Literature Review on Online Assessment Authentication

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1. Literature Review

While it is acknowledged that much more has been written on this subject than can be reviewed here, every effort has been made to search for and review those works that were deemed by the author and others to have the closest relationship to the issues of online assessment and authentication of such online assessment when developing online courses and programmes of study at CPIT.

Allen and Seaman (2003) present an excellent argument for having online courses. Their research-based findings support the argument for having online courses as well as a detailed analysis of the characteristics of online learners.

They found that given the opportunity, students would predominantly choose to do a course online, and that the number of students enrolling in online courses grew at the rate of 20% from mid-2002 to mid-2003, but that various institutions grew their involvement in online courses by 40% for the same period.

However, Allen and Seaman do not discuss the issues of authentication of assessment.

Dewey (2004) gives excellent advice on writing multiple choice questions (MCQ) style examinations/tests, including the suggestion that students can be offered MCQ tests over small chunks of material (which has been shown to promote learning) and students can be offered frequent re-tests or make tests (to reduce anxiety and promote mastery of the material). However, Dewey also does not address the issue of authentication of assessment.

Although Dirks (2002) also does nothing to concern himself with the issue of authentication, he does present arguments for the case of the formal examination being important to measure academic success. In examining the question of how important exams are, Dirks found that exams measure feedback and grading and that they impact on learning by being motivational and improve learning. However, conversely exams were often used purely out of tradition and were not tied to the real world. Finally, with regards to exams, Dirks found that distance learning instructors haven't created new types of assessment and they are choosing assessment based on their own needs, instead of letting the technology dictate what they will use.

Dirks (2002) also found that case studies were a good form of assessment in that their strength was in being current, real world application of concepts. Case studies also required reading and comprehension on the part of the student, as well as demonstrated the student's ability to apply their learning in a practical manner.

Engelbrecht and Harding (2003a) make a good case for using technology in online assessment, including the argument that "if technology is incorporated into the presentation of the course, then it makes little sense to avoid technology in the assessment part of the course." They even argue that MCQ exams can be used not just for "testing lower level cognitive skills, but can be implemented to measure deeper understanding if questions are imaginatively constructed." However, they do finally conclude that quality standards can be maintained by "using a combination of online and paper-based assessment (in mathematics)."

Engelbrecht and Harding (2003b) present a good argument for using Provided Response Questions (PRGs) – MCQs in disguise – with even a case study to support their argument. Again they express their belief that there is still a place for paper-based assessment.

Engelbrecht and Harding (2003c) present further arguments for online testing with MCQs, supported by research carried out with first year (calculus) students. The majority (56.6%) said they would prefer online assessment. However, almost half of the students said they would either prefer paper tests or a combination of the two modes of assessment.

In none of their three papers do Engelbrecht and Harding discuss the issue of authentication of assessment.

Tolki and Caukill (2003) claims online assessment is a new horizon and that despite the wealth of research or studies on online learning, there is a serious lack of empirical research on what constitutes good practice in learning and assessment, but then go on to admit that "new" can be coined as since the late 80's. They further state that, despite the American Psychological Association having published guidelines for the development, use and interpretation of computerised testing in 1986, they believe the real new horizon is for tertiary lecturers and students to cross is acceptance of this assessment tool. Tolki and Caukill concluded with good argument for the use of online assessment being suitable for issues requiring knowledge and comprehension, but not application, analysis, synthesis, and evaluation. However, as with other researchers or commentators, they paid no attention to the issues of assessment authentication.

Hinman (2002) discusses issues of honesty, fairness, trust, respect, and responsibility with regards to academic integrity and the World Wide Web. For example, Hinman believes that we should set aside "the negative and narrow conception of academic integrity as "don't cheat" and replace it with a conception that is both positive and much broader."

He goes on to argue that academic honesty by students will be best responded to by creating an academic life (even online, perhaps especially online) that is honest, fair, trustworthy, respectful and responsible. He believes the moral goal is clear, only the path to attaining it is in dispute.

However, once again, the issue of authentication of assessment is not raised – apart from perhaps by inference when discussing his "Fundamental Values of Academic Integrity."

Bridgeman (2000) raises the issue of how online education, or "the virtual class" as he calls it, is to be implemented and managed. He raises the issues of the technology involved, the requirements on educators, and

assessment. With regards to assessment, Bridgeman admits that particular attention needs to be paid at the time that assessments are designed to take into account how the assessments are to be administered and managed. Although he does state that strategies have to put in place for assessment monitoring, he does not go so far as to state what form that assessment could or should be nor does he address the issue of authentication as such.

