

Fit for Purpose: traditional assessment is failing undergraduates with learning difficulties. Might eAssessment help?

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Abstract

Recent years have seen unprecedented growth in the size, diversity and academic orientation of undergraduate student populations. Innovative pedagogies using information and communications technology (ICT) have addressed these changes by seeking to personalise learning, teaching and assessment and extend the range of educational media beyond the printed word. By contrast, course assessment in English universities remains largely unchanged, implemented typically in the form of high-stakes, timed exercises separate from the process and context of learning. Being almost always text-intensive, these can prove particularly stressful and disadvantageous for the growing numbers of students with specific learning difficulties (SpLD). Such challenges are examined in relation to national requirements and exemplified in the SpLD strategies developed in two faculties of an English university. The paper defines key principles and practices to be realised in order for assessment to be considered fit for purpose. Using these as criteria, traditional assessment is compared to new ways of evaluating student progress that are personalised, integral to and embedded in the learning process. It is concluded that computer-based assessment (eAssessment) offers fairer and more inclusive ways of monitoring, diagnosing, supporting learning, and reporting students' achievements.

Introduction

Higher education in England has undergone dramatic changes in both the size and heterogeneity of its undergraduate population. Intakes increased by 44% from 1999-2009 (OECD, 2010) and the demand for university places well outstrips supply. The size of the 18-20 population is predicted to fall by 13% from 2011 to 2020 but the overall UK population will increase. A 10% growth in higher education demand is expected to continue over the next ten years (OECD, 2010), pushing up the average age of students. The last decade has also seen significant growth in the number of students identified with specific learning difficulties (SpLD) such as dyslexia and dyspraxia (HESA, 2011; HESA, 2012). This widening social and cultural diversity of university entrants is likely to continue, reinforced by equality legislation promoting access to entitlements (Jamieson and Morgan, 2007). In the UK, increases in part-time and mature students (over 21 years of age) are closely related, suggesting that as numbers of mature applicants grow there will be greater demand for part-time study and vocationally relevant degrees to address the growing employment opportunities predicted in the knowledge-intensive services sector (Williams, 2007; The Work Foundation, 2009).

English universities are experiencing radical changes in national priorities. The Conservative-led coalition government seeks to create a competitive, student-driven university market and has reduced state funding in most subjects, in exchange for a trebling of undergraduate fees. The likely effect will be to turn students from 'service users' into customers and will exert further pressure on universities to introduce more flexible types of course structure, delivery and assessment for the growing numbers of home-based students in part-time employment. Another driver is the importance of league tables created with data such as the annual National Student Survey (NSS, 2012), where the lowest student satisfaction rating is the speed and quality of feedback given to assessed work. As Price et al. (2011) argue, dissatisfaction with current assessment practice has become a key issue.

There is growing pressure on universities to reform assessment. Traditional timed, essay examinations are high-stakes and summative, with outcomes more likely to be reported to students in the form of conflated numerical marks. Although the use of

statistical processing gives the appearance of objective rigour, this is misleading and there is considerable evidence that examinations have poor validity and reliability (Brown, 2010; Yorke, 2011). In the way that they are typically employed, examinations also provide little feedback to students – yet well constructed formative feedback has been shown to have great motivational value (Taras, 2002; Blair and McGinty, 2012). Vocationally oriented courses are more likely to include the application of propositional knowledge in contextual and work-based environments – for which, as Williams (2008) argues, traditional examinations are ill suited. In their *Manifesto for Change*, Price et al. (2008) propose six tenets developed by an expert group. They call for a shift in emphasis from summative to formative assessment, away from marks and grades towards evaluative feedback focused on intended learning outcomes. They argue also for students to more actively engage and take ownership of their own learning. Similar recommendations are made by Boud and Associates (2010) in their *Assessment 2020* propositions for reform in higher education, placing ‘assessment for learning’ (Black and Wiliam, 2009) at the centre of course design.

The following four sections detail the nature and effects of SpLD, discuss sector-wide responses and requirements, identify principles and practices, and describe SpLD provision within two faculties of an English university.

The nature and effects of SpLD

The number of students with SpLD entering higher education institutions has climbed over the past two decades (Jamieson and Morgan, 2007). Internationally, up to 10% of students attending higher education are registered with a disability, with learning difficulties being the most commonly reported type (Hadjikakou and Hartas, 2008). In the UK, the number of undergraduates in receipt of Disabled Students’ Allowance almost trebled to 62,865 in the eight years to 2011 (HESA, 2012), and in 2010 3.9% of first year undergraduates were registered with SpLD (HESA, 2011).

