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ITP4145

An Exploration Of Rubric Use In Online Course Assessment

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INTRODUCTION AND PURPOSE

An important element in the educational system is student assessment, as appropriate assessment strategies can illuminate numerous issues related to faculty development and student learning. The intents of assessment are to monitor student learning and faculty performance, and to promote an environment of continuous improvement in courses and programs. Assessment provides common understanding among faculty, students, and university administrators. While assessment enables faculty to articulate their expectations and learning outcomes, it provides students meaningful feedback on progress with their learning goals. For administrators, assessment provides not only documentation of productivity and effectiveness but also feedback on student retention (Perrin et al., 2001). Student assessment, if conducted properly, will enhance teaching and learning.

The purpose of this paper is three-fold. First, we define and describe the concept of student assessment in an online learning environment. Second, we argue that using only traditional assessment in an online classroom is not sufficient and suggest that online instructors consider alternative assessment. Third, we carefully examine one of the alternative assessment tools called 'a rubric' that has been utilized successfully in our online courses. We explain how rubrics can be created and utilized, as well as provide some lessons learned from our past experiences.

STUDENT ASSESSMENT

Student assessment is defined as "the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development." (Palombra and Banta, 1999) Assessment is an on-going process (Angelo, 1995) and is a means, not an end in itself (Angelo, 1999). There are two major types of assessment: formative and summative (Palombra and Banta, 1999). Formative assessment is conducted during a course or program with the intent of providing feedback to be used for improvement. On the other hand, summative assessment is given after a course or program has been completed to evaluate its quality or value compared to a predefined set of standards.

The issue of student assessment in an online course is relatively new and has not been discussed widely. As the area of Web-based learning and teaching grows rapidly, course developers and instructors have spent a great deal of their time on choosing and learning new technologies; creating online lectures, assignments, and tests; and delivering the course synchronously (e.g., chat, video conference) and asynchronously (e.g., electronic discussion board, email). More often, student assessment created for an online classroom is simply a reproduction of that typically used in a campus-based classroom. For example, a paper-and-pencil test can be easily transformed into an electronic test by using course management software products such as Blackboard and WebCT.

Traditional assessment tools such as multiple choice, true/false, fill-in-the-blank, and matching are criticized as they measure what students are able to recall or reproduce, rather than what they integrate and produce (Huerta-Macias, 1995). Today, assessment of student progress is changing, mainly because current real-world situations require workers who possess not only knowledge but also abilities to perform a certain task (Bond, 1995). Traditional assessment such as a standardized test tends to be summative in nature and does not provide feedback to students until they complete a course or a program. Feedback is critical in an online learning environment due to lack of face-to-face meeting. Without a frequent response from an instructor, an online learner can become frustrated and lose interest, which will jeopardize the learning process. In addition, traditional tests are designed to measure only knowledge in a certain subject. Frequently, a student who received a high test score does not necessarily perform well on the job where many subjects must be integrated. Therefore, the mindset on student assessment needs to be shifted to focus more on values, attitudes, and behavior inherent in learning efforts. This is true for both campus-based and online educational systems that need to explore alternative ways to assess student learning. Since this paper focuses on Web-based learning and teaching, our discussion will address the issue of alternative assessment only in an online classroom.

PERFORMANCE ASSESSMENT

Student performance assessment is an on-going process examining what a student is able to do. The term performance assessment encompasses both alternative and authentic assessment (Wangsatorntanakhun, 1999). As an alternative assessment, performance assessment distinguishes itself from the traditional tests and quizzes (e.g., selecting from a list of possible responses). This reaction to administratively convenient testing began in the early 1990s, with more proposals calling for authentic assessment (Madaus and Raczek, 1996). Rather than merely recognizing facts, students and teachers are encouraged to engage jointly in knowledge construction, where teachers progressively turn over the metacognitve processes to the student; students are learning to think about thinking (Gipps, 1996). Performance assessment is authentic since it requires students to perform tasks under defined conditions similar to what happens in the real world.

Performance assessment consists of two major components: tasks and criteria (Rudner and Boston, 1994). Assessment tasks include identifying learning objectives and audiences, matching assessment techniques to learning objectives, and specifying illustrative tasks where students demonstrate sets of skills and mastery of the desired outcomes (Herman et al., 1992). Assessment criteria, or "the standards of achievement," need to be communicated to students before the tasks are assigned (Wangsatorntanakhun, 1999). One of the most popular tools used to organize and present these criteria is known as a rubric.

