2) To develop a shared understanding of potential bridges (enablers) and barriers (inhibitors) to developing visual literacy in our undergraduates.

3. **Why have you been chosen?**
   You are a module leader or are teaching on an existing module in which the researcher has identified that visual literacy is one of the following:
   Explicitly developed
   Implicitly developed
   Potentially developed
   Not apparently developed

   Your module has been categorised as **'category here'**.

4. **Do you have to take part?**
   It is up to you to decide whether to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. You can withdraw at any time without giving a reason and

without it affecting any benefits that you are entitled to. If you decide to withdraw you will be asked what you wish to happen to the data you have provided up that point.

5. **What will happen if you decide to take part:**
   You will be asked to take part in an interview during Trimester 2 or 3 of the 2018-19 academic year. This will take place on the University of Hull campus and should last between 30-90 minutes. The interview will be transcribed and if you wish, you can request a copy of this transcription to ensure that it is a true reflection of the conversation we had and to allow for clarification or questions to be asked.

   During the interview, you will be asked to map some skills relating to visual literacy on a matrix and photographs will be taken of this artefact.

6. **Will you be recorded and how will the recorded media be used?**
   The interview will be recorded on my phone and this audio will be used only for transcription and analysis. The audio recording will be destroyed once transcription has been completed and any associated queries resolved. I will have sole access to the original recordings during this process.

7. **What are the possible disadvantages and risks of taking part?**
   You will be asked to rate your own confidence in some aspects of visual literacy and whether you feel you are developing it in your students. You may be worried that you will be judged detrimentally. Please be assured that this is not the case. There is no expectation by the researcher or the institution that you should or should not be developing visual literacy in your students. It is essential for the success of the research that a spectrum of experiences and perceptions be included and all your responses will be respected and valued.

8. **What are the possible benefits of taking part?**
   Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will help shape future research and that a shared understanding of the answers to the research questions will benefit our students.

9. **What if something goes wrong?**
   In the first instance, any problems or complaints should be raised directly with the researcher.
   If you wish to make a complaint or speak to someone external in relation to this research, concerns can be addressed to the Faculty of Art, Culture and Education Ethics Committee face-ethics@hull.ac.uk

10. **Will my taking part in this project be kept confidential?**
    All the information collected about you and your views during the course of the research will be kept strictly confidential. Should you need to be referred to within the thesis or any further publications, this will be done using pseudonyms and any other identifiable details will be removed where possible. Only the researcher will have access to the identities behind the pseudonyms used.

11. **Limits to confidentiality**
    Please note that confidentiality will be maintained as far as it is possible, unless during our conversation I hear anything which makes me worried that someone might be in danger of harm, I might have to inform relevant agencies of this. In addition, if I am unsure if certain data is potentially identifiable due to discipline-related details, I will contact you to request permission to use it.

12. **What will happen to the results of the research project?**
Results of the project will be published as part of an EdD thesis which will be available via the university repository if completed. Further publications such as journal articles or book chapters may also use the results, as may conference papers.

13. **Data Protection Privacy Notice**
The data controller for this project will be the University of Hull. The University of Hull Data Protection Office provides oversight of University of Hull activities involving the processing of personal data, and can be contacted at Data.Protection@hull.ac.uk.

Your personal data will be processed so long as it is required for the research project. I will anonymise and pseudonymise as much of the data as is possible and will endeavour to minimise the processing of personal data wherever I can.

If you are concerned about how your personal data is being processed, please contact the University of Hull in the first instance at Data.Protection@hull.ac.ukhttps://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr/individuals-rights/. If you remain unsatisfied, you may wish to contact the Information Commissioner's Office (ICO). Contact details, and details of data subject rights, are available on the ICO website https://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr/individuals-rights/.

Who is organising and funding the research?
This research has no external funding.

16. **Contact for further information**

Researcher:	Jacqui Bartram
Email:	Provided but removed for privacy
Telephone:	Provided but removed for privacy
Supervisor:	Provided but removed for privacy
Email:	Provided but removed for privacy

Thank you for reading this information sheet and for considering taking part in this research study. Should you wish to go ahead, you will be given a copy of this information sheet and a signed consent form to keep.

