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MODERNISING ASSESSMENT: THE USE OF WEB 2.0 FOR FORMATIVE AND SUMMATIVE ASSESSMENT

Bobby Elliott

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Abstract

This paper considers current assessment practice, looks at the impact of the Internet on today's learners, and explores ways of modernising assessment to narrow the real or perceived gap between the everyday lives of students and the assessment practices that we impose on them.

Assessment 1.0

At its most basic level, assessment is the process of generating evidence of student learning and then making a judgment about that evidence. Current assessment practice provides evidence in the form of examination scripts, essays or other artefacts.

Characteristics of Assessment 1.0

For the purposes of this paper, 'Assessment 1.0' can be thought of as assessment practice from the beginning of the 20th century until today. Throughout this period, assessment exhibited the following characteristics:

- mostly paper-based
- mostly classroom-based
- very formalised (in terms of administration)
- highly synchronised (in terms of time and place)
- highly controlled (in terms of contents and marking).

These characteristics were largely unchanged during this period; a school master from 1907 would feel at home in an examination hall in 2007.

This system of assessment has served us well. The highly centralised, top-down, command-and-control assessment system matched the kind of society that existed throughout most of the 20th century. Its stability has engendered widespread public confidence in the examination system in the UK (QCA 2006)[i] and maintained national qualifications as the primary means of employee selection and progression to Higher Education. The system is also widely understand by its users (students, parents, teachers, university

admissions staff, employers and politicians), being relatively unchanged from generation to generation.

Assessment 1.5

A more up-to-date form of assessment has developed in the last ten years, which involves the use of computers in the assessment process. 'E-assessment' embraces 'e-testing' (a form of on-screen testing of knowledge) and 'e-portfolios' (a digital repository of assessment evidence normally used to assess practical skills).

Problems with assessment 1.0 – and 1.5

In recent years, traditional assessment has been the subject of criticism. The current system is struggling to cope with the demands being placed on it. It was designed to filter students by ability for the purpose of employment or university selection – not mass accreditation of student achievement. Because of its bureaucratic nature, it's expensive to run and doesn't scale well. Awarding bodies' costs are rising and these are being passed onto schools and colleges, which complain about the rising burden of examination fees. It's also inflexible, organised around examination "diets".

In addition to these practical considerations, there are educational and political concerns. Some educationalists claim that the current assessment system encourages surface learning and "teaching to the test". Instead of instilling genuine problem solving skills, it fosters memorisation. Examination papers that appear to pose "deep" questions are answered using rote memory – memories that are acquired by students under pressure from parents who are keen to see their children gain qualifications, and drilled by teachers who are seeking to meet targets. Employers complain that, in spite of rising achievement (DfES 2006)[ii], young people are not gaining the skills that are needed in the modern workplace – skills such as collaboration, team working, problem solving, adaptability and creativity. Teachers complain about the rising burden of time spent carrying-out and marking assessment– and which reduces the time available for "real learning". Students themselves complain that the only time that they are required to undertake extended writing is during an examination.

These criticisms are not confined to paper-based assessment. E-testing has been criticised for crudely imitating traditional assessment. Vendors of computer-based testing systems boast about their systems' faithful reproduction of the paper experience. These systems typically support a limited number of question types (almost always selected response questions) and, at best, crude simulations of traditional tasks. Most contemporary e-portfolio systems, likewise, set-out to mirror the existing curriculum, effectively little more than online storage for students' work, with a highly content-focussed (rather than student-centred) approach to assessment.

"In 21st century learning environments, decontextualised drop-in-from-the-sky assessments consisting of isolated tasks and performances will have zero validity as indices of educational attainment." (Pellegrino, 1999)[iii]

These criticisms of e-assessment mirror the criticisms of VLEs – that they simply seek to copy conventional practice: the "primacy of pedagogy" as Cousin (2004)[iv] described VLEs' slavish simulation of the traditional classroom rather than seeking to capitalise on the unique opportunities afforded by technology. Cousin observed that: "VLE environments (*sic*) tend to be skewed towards the simulation of the classroom, lecture hall, tutor's office and the student common room." Similarly, most contemporary e-assessment systems are skewed towards the simulation of the class test and the examination hall. Or, to paraphrase Cousin, they re-enforce the "tyranny of testing".

