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STUDENT ASSESSMENT AND THE WORLD WIDE WEB

Regardless of the delivery method, the goal of a teacher is to facilitate learning in their students. With the development and expansion of distance education and computer based instruction, many of the rules for monitoring a student's progress are changing and it is critical that appropriate techniques be developed to maintain quality instruction despite the change of educational venue. In a traditional classroom, keeping an eye on student's progress and understanding can be done on a verbal and visual level. The traditional teacher relies a great deal on cues such as body language and facial expression to determine if the information is being understood and absorbed. Additionally, Classroom Assessment Techniques (CATs) are methods that the traditional teacher may employ to get feedback on student learning and reaction to teaching methods. It also allows students to be actively involved in their own learning by providing a method to monitor their progress and make the necessary adjustments to their learning approach. It may also be argued that by continuously assessing and adjusting the course, a teacher can provide a better learning experience for their students and confirmation that they are actively interested in their students' well being (Indiana University, 1997). However, teachers in a distance education format do not have the advantage of face-to-face communication with their students and the asynchronous nature of distance education does not always allow for instantaneous feedback and assistance so ways must be found to ensure that student understanding and competencies are achieved. Moreover, because students are working in non-standard environments, outside distractions and a sense of isolation may also hinder motivation and learning (Gottschalk, 1995; Suen & Parks, 1997). The impediments created by distance make both formal testing and informal assessments doubly critical.

Thanks to the developments in computer and Internet technology on-line assessment is starting to become a viable possibility. As the price of computers drops and the population becomes more and more computer savvy, concerns regarding access and availability of resources are no longer convincing arguments against the virtual classroom. While a great deal of attention is focused on the gee-wiz gadgetry and an ever-increasing array of programs, it is important to remember that a quality course requires proof that the learner is actually learning. This requires some facility to test and assess the student's progress.

The most common type of student assessment in both traditional and distance formats is Objective Testing. This is the use of easily graded, closed option tests such as true/false, multiple choice, and matching (Brusilovsky & Miller, 2000). However, objective testing does not always provide an accurate picture of student learning. Most students have a testing heuristic which allows them to "wing-it" and often score well even on questions that they are guessing at. Additionally, security issues become a major factor when dealing with distance education. Unlike the more controlled setting of a traditional classroom where everyone is given the test at once and the teacher or aides are there to oversee the process, students taking the course at a distance are not subject to the same measure of control. There is generally no one to monitor if they are using illegal assists, making copies of the test for others, or are even who they claim to be. This is where advances in computer technology does provide some advantages. The use of programs such as Java, CGI and XML allow tests to be individually created from a central database. These programs can mix and match questions according to the guidelines set by the instructor ensuring that no two students will receive the same test. More advanced systems can even monitor the answers and accuracy of the student and choose the next question based on their performance as well as provide feedback and hints. This is

especially useful for student self-assessment and practice as the student can work through sample questions drawn from the database until they have mastered the subject at which point the computer will move on to the next topic to be mastered. This ability to tailor the questions helps to ensure that students gain the maximum amount of knowledge in the optimum number of steps (Brusilovsky & Miller, 2000; Whittington, Bull & Danson, 2000). Another advantage of computer-based testing of this type is that the technology is now in place that can assess the student's answers, provide feedback, assign the appropriate grade, record it in the system and generate statistics based on these outcomes without the need for human intervention or the possibility of human error.

Despite these technological advances, the question of authentication is remains an issue. Is the person at the computer actually the person they claim to be and are they behaving themselves? It has been predicted that authentication techniques such as fingerprint and/or retinal scans (or some other biological test) is coming soon, currently the options are a bit more limited. One option is to deputize "proctor sites" to serve as monitors. Students would go to one of these approved sites and take their tests overseen by facility personnel. Distance Educators such as those at the University of Oregon (1999), have specific rules and eligibility requirements for proctor applicants. However this does negate some of the convenience of taking distance education courses so other methods of ensuring compliance should also be considered. Objective tests are also problematic as they do not assess the student's ability to use the knowledge correctly. Therefore, alternative testing methods can be used to evaluate the effectiveness of the course and the students understanding of the subject. Suen and Parks (1997), recommend two alternative testing methods; Authentic Performance Assessment and Portfolios.

Authentic Performance Assessment tests knowledge and understanding of a subject in real life situations. Information by itself is not terribly useful unless it can be put into practice. Ensuring that students can successfully use their knowledge in a practical manner is an important (and often overlooked) part of the learning process. It has been suggested that a successful performance assessment should include the following six characteristics:

1. Open-ended tasks
2. Focus on higher order skills
3. Use of context-sensitive strategies
4. The problem should be complex enough to require multiple performance goals and substantial student time
5. Can be either an individual or group project
6. Involves student choice (Suen & Parks, 1997).

Unfortunately, authentic situations are not always possible. Subject matter and logistical constraints may not allow for complete authenticity of a task. Therefore, other, more conventional methods may be necessary. Essay examinations are another option in performance assessment. They go beyond the yes/no and multiple-choice format and require higher-order thought and reasoning and can provide a more accurate assessment of a student's understanding of the subject without requiring the more complicated structure of an outside activity. There is even software being developed that can evaluate and grade essay-type questions.

A second assessment alternative is the portfolio. A portfolio is a "*purposeful collection of student work that exhibits to the student and others the student's efforts, progress and achievement in a given area.*" (Suen & Parks, 1997) The portfolio shows the progress and progression of the student throughout the course of the assignment. In assessing the portfolio, it is particularly important to have specific guidelines and criteria for judging it. Additionally, the student should be actively involved in the choice of project and be

responsible for making major decisions about its progress. It is also helpful to require some evidence of self-reflection on the part of the student. One way of doing this is to have them keep a journal or log of their activities and thoughts related to the project.

One of the major complaints regarding distance education in the past was a sense of student isolation on the part of the student (Gottschalk, 1995; Suen & Parks, 1997). However, with new communication tools, collaborative work is not only possible but can also serve as a valuable learning tool. Authentic Performance Assessment and Group Portfolios not only encourage interaction and foster community between students, but can also create more realistic performance environments adding to the overall quality of the student experience.

In conclusion, student assessment is an important and necessary component of any teaching and learning curriculum. However, the same formats that work in a traditional classroom may not be the best options (or even possible) via distance education. Fortunately, the development and accessibility of web-based courses are providing new and interesting opportunities for evaluating student knowledge and understanding. The ability to provide accurate on-line assessment is available, now the trick will be choosing the appropriate methods for the situation.

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