Appendix 4 Consent form

UNIVERSITY OF HULL

University of Hull

Hull, HU6 7RX
United Kingdom
T: +44 (0)1482 346311 | **E:** j.bloggs@hull.ac.uk

CONSENT FORM FOR STAFF

YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP

Please complete this form *after* you have read the Information Sheet

Title of Study:

BRIDGES AND BARRIERS TO DEVELOPING VISUAL LITERACY IN UNDERGRADUATE STUDENTS

Department:

SCHOOL OF EDUCATION AND SOCIAL SCIENCE

Name and Contact Details of the Researcher:

JACQUI BARTRAM

[redacted]

Contact Details of the University of Hull Data Protection Officer:

DATA PROTECTION OFFICER

Venn Building
University of Hull

Data.Protection@hull.ac.uk

This study has been approved by the Faculty of Arts and Social Sciences Ethics Committee:

Reference number: 1819PGR08

Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to participate.

I confirm that I understand that by ticking/initialling each box below I am consenting to this element of the study. I understand that it will be assumed that unticked boxes means that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element that I may be deemed ineligible for the study.

		Tick Box
1.	I confirm that I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had the opportunity to ask questions which have been answered to my satisfaction	☐
2.	I would like to take part in an individual interview	☐
3.	I understand that I will be able to withdraw my data up to four weeks after an individual interview	☐
4.	I consent to the processing of my personal information (name and contact details) for the purposes explained to me. I understand that such information will be handled in accordance with all applicable data protection legislation.	☐
5.	I consent to my interview being audio recorded and understand that the recordings will be destroyed following transcription and any queries arising during the transcription are resolved.	☐
6.	I understand that my data gathered in this study will be stored anonymously and securely. I understand that results and publications will be pseudonymised, and that as far as possible, it will not be possible to identify me in any publications. Only my organisational affiliation (but not the title of my position) and broad non-identifiable demographics will be used against my pseudonym. I am aware that I have the right to request edits in future publications if I feel my anonymity is compromised.	☐
7.	I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason. I understand that if I decide to withdraw, any personal data I have provided up to that point will be deleted unless I agree otherwise.	☐
8.	I understand no benefits have been made to encourage me to participate. I understand that I will not benefit financially from this study or from any possible outcome it may result in in the future.	☐

Name:

Signature: Date:

Appendix 5 Interview schedule

Question	Follow up questions
Preliminary: Can you tell me a little bit about yourself	• i.e. Your background, how long you have been at this institution etc?
1. Can you tell me your rationale for using ASSESSMENT X as your assessment method in *MODULE Y*	• [Possible if answer is "I did not decide"] • Would you have still chosen to use that method? - and why/why not?
2. Do you consider the visual elements of a poster/presentation/other assessment method to be important - and why?	• Do you consider this to be an implicit part of your discipline?
3. Do you specifically TEACH the effective use of visuals in posters/presentations/other assessment method (or make sure your students receive such teaching)? If so, how?	• [Possible if answer no] Do you think you promote the effective use in a other ways, and if so how? • Do you think it is your role to teach this? Are you happy doing so? Do you think they get this elsewhere in the programme?
4. How are visuals generally used to communicate information or ideas in your discipline/field?	• Has this changed? (recently? Since you began teaching?) • How important is the ability to do this for undergraduates? • At what point do you become producers rather than consumers of such communication?
5. These cards (given during interview) are the visual literacy standards created by the ACRL and endorsed by CILIP here in the UK. Where would you put their importance on this diagram…(shown below) and please explain your decisions.	• **How do these move if the vertical axis is changed to Skills my students have when they graduate?** **…and if the horizontal access was looking at skills for employability rather than subject-specific?**

6. Are you aware of any other 'literacies' that undergraduate student may need to develop?	• Why do you think these are more well known than visual literacy? • Do you think they are more important? • [Prompt if need be] What about information literacy and digital literacy? Do you think these are more important? • Do you expect students to demonstrate any of these other literacies in your modules? • Do you teach or promote these yourself (or make sure your students receive such teaching)? • [Possible if doing either of these but not visual literacy] - Why is visual literacy different?
If you are a programme leader: **7. Are you aware of any aspects of visual literacy being developed in any other modules in the programme you lead?**	Do you take this into account when putting together the programme?
8. Is there anything else you can tell me about what we have discussed?	