SpLD covers a range of conditions including dyslexia, dyscalculia and dyspraxia (Cowen, 2010). Dyslexia, the commonest, affects the way information is handled, stored and retrieved, with problems of memory, processing speed, time perception, organisation and sequencing (BDA, 2011). Entering university is a stressful experience for most students (Tinto, 2005), but this may be heightened for those with SpLD (Carroll and Iles, 2006). Dyslexic students' slower handwriting speed can translate to 300 fewer words in a two-hour essay examination (Summer and Catarro, 2003) and difficulties with short-term memory, information processing and academic English disadvantage the examination performance of all students with SpLD (Osborne, 1999; Gannon-Leary and Smailes, 2004). Indeed, some dyslexic students choose a course on the basis of the assessment regime having few or no examinations (Gannon-Leary and Smailes, 2004).

Sector-wide responses for SpLD

Responses across the English higher education sector to address diverse learning needs have been reactive and focused on making adjustments to existing provision. This strategy of accommodating 'difference' is a historical legacy of the medical conceptualisation of disability (Riddell et al., 2004). The 'medical model' (Llewellyn and Hogan, 2000) focused on the disadvantaging impact of physical or mental impairments to an individual; consequently students attending university were perceived as biologically deficient, and the institution met individual needs with support and special adjustments. By contrast, the 'social model' (Shakespeare, 2006) focuses on the environment in which such students operate. The academic literature consistently acknowledges that accommodating additional needs as 'add-ons' to provision is neither time- nor cost-effective. The new policy agenda is towards inclusive education to significantly empower students with disabilities to learn more effectively (National Association of Disability Practitioners, 2012). Inclusivity is treated as a mainstream issue, meaning that policy and practices must move away from supporting specific student groups, towards embracing quality enhancement for all (May and Bridger 2010).

Universities must conform to the requirements of the 2010 Equality Act, making it unlawful to treat disabled students less favourably than their non-disabled peers. The

legislation has been interpreted in the Quality Assurance Agency Standards (QAA, 2010), prescribing inclusive practices to benefit all students. Institutional approaches to inclusivity can be sited on a continuum from modified provision through alternative provision to inclusive provision (May and Bridger, 2010). Modified provision is concerned with the implementation of 'reasonable adjustments' for individual students, for example allowing extra time for examinations; it is a reactive approach concerned with conforming to the requirements of legislation and orientated within the medical model. This contrasts with an inclusive approach, in which institutions seek to embed special arrangements for particular students – such as offering alternative assessment opportunities. Such an approach is more proactive and addresses the needs of a diverse student body. An example can be found in the SPACE (Student-Staff Partnership for Assessment Change and Evaluation) project (Waterfield and West, 2007), which investigated the use of inclusive and alternative assessment practices that no longer necessitated reasonable adjustments. These changes resulted in increased student satisfaction and improved grades (Waterfield and West, 2007), supporting the view that inclusive practice benefits all (Madriaga et al., 2010).

Principles and practices for assessment and student support

This paper derives two key principles for assessment and student support from the foregoing. They are that:

1. assessment methods should be inclusive and equitable
2. systems of student support should reflect the social model.

The assessment and support practices relating these principles are set out in Table 1, where assessment methods 1a – 1d relate to the first principle, of inclusiveness and equitability, and support systems 2a – 2b to the second principle, of reflecting the social model. The principles will be employed later in the paper, as criteria by which to compare approaches to assessment and student support.

Table 1. Principles and practices for methods of assessment and systems of student support.

PRINCIPLES	PRACTICES
1. Assessment methods should be inclusive and equitable.	a. Methods should provide equitable opportunities for non-conventional students and those with SpLD to demonstrate their knowledge, understanding, skills and achievements through active engagement with and ownership of the learning process;
	b. Methods should be flexible and adaptive to the particular needs of time-constrained students with work and domestic commitments;
	c. Methods should provide students with timely and formative feedback;
	d. Methods should be relevant to the vocational orientation of university courses.
2. Systems of student support should reflect the social model.	a. Systems should not modify provision in order to 'accommodate' the needs of specific groups of students.
	b. Systems should be designed to empower all students and meet the diversity of their needs.