Both paper-based and computer-based assessments are perceived by students as something external to them; something that is "done" to them; something over which they have no control. And the assessment instrument itself is considered contrived and artificial: just a hurdle to be jumped – not part of their learning. Assessment 1.0 (and 1.5) is also intensely individualistic. Assessment activities are done alone, competition is encouraged, and collaboration (or "cheating" as it is known in the world of Assessment 1.0) is prohibited.

Not ideal preparation for the 'networked information economy'.

Web 2.0

Meanwhile, the Internet is evolving. 'Web 2.0' is the name given to the current state of development. Anderson (2006)[v] describes "six big ideas behind Web 2.0". These are:

- user-generated content
- the power of the crowd
- data on an epic scale
- architecture of participation
- network effects
- openness.

For the purposes of this paper, four of these ideas are of particular relevance.

User-generated content refers to the ease of creating content. Web services such as MySpace, Blogger and YouTube have made it easy to create content – and more and more young people are doing exactly that, with social networking sites becoming a significant part of contemporary culture.

The **power of the crowd** refers to the collective intelligence that can be harnessed from large groups of people. The basic premise is that, subject to

certain conditions, a large group of knowledgeable (but non-expert) users can make better decisions that any individual expert. Web services such as Digg and Wikipedia are cited as examples of this collective intelligence.

Architecture of participation is based on the twin ideas that Web services must be easy to use (thereby encouraging participation) and must be organised in such a way as to improve as more people use them. Google Search is a good example of both since it is very straight-forward to use and its search algorithms (which are proprietary) learn from the results of previous searches (although the precise means are not known). An aspect of ease-of-use is the idea that not only is new content easy to create but it should be easily created from pre-existing content or easily combined with the contents of other web services ("mash-ups").

Openness not only refers to the use of open source software for many Web 2.0 services but also the philosophy of the free sharing of information and resources among users, making it relatively straight-forward to capture and share information or resources, such as embedding a YouTube video in a blog.

Digital natives

It is in this environment that today's students are living and learning. In *Digital Natives, Digital Immigrants* Prensky (2003)[vi] argued that there was a fundamental distinction to be made between today's learners and those of the past due to "the arrival and rapid dissemination of digital technology… an event which changes things so fundamentally that there is absolutely no going back". He labelled these new learners "digital natives" and contrasted them with "digital immigrants": "The single biggest problem facing education today is that our digital immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language".

Today's learners are also known by other names. Diana Oblinger (2003)[vii], of Microsoft, calls them the 'Millennial generation': "Millennials exhibit distinct learning styles. For example, their learning preferences tend toward teamwork, experiential activities, structure and the use of technology. Their strengths include multitasking, goal orientation, positive attitudes, and a collaborative style". From the student's perspective, "Net Geners" are "academically driven… we refuse to accept elders' speeches or sermons at face value… our technological savvy makes us smarter, easily adaptable, and more likely to employ technology to solve problems" (Windham, 2005)[viii].

Different learning styles

A common set of characteristics emerges from the literature on the digital native with respect to their learning styles. These are:

- skilled use of tools
- active learning rather than passive receiving of knowledge
- authentic learning experiences rather than contrived tasks

- task (not process) oriented
- just in time learning
- search not memorise
- utilise social networks
- doesn't know answer but knows where to find it
- Google not libraries
- collaborate not compete.

When tasked with an assignment, a young person is likely to look-up Wikipedia, search for relevant information on Google, seek help from their friends via Hotmail or MySpace, finally pulling together the resulting information into a coherent document using a range of web-based and desktop applications. Unless, of course, the assignment is the same as last year's, in which case a simple e-mail to a friend (or someone else in their extended social network), requesting last year's answer, will be sufficient for these goal-oriented learners.