Appendix 6 Individual confidence grids

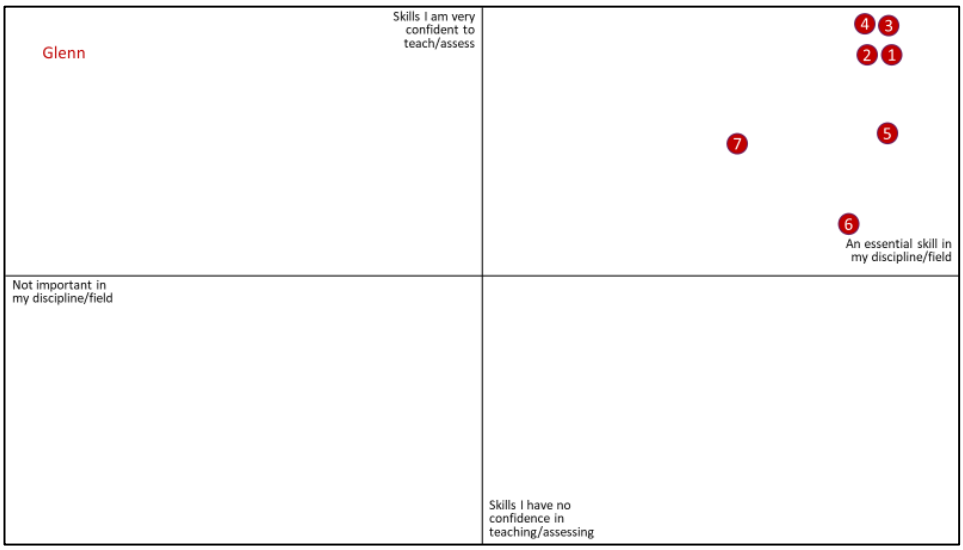


Figure A1 Glenn's confidence grid (explicit development)

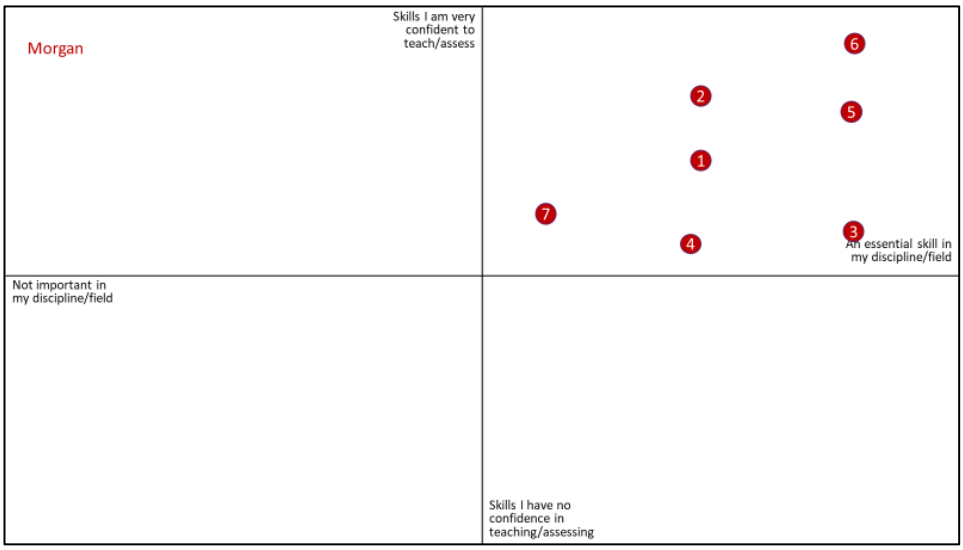


Figure A2 Morgan's confidence grid (explicit development)