Young and McSporran (2004), in their detailed description of the processes involved in setting up online courses in various Learning Management Systems, admit that all of their online courses involve some degree of assessment that is conducted online. However, they also do not discuss the issue of how this assessment is conducted and authenticated.

Clear, Haataja, et al (2000), in an extensive body of work on the opportunities for and advantages of, distance learning for computing education, do address the issue of assessment. They place great significance on the process of students "producing something" as being the objective of computer science as opposed to reading materials and then discussing the content. Clear, Haataja, et al refer to Rosbottom, et al (2000) where they reference the constructivist theory that all learning requires "making something". Clear, Haataja, et al go on to give this as the main reason for much of computing work being based on students having specific, substantial, concrete assignments to work on individually, or in assigned groups.

Clear, Haataja, et al eventually, although not stated, address the issue of authentication when they say that just as composition teachers must be more inventive and not assign students topics for which they can

obtain a completed essay on-line, computing faculty need to be inventive about the assignments and requirements for presenting the final work. They go on to say that if a student has learned from other sources how to do portions of a project and can now explain how they did it, they do deserve at least some credit, perhaps all. "Assessment is not trivial, but there are solutions" they said.

Kerka and Wonacott (2000), in their brief article directly address the issue of "ensuring that the individuals completing the assessment are who they say they are" in the online environment. In reviewing several cited items of literature themselves, Kerka and Wonacott have some specific suggestions for security measures.

These measures include holding proctored (invigilated) examinations at remote sites, minimising objective tests and focusing on methods calling for analysis and application (e.g. case studies), carefully designing web-based instruction to convey outcomes the learner perceives as useful and desirable, and considering online exams in the same way as take-home tests.

With regard to the online exams, Kerka and Wonacott point out that "they will never be asked on the job to sit away from all reference materials, forced to solve problems and communicate in isolation.

Olt (2002) gives support to the fact that academic dishonesty is on the rise and in turn, gives some practical strategies for minimising this dishonesty in online student assessment. She focuses on the benefits of three key methods of online assessment as being more suited to counteracting student dishonesty.

The first of these three key methods are having multiple, individualised tasks utilising several, short assessments throughout the course. This makes counterfeiting harder "because of the necessary coordination and planning involved for the student to arrange for someone else to do the work in a timely and appropriately specific manner." In other words, it is "very difficult for the student to solicit help throughout an entire course."

The second key method is to include assignments that require some degree of cooperation and coordination among the students on the course. Again it would be "very difficult for a student to find consistent help throughout a cooperative project (assignment) of some duration and complexity."

The third key method is to build into the course a "high level of instructor/student interaction." Possible ways to achieve this are more frequent email contact and either synchronous chats or asynchronous discussion. The more frequent the contact the more difficult it will be for the student to find consistent help in responding to instructor emails and online discussion. Through this ongoing dialogue, the instructor will get a better "feel" for a student's ability.

Olt (2002) further goes on to give several key strategies for minimising academic dishonesty. These strategies include focusing on the process rather than the results, assigning original, individual assignments and readings, use project-based assessments which require more creativity, and have an integrity policy that is opening discussed with students.

Shepherd, Kleeman and others (2003) give a good analysis of the consequences or stakes for students in passing or failing assessments. They say that the consequences for passing or failing an exam might extend to being hired, fired, promoted, demoted, released from custody, authorised or certified, graduating or not graduating. Therefore, the motivation to complete the assessment is high. Because the motivation to complete is high, the risk of dishonesty is high.

Shepherd, Kleeman and others claim therefore that, because of this high risk, the only possible way to guarantee authentication for online assessment is with a dedicated computer in a professional centre – in other words, on the institution's computer on the institution's premises. They then go on to give detailed requirements for these professional centres to meet the integrity codes.

Shepherd (2003) gives a cut down version of his previous paper in the eLearning Developers Journal, and again, naturally enough, comes to the same conclusion – you must use an assessment centre for maximum authentication when assessing by way of examinations.

Rowe (2003) paints such a detailed and graphic account of cheating that he turns the pitfalls of online assessment into a veritable nightmare, and believes that the only solution is to have human-proctored assessment held in assessment centres.

2. Conclusion

Kerka and Wonacott (200) have some positive suggestions for managing online assessment with practical solutions to the issues of authentication. These ideas are worth further exploration and discussion. Kerka and Wonacott's ideas are also supported by Shepherd and Rowe.

Olt (2002) has several positive key methods and strategies for managing online assessment and dealing with academic dishonesty. Her methods and strategies over-ride the need for authentication. These ideas are also worth further exploration and discussion as part of the development of online courses and programmes of study.

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