Disjoin between classroom practice and real world behaviour

The above scenario sidelines the formal teaching and reference material that the student is meant to use. There is a growing disconnection between the lives of students inside and outside of the classroom. "Schools should not expect students to leave the 21st century in the cloakroom; for example, many schools do not allow e-mail, instant messaging, mobile phones or blogging" (Owen *et al* 2006)[ix]. And the list of prohibited technologies is growing. Twist and Withers (2006) describe the ways in which young people really learn as the "hidden curriculum" – the "informal digital spaces", such as MySpace and MSN, which students routinely use for social and educational purposes.

Assessment 2.0

This paper proposes an update to Assessment 1.0. The updated system will embrace the Internet and, more specifically, Web 2.0 – particularly the four "big ideas" described above. It seeks to bring the 21st century into the examination room.

Characteristics of Assessment 2.0

The type of assessment activity best suited to the digital native would exhibit some or all of the following characteristics.

- **Authentic**: involving real-world knowledge and skills.
- **Personalised**: tailored to the knowledge, skills and interests of each student.
- **Negotiated**: agreed between the learner and the teacher.
- **Problem oriented**: original tasks requiring genuine problem solving skills.
- **Socially constructed**: using the student's social networks.

- **Collaboratively produced**: produced in partnership with fellow students.
- **Recognise existing skills**: willing to accredit the student's existing work.

And the type of evidence that best fits this type of assessment would be:

- **naturally occurring**: already in existence or generated out of personal interest
- **digital**: such as e-mail, instant message logs, blog posts, wiki contributions, audio and video recordings
- **multimedia**: existing in text, audio and video format
- **distributed**: may be scattered across various sources (such as web sites, blogs, inbox, iPod).

For example, an Assessment 2.0 task relating to language skills would permit the student to explore a topic of personal interest to them, negotiating the precise parameters of the task with their teacher, working in conjunction with fellow students, and recognising the student's previous writing on the subject (such as their MySpace page). The evidence could be in a number of digital formats such as e-mail conversations, IM logs, blog, web site or wiki.

How Web 2.0 can be used for assessment

Assessment is about evidence generation. The diagram below illustrates how evidence is traditionally produced.

Evidence has to be discovered (when it already exists) or created (when it does not). The resulting information has to be captured and organised. And, once it is coherent, the evidence has to be assessed. It is straight-forward to relate this model to Web 2.0. The following table illustrates how a range of Web 2.0 services can be used for one or more of these stages. For example, a contemporary web-based e-mail system (such as Google Mail) can be used as a repository of every e-mail message you ever send or receive – which could be an Aladdin's Cave of assessment evidence.



The following table relates a number of Web 2.0 services to the assessment cycle.

Web service	Example	Cycle	Use
Personal portal	Netvibes	Evidence organisation	Combining items on single page
E-mail	Google Mail	Evidence storage	Searching e-mail archive for evidence
Blog	Wordpress	Evidence organisation	Recording activities
RSS	Bloglines	Evidence discovery	Subscribing to evidence sources
Social bookmarking	Del.icio.us	Evidence capture	Capturing URLs
VOIP	Skype	Evidence capture	Talking and chatting
Wiki	Wikispaces	Evidence creation	Collaborative writing
Instant messaging	MSN	Evidence discovery	Chatting
Search engine	Live Search	Evidence discovery	Locating information
Online storage	Box.net	Evidence organisation	Saving and storing information
Data capture	Clipmarks	Evidence capture	Selecting and storing information

Downes (2006)[x] describes the combination of Web 2.0 services for learning as "personal learning environments" (PLEs), arguing that the PLE is a "recognition that one-size-fits-all approach of LMS [VLE] will not be sufficient to meet the varied needs of students". Assessment 2.0 posits Web 2.0 as a **personal assessment environment** in recognition that the one-size-fits-all approach of e-assessment systems will not be sufficient to meet the varied needs (and interests) of candidates.