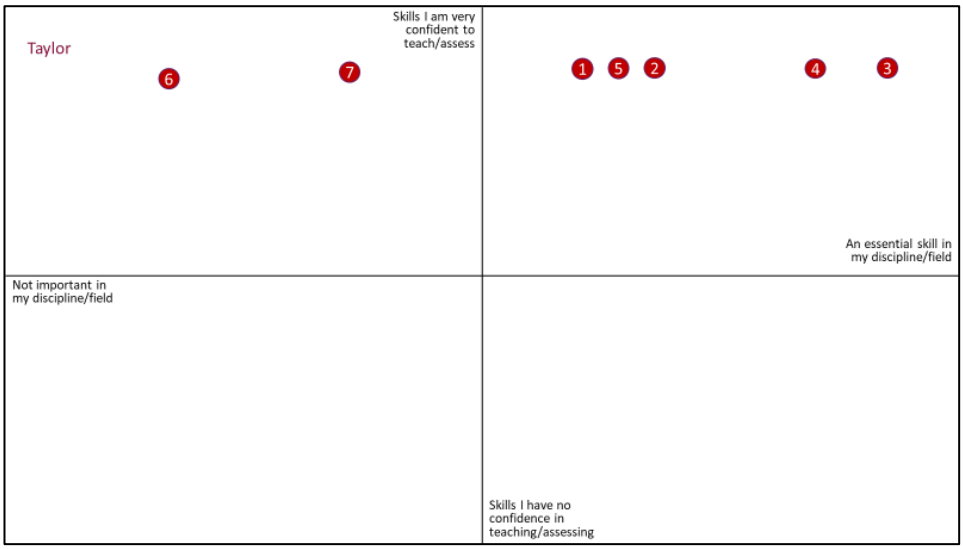


Figure A3 Taylor's confidence grid (explicit development)

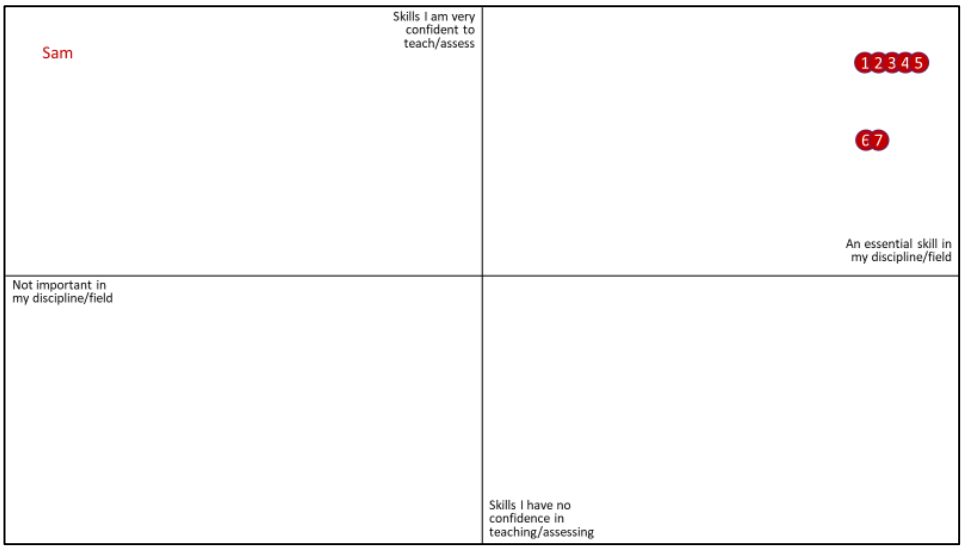


Figure A4 Sam's confidence grid (explicit development)