University of Hull strategies for SpLD

Provision for SpLD at the University of Hull is located towards the modified provision end of the continuum. Support networks, procedures and guidelines are in place to ensure that the University carries out its legal obligations, and a Disability Services team offers a wide range of support to students including advice on academic practices and study skills via one-to-one sessions, workshops and information. Students are referred to Disability Services for a full psychological assessment to ascertain eligibility for Disabled Students' Allowance (DSA) prior to an Assessment of Needs – a process which articulates the adjustments required to meet the individual's learning requirements. DSAs for students with SpLD subsidise the purchase of sound recorders and portable computers with software for text-to-speech and mind-mapping. The University has produced guidelines and procedures for making reasonable adjustments to examination and assessment arrangements, guidelines for marking work from disabled students

who may have difficulties with written English, and guidance on making teaching more inclusive (University of Hull, 2008a; 2008b; 2008c). However, this 'add-on' approach runs the risk of setting students with SpLD apart from their peers, with the potential for discrimination and stigma, perpetuating the medical model of disability.

Different faculties of the University meet these inclusive practice requirements in different ways, and two examples are compared here. The Faculty of Health and Social Care has a range of programmes at pre- and post-registration level including honours degrees leading to professional qualifications in nursing, midwifery and allied health professions. The Scarborough School of Education in the Faculty of Education offers vocationally oriented courses ranging from a workplace-based Foundation Degree, honours degrees in Education and school teaching, and Masters courses for serving schoolteachers. Students in both faculties are drawn from diverse backgrounds, with higher proportions of mature and non-traditional entrants than the university norm. Table 2 compares SpLD provision in the two faculties. There are many commonalities in the ways the two faculties have interpreted the university's strategy, but the differences reflect the separate requirements of external professional bodies such as the Nursing and Midwifery Council and the Teaching Agency.

Table 2. SpLD Provision in two Faculties of the University of Hull.

PROVISION	FACULTY OF HEALTH AND SOCIAL CARE	FACULTY OF EDUCATION
Referrals and support	Referral via University Disability Services	
	Student Support Lecturer undertakes Disability Tutor role.	Lecturer in Academic English/Study Skills not specifically targeted towards students with SpLD.
	Specialist study skills embedded into a first-year module.	No embedded provision in subject specific modules. Three programmes have first-year study skills modules.
Individual tutorials	Personal Group Supervision Leaders undertake targeted support following student completion of an 'Attrition Risk Prediction Tool' (includes SpLD).	Academic English / Study Skills Tutor; Disability Tutor.
Coursework adjustment	Adjustments include: note-takers or Dictaphones, accessing lecture notes in advance, and having hand-outs on different coloured paper.	
Assistive technology	DSA covers cost of technology recommended in Assessment of Need report. Institutional licences for text-to-speech and mind-mapping software.	
Practice placements	All students and mentors given a 'Top Tips for supporting students with SpLD on placement' information sheet.	Common reasonable adjustments are made for coursework situated in placements.
Assessment	Adjustments include: extra time in examinations, rest breaks, use of an amanuensis/reader/ computer in examinations, requesting feedback on draft assessments, and extensions for deadlines.	
Other	If a student is considered 'at risk' of having SpLD, adjustments are put in place prior to formal identification and assessment.	Adjustments put into place after formal identification and Assessment of Needs report.

With the exception of the embedded study skills sessions, the types of provision outlined in Table 2 are essentially reactive 'coping strategies' that address effects rather than causes. This appears to be not uncommon, for as Hockings (2010) notes from an extensive review of research into inclusive learning and teaching in higher education, 'much of the literature showed the emphasis on students adapting to learning at

university rather than universities adapting to cater for the diverse educational backgrounds of their students' (Hockings, 2010, 21).

The remainder of this paper examines alternative methods of assessment and compares them to traditional methods, using as criteria the principles of assessment and student support presented in Table 1.

Personalising learning and assessment

The adoption of alternative assessment practices in higher education has lagged behind innovation in learning and teaching, which under the last Labour government was encouraged and supported in the UK through targeted funding. ICT has been used to situate learning in authentic contexts, pioneer problem-based, inquiry-based and collaborative learning, and to develop educational games and simulations (JISC, 2004; Mayes et al., 2009). The use of eAssessment – to enhance formative assessment in particular – has followed, and emerging evidence suggests is becoming more widespread. For example, Nicol (2009) reports on how eAssessment has improved both feedback and formative assessment for first-year undergraduates, and Hodgson and Pang (2012) note the benefits of formative eAssessment in encouraging reflection and engagement, with resultant gains in student satisfaction. This marries with an established body of evidence suggesting the diagnostic use of performance data in feedback results in learning benefits for all students (Torrance and Pryor, 2001; Boud, 2007; Black and Wiliam, 2009). Two developments are of particular significance for formative assessment and inclusion: electronic portfolios (ePortfolios) and Learning Analytics.