Advantages and Disadvantages of Web 2.0 for Assessment

Given that Web 2.0 is Life 1.0 for most students, it is an easy fit for most young people. They are already using Web 2.0 services as part of their everyday lives. Recognising their MySpace page or their YouTube video or their Odeo podcast seems only "fair" to them. And in doing so, it would reduce the perceived chasm between education and "real life". It would also provide an incentive to learners; instead of artificial tasks involving "ancient" practices (such as hand-writing or using the library), assessment could provide real challenges using real tools – the same tools that they will use in the workplace. Web 2.0 is inherently collaborative and the antithesis of Assessment 1.0's obsession with individuality – and collaboration is a skill much sought after by employers. Web 2.0 services are also inexpensive (or free), easy to maintain (since it is maintained by someone else), and very scaleable (in fact, the more users the better). The alternatives (dedicated e-

testing systems and e-portfolios) are expensive, difficult to maintain, (usually) proprietary, and quickly become out-of-date.

There are drawbacks. Older students (our digital immigrants) aren't using Web 2.0 services – or, at least, not routinely. They don't have MySpace pages or YouTube videos to be plundered for accreditation of prior learning. And they may lack some key Web 2.0 skills (such as search skills) and attitudes (such as a willingness to share). Assessment 2.0 also poses challenges for teachers – who are often the epitome of the digital immigrant. Not only might they lack the IT skills needed to understand Web 2.0 services but they may lack the knowledge and experience required to appraise students' work produced using these tools. They also lack the rubrics required to assess Web 2.0 skills, such as collaboration and team work. Group work is notoriously difficult to assess – so difficult that most awarding bodies prohibit it from high stakes assessment. Yet, it is at the core of Web 2.0 and a crucial skill for the workplace. Authentication is another challenge for awarding bodies in the world of Assessment 2.0, with the myriad sources of digital evidence and collaborative inputs making it a challenge to authenticate an individual piece of work.

The Future

It's impossible to confidently predict the future. But there are certain themes that emerge when you review the international literature relating to the future of education and technology. With regard to education, there is a consensus about the following:

- greater focus on education as a key differentiator between countries in the global economy
- growth in learning at all stages in your life (the "forty year degree programme")
- the emergence of new skills to better fit the networked information economy
- greater role for e-learning (and particularly mobile learning)
- move towards personalised learning (and, by corollary, personalised assessment)
- greater recognition of informal learning.

In tandem with these educational developments, the next decade may see the emergence of ubiquitous computing and Web 2.0 will evolve into Web 3.0. "Ubiquitous computing" describes a state of pervasive computing where digital devices are embedded into everyday life to such as extent that we are unaware of their existence. And Web 3.0 will consolidate the "big ideas" of Web 2.0.

"Educational institutions may be reconfigured from monolithic institutions to resources operating across different domains (e.g. home, school and community); educational practices may prioritise collaboration and reflection

rather than the acquisition of knowledge; and educational goals may be re-imagined as personal and bespoke rather than mass-industrial and one-size-fits-all. At the heart of these visions are personalisation, collaboration and learning to learn." (Owen et al 2006)[9]

If you combine these developments, you see a digitally rich environment, where learning will take place in multiple locations (at school, at home, on the bus), at a time to suit the learner; where learning is personalised – in fact, a world where the distinction between learning and living is blurred and assessment evidence occurs naturally as part of the student's everyday personal and professional endeavours.

Conclusion

Assessment is often accused of preventing educational change. The critics accuse high stakes assessment of dictating the educational system and stifling innovation. So, if education is to change, that change has to be led by the assessment system.

One of the ways assessment can evolve is to embrace some of the characteristics of 'Assessment 2.0'. That means embracing Web 2.0 and the digital environments that students inhabit. Doing so would present a challenge to teachers and awarding bodies. Teachers would have to up-skill to understand Web 2.0. Awarding bodies would have to face the challenge of creating rubrics for assessing difficult to measure skills, such as collaboration, and confront issues such as plagiarism. Both teachers and awarding bodies would have to embrace digital evidence in all of its forms and set more authentic tasks that genuinely challenge (and engage) students.

"It will not be easy but the next generation will create new models of scholarly publishing and learning regardless of whether we choose to participate. The only question will be what role we carve out for ourselves." (Thompson 2006)[xi]

We're talking evolution – not revolution. There is a place for Assessment 1.0, 1.5 and 2.0. We just need more of the latest version.

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