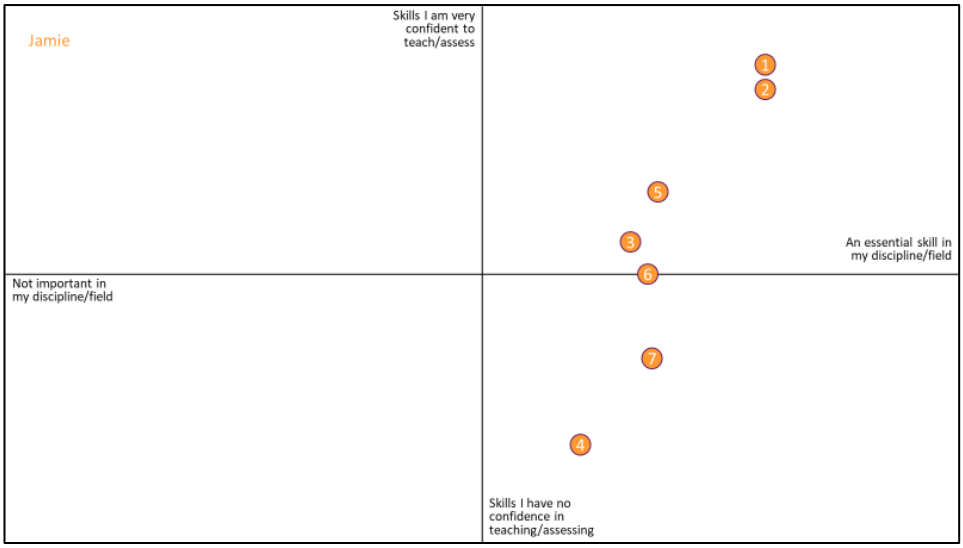


Figure A5 Jamie's confidence grid (implicit development)

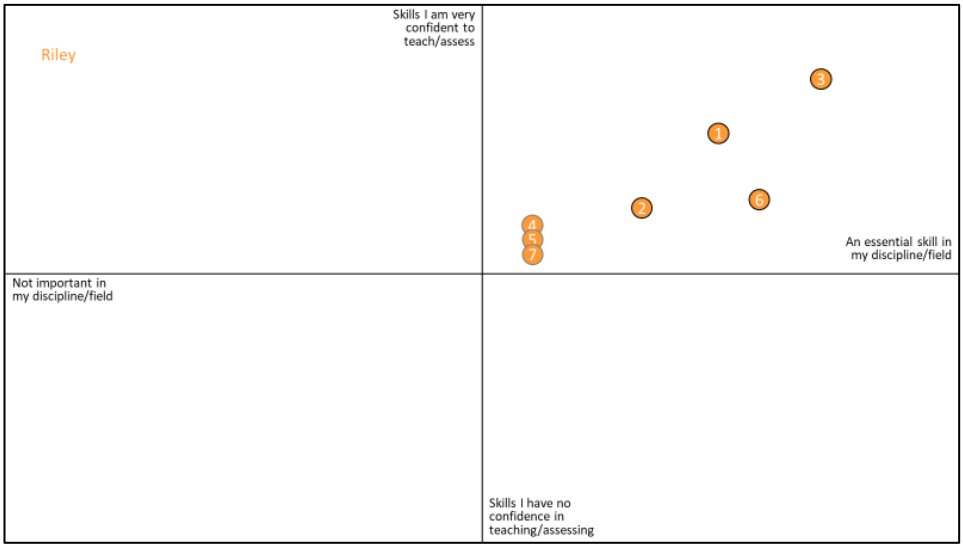


Figure A6 Riley's confidence grid (implicit development)