An ePortfolio is 'a purposeful collection of information and digital artifacts that demonstrates development or evidences learning outcomes, skills or competencies' (LTMS, 2011). ePortfolios are entering mainstream use in higher education and their educational value is well documented (Stefani et al., 2007; JISC, 2008). Outside formal education, there is evidence of a growing use of ePortfolios to supplement criterion-referenced assessments of the collaborative skills, creativity and productivity of

graduate employees in the professions, where constructive evaluation rather than assessment against intended learning outcomes is the preferred paradigm (Shephard, 2009). Similarly, Cotterill et al. (2006) report the use of ePortfolios in complex work environments and Scott (2005) notes that rather than just offering a replacement for traditional methods the potential of ePortfolios extends beyond the assessment of subject content into a wider evaluation of the aptitudes and skills expected of modern graduates. The radical reform of assessment to better match changing employment needs has long been the practice at Alverno College in the USA, where assessment-as-learning is an essential process within the development of an ability-based curriculum (Mentkowski, 2006). Alverno has extended this through a Diagnostic Digital Portfolio (DDP, 2011) to help students understand feedback comments from their teachers and peers, analyse their progress and take more control of their learning.

In common with other forms of alternative assessment, the use of ePortfolios must be carefully managed to overcome inherent problems. Maclellan (2004) identifies two key difficulties in all forms of alternative assessment. The first is *task specification*: problematic because of the need to tune out non-relevant variables such as generic skills and knowledge, and the need to separate judgements of task outcome from those of student performance. The second is *consistency of grading*: problematic because of the difficulty of determining optimal assessment criteria and making judgements across the variety of complex factors that are typically involved in situations where alternative assessment is employed. Baum et al. (2004) found substantial differences between the ratings of different portfolio assessors in situations where assessment criteria had been loosely interpreted. A more rigorous agreement and application of criteria was found to be of value by Van der Schaaf and others (2012), but issues of validity and reliability remain that are generic to all forms of ICT-based assessment (Gikandi et al., 2011). There is promise, however, in the use of intelligent machine reading. High levels of internal reliability comparable to that of human assessors was achieved in the use of software to grade undergraduate essays (Landauer et al., 2003), and Heinrich et al. (2009) report how similar systems for managing and marking assignments have been used successfully in five universities.

These developments link to the emerging use of Learning Analytics, defined by Siemens (2011 [unpaged]) as ‘the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs’. The focus is upon the online activity data generated by the learner in the process of learning and upon the formal ‘outputs’ (also online) of the learner in directed tasks and coursework. Long and Siemens (2011) note the intensive use of data in medicine, away from the clinical judgements of individual physicians towards evidence-based prediction derived from the analysis of large data sets. They contrast this with higher education, where the considerable volume of digital data generated by students using virtual learning environments (learning management systems) is not exploited. In Ferguson’s (2012) view, the technological drivers for the adoption of Learning Analytics are being supplemented by learning-focused ones, as social network analysis tools such as SNAPP (2011) are developed to identify patterns of behaviour in online forums. In the universities that have pioneered these developments, key advantages claimed for tutors and course managers are the early identification of students ‘at risk’, and the refinement of course materials informed by analysis of how they are typically used. Making the results of Learning Analytics available to students has a range of benefits including regular formative feedback on progress, ‘at risk’ alerts, and guidance on what actions to take to improve their performance. The latter is derived from analyses (employing ‘student success algorithms’) of peer and high-achieving students’ activity patterns, exemplified by the Check My Activity tool used at the University of Maryland (Fritz, 2010). Data visualisation systems present this information on ‘dashboards’ in simple ways, as in the Course Signals (2012) system developed at Purdue University and now commercially available (Ellucian, 2012). Here, individually-tailored emails from tutors include a traffic lights dashboard showing whether a student’s progress is satisfactory, at mild risk or urgent risk, and advise study strategies. In research by Arnold and Pistilli (2012) students felt the Course Signals system to be more personalised and inclusive. They subsequently became more proactive in meeting course targets and there were also significant improvements in student retention. This personalised assessment for learning as a supportive, inclusive and integral part of the student experience stands in sharp contrast to traditional assessment as a high-stakes exercise separate from context.