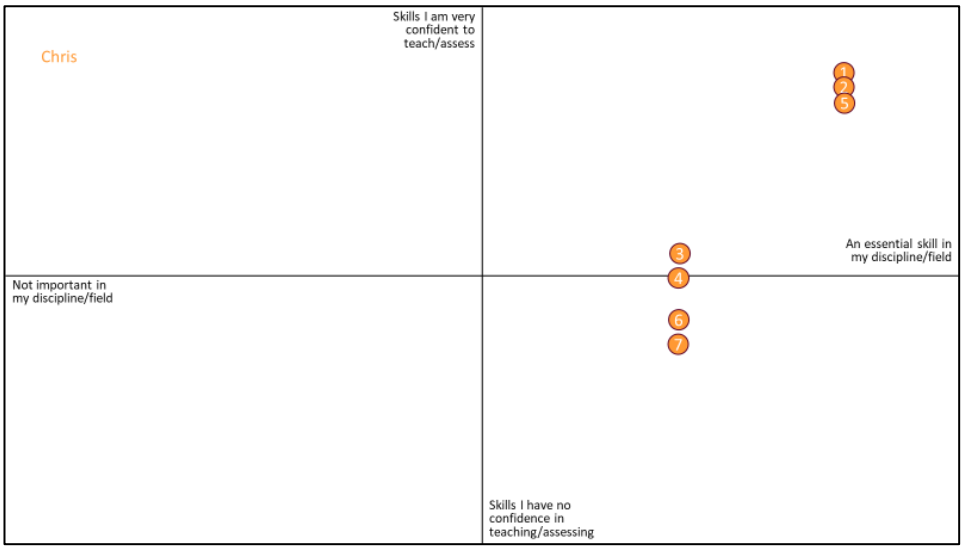


Figure A7 Chris's confidence grid (implicit development)

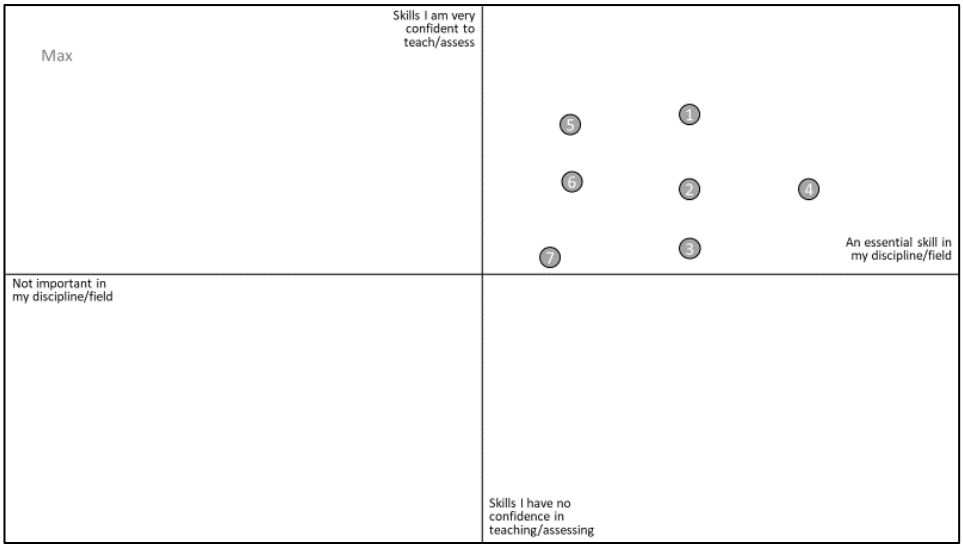


Figure A8 Max's confidence grid (potential development)

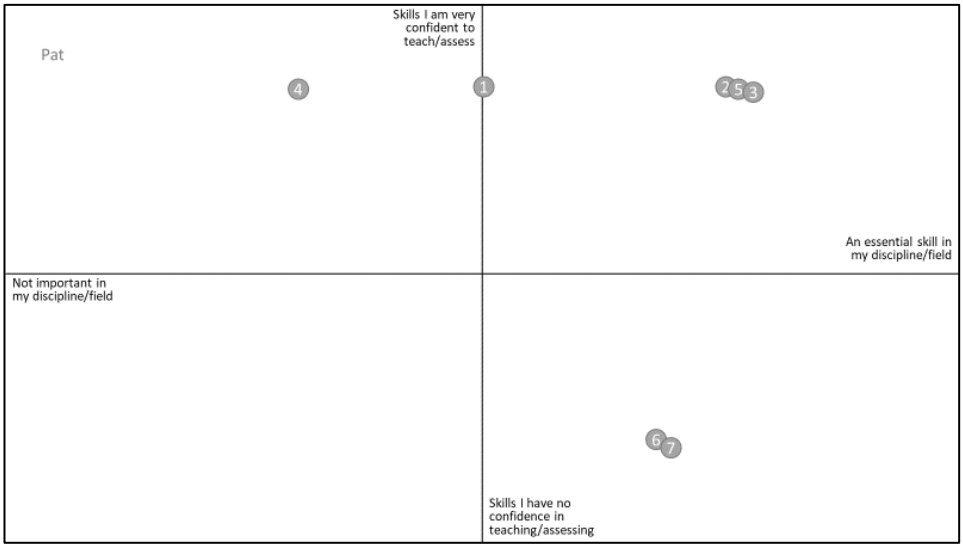


Figure A9 Pat's confidence grid (potential development)

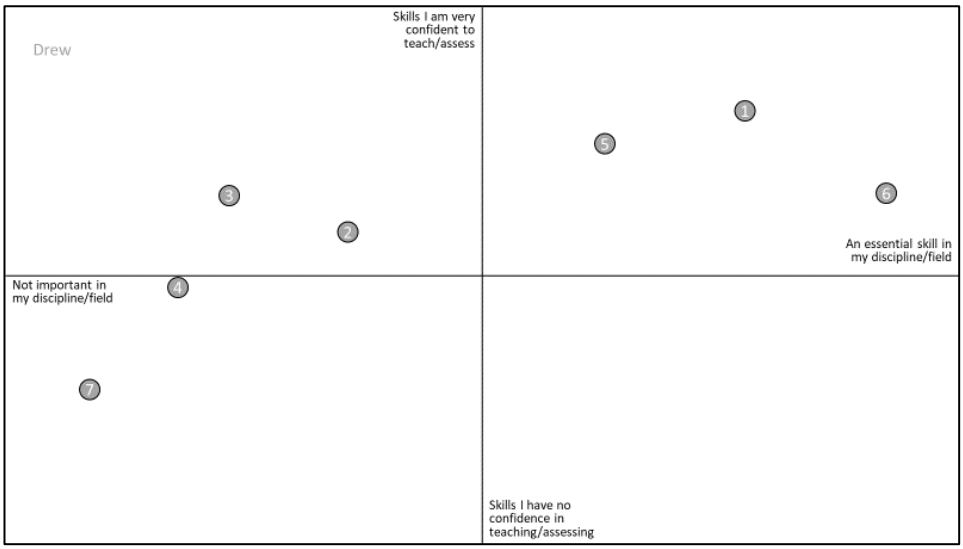


Figure A10 Drew's confidence grid (potential development)

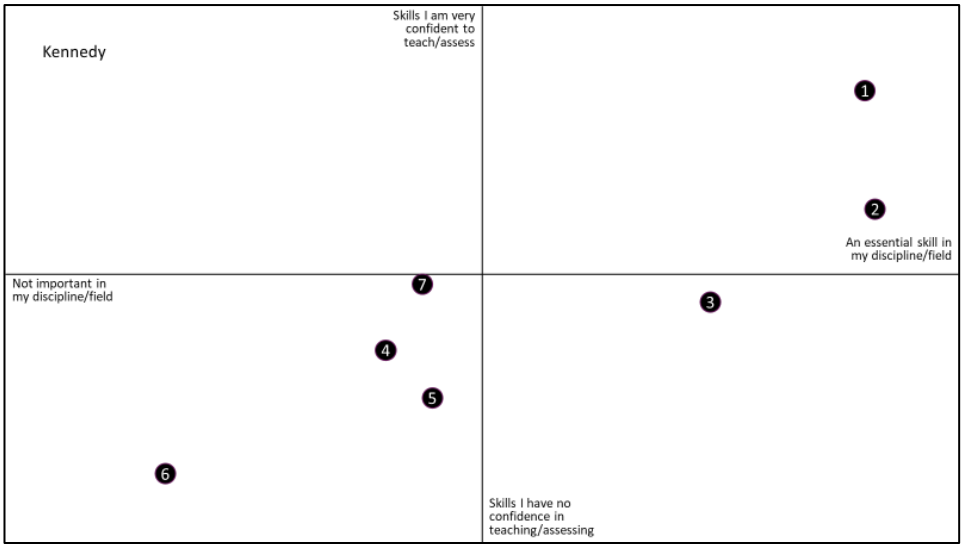


Figure A11 Kennedy's confidence grid (no apparent development)