Evaluation of alternative and traditional approaches

This final section of the paper will first evaluate the potential of eAssessment in relation to the principles and practices identified in Table 1, then go on to evaluate traditional approaches.

Principle 1 states that *'assessment methods should be inclusive and equitable'* and this is articulated in four practices. Addressing Practice 1a (*'methods should provide equitable opportunities for non-conventional students and those with SpLD to demonstrate their knowledge, understanding, skills and achievements through active engagement with and ownership of the learning process'*), the evidence from JISC (2004; 2008) on the learning benefits of eAssessment and ePortfolios and the findings of Stefani et al. (2007), Mayes et al. (2009) and Hodgson and Pang (2012) support the view that all students can engage with and benefit from these applications. Examples of how new technologies can be used to address issues of flexibility and feedback are provided by de Freitas and Yapp (2005), JISC (2008), Nicol (2009) and Course Signals (2012). These address both Practice 1b (*'methods should be flexible and adaptive to the particular needs of time-constrained students with work and domestic commitments'*) and Practice 1c (*'methods should provide students with timely and formative feedback'*). Finally, addressing Practice 1d (*'methods should be relevant to the vocational orientation of university courses'*), Shephard (2009), Cotterill et al. (2006), Scott (2005) and Mentkowski (2006) report the successful use of ePortfolios to support context based learning and career development in work settings. Principle 2 states: *'systems of student support should reflect the social model'*. Stefani et al. (2007) argue that the strengths of ePortfolios for personalising learning are also strengths for inclusivity, and they provide guidelines for ePortfolio design in relation to the needs of dyslexic students (Stefani et al., 2007, 111-113). In addition to text, the affordances of ICT (Conole and Dyke, 2004) provide a range of presentation media including audio-clips, photographs, video-clips, animated diagrams, narrated video and interactive learning/assessment objects. These not only assist students who would experience difficulties with text-intensive work, but also provide teachers with a richer variety of media through which to design context based assessment tasks. The opportunities provided by Learning Analytics should enable

university teachers to shape learning opportunities to individual students' needs and talents in a more proactive and finely grained manner than is possible at present. The resultant targeting therefore addresses both practices relating to Principle 2 (2a: *'systems should not modify provision in order to 'accommodate' the needs of specific groups of students'* and 2b: *'systems should be designed to empower all students and meet the diversity of their needs'*), with the potential to be more fully inclusive, empowering all students and seeking to meet the diversity of their needs.

As the information in Table 2 shows, despite considerable attempts through referrals, individual tutorial support, coursework adjustments, assistive technology and various compensating strategies, traditional methods of assessment impose constraints that make it difficult for universities to meet the requirements of Practice 1a for students with SpLD to equitably demonstrate their knowledge, understanding, skills and achievements. The siting of assessment separate from the process of learning creates disproportionate problems for time-constrained students with work and domestic commitments (1b), and can limit the opportunities for situating assessment in the realistic contexts that are particularly important in vocationally-oriented courses (1d). Finally, the employment of examinations – in the way they are typically organised – means that timely and formative feedback and the benefits of assessment for learning are not available (1c). Taken together, these four practices cast doubt on whether Principle 1 – that assessment methods should be inclusive and equitable – might ever be achievable by traditional approaches. If this is the case, then Principle 2 – that systems of student support should reflect the social model – must also be difficult to achieve, as provision must be modified for SpLD students (2a) and the disadvantage intrinsic to many traditional methods considerably hamper the design of student support reflecting the social model, and so empowering all (2b).

Conclusion

This paper has outlined some of the challenges for English universities presented with increasingly heterogeneous intakes: for inclusive provision with more appropriate assessment formats, flexible delivery and personalised academic support. Examples have been discussed of compensating strategies employed by two faculties in one

university, where providing learning support specialists and integrating study skills into programmes addresses effects rather than causes. Considerable time, effort and dedication are needed by institutions to meet just some of the needs of students with SpLD; but the elephant of traditional assessment remains in the room. The methods of the previous century, in which assessment is typically through a non-personalised, high-stakes, timed and text-intensive exercise separate from the learning process and context, must be questioned. In particular, as this paper has argued, practices such as examinations unfairly disadvantage an increasing proportion of students, contravene the spirit of equality legislation and must be considered no longer fit for purpose. The opportunities of eAssessment for a more inclusive and personalised monitoring of students' progress open the door to pedagogic and curriculum change in which assessment can be made integral to and embedded in learning, and students can more equitably achieve their academic potential.

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