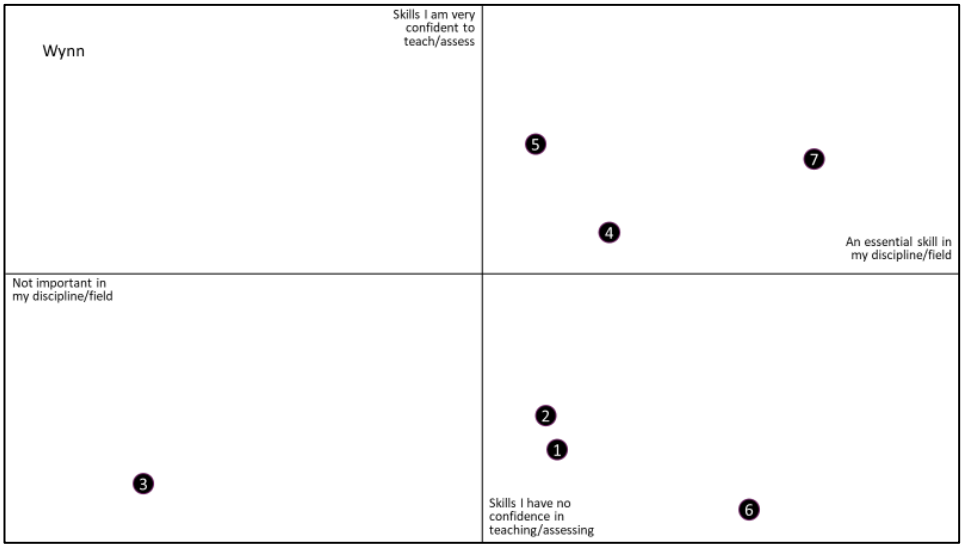


Figure A12 Wynn's confidence grid (no apparent development)

Appendix 7 Centrally provided assessment rubric for presentations

Section	Weighting	Upper 1st	1st	2.1	2.2	3rd	Outcomes just not met	Limited outcomes met	No outcomes met
		90%	80%	65%	55%	45%	35%	15%	0%
Presentation		The presentation is particularly exceptional in its design principles beyond what would be expected at this level of study such that they show evidence of careful thought and study outside of the training provided on the course.	All of the four elements expected for a 2:1 are evident but 3 or more are exceptional, innovative, or otherwise remarkable.	1. The presentation adopts an appropriate structure that provides a clear story/narrative (this might be indicated in the assignment brief). 2. The presentation design principles are accessible and easy to read. The design principle is consistent throughout (especially for group presentation) 3. The slides use professional design principles including informative diagrams and concise text. 4. The expected professional conventions are used correctly (e.g. correct referencing and adherence to time limits).	Not all of the four elements expected for a 2:1 are evident but none fall short by any significant margin.	Not all of the four elements expected for a 2:1 are evident and 1 falls short by a significant margin.	Not all of the four elements expected for a 2:1 are evident and 2 fall short by a significant margin.	Not all of the four elements expected for a 2:1 are evident and 3 fall short by a significant margin.	The submission falls short of all four elements expected for a 2:1 by a significant margin.
Individual presentation		The individual is professional, exciting, engages with the entire audience, speaks clearly, does not run over or under time, is convincing in their knowledge of the subject (without extensive use of notes), and most of all is persuasive.			The individual is clear (projects out) and speaks at the audience. They do not run overtime. OR The student overcomes obvious and externally clear signs of nervousness and anxiety to deliver their part of the presentation.	The individual achieves most of the aspects of a 1st but has some consistent presentation issues (e.g. not looking at the audience, mumbling or over-reliance on notes).	The individual speaks but does not really exhibit many of the aspects required for a first.	The individual misses the session or otherwise does not contribute to the session itself but has (by consensus of their group) contributed to the actual presentation.	The individual misses the session or otherwise does not contribute to the session itself and has not (by consensus of their group) contributed to the actual presentation.
Individual questions		The individual provides a particularly excellent, coherent and informed answer to a question from the panel or the audience.		The individual provides a coherent answer to a question from the panel or the audience.	The individual attempts to answer a question from the panel or the audience.				The individual does not attempt to answer a question from the panel or the audience.