RUBRIC

The word rubric dates to the Middle Ages, derived from the Latin work "ruber" meaning "red." According to Webster's Unabridged Dictionary, the earliest references to rubrics include when scribes would write performance instructions for the priest in red in church missals to distinguish prescribed actions or rules from the actual text that the priest would deliver. Modern use of rubrics within education has increased in the last decade; the use of this tool is congruent with the recent movement towards alternative and authentic assessment.

A rubric serves as both an assessment and communication instrument between students and an instructor. To measure how much students learn, a rubric provides a clear list of assessment criteria that the instructor intends to measure and a numerical score associated with

This paper appears in *Issues and Trends of Information Technology Management in Contemporary Organizations,* the proceedings of the Information Resources Management Association International Conference.

each criterion. A student's performance is compared directly to these predefined criteria and only indirectly to other students (Elliott, 1995). A well-written rubric can also serve as a means to convey an instructor's expectations to students. Both instructor and students will have a common tool to assist an evaluation process and to monitor student progress. Also to promote student collaboration and motivation, a faculty invitation for student input in the rubric process is an option (Kordalewski, 2000). This technique of self-assessment would further empower students as independent learners and is illustrative of the formative nature of assessment.

In order to consider the comprehensive nature and multiple facets within learning, rubric use provides more meaningful and stable appraisals than traditional scoring methods. The use of the rubric involves acts of scoring, interpreting, and judging (Simon and Forgette-Giroux, 2001). Scoring entails alignment of a rubric description that most closely matches observed performance, interpreting is the assessment of the level of skill mastery observed, and judging compares the actual performance level with a predetermined standard. The issues of validity and reliability are important in the design and use of rubrics. Evidence of validity of the assessment rubric is generally categorized into content, construct, and criterion. Reliability issues most applicable in rubric use are inter-rater reliability and intra-rater reliability (Moskal and Leydens, 2000).

RUBRIC DESIGN

Rubric design needs to focus on assessment criteria that are observable and measurable in an online classroom. A rubric is usually presented in a matrix or checklist format. Rubrics may be designed for the evaluation of specified tasks or for general categories (Moskal 2000); either category is appropriate in an online course. For example, when a stated purpose is to develop communication skills, the general scoring rubric is used to evaluate each discussion, which allows students to use any feedback obtained in their next discussion situation. Assessment criteria can be grouped in two different ways: analytical and holistic (Betts, 1997). An analytical rubric contains several dimensions, each of which is then divided into multiple levels of competency. For example, an analytical rubric for a short paper together with the assignment's instruction is shown in Figure 1.

Figure 1 shows an analytical rubric with four dimensions: application of background knowledge, presentation of new ideas, demonstration of analytical skills, and overall writing quality. Each of these dimensions is divided into three to four levels of competency. The expectation of each level is explained clearly; therefore, students know what needs done to meet the desired level. The total score of this rubric is based on a summative scale of all criteria.

A holistic rubric, on the other hand, provides a summary of all assessment criteria on one scale. This scale is divided into different levels of competency, and either a letter grade or a point base is assigned to each level. An example of a holistic rubric for the aforementioned assignment can be created as shown in Figure 2.

At the present time there are many tools that exist to help educators develop rubrics; an abundance of electronic tools are accessible through the Internet. Also rubrics related to nearly every imaginable discipline can be found on the Internet.

LESSONS LEARNED IN IMPLEMENTING RUBRICS

We began using rubrics in online courses during summer 2001. We designed several rubrics for different types of assignments including short papers, group discussion, and case analysis. For example, these rubrics were used with graduate students in an introduction to Management Information Systems (MIS) course offered fully online (i.e., without a face-to-face meeting). The class interacted using Blackboard and electronic mail; rubrics were posted where everyone had access. Two or three class activities were assigned every week; the instructor emphasized clearly which rubric would be used for assessing

Figure 1: Analytical rubric

Instruction: Write a short paper (1-2 pages) and incorporate answers to the following questions.

1. What is an information system?
2. On this campus, what are examples of information systems?
3. What would be an information system application that this campus needs in the future? Why?

Short Paper Rubric: Points in a possible range from 0 - 10 will be awarded based on a summation of scores received from each the following four criteria.

Student Uses Background Knowledge

___ 2 Integrates background knowledge to explain the questions
___ 1 Incomplete background knowledge; mostly copied from other sources
___ 0 Did not submit the paper

Student Presents New Ideas

___ 3Presents new and well-thought out ideas with a reasonable justification
___ 2 Presents developing ideas that are not fully thought through; ideas have some major flaws
___ 1 Presents old ideas that do not add value to the paper; Ideas are copied from other sources without applying them within the context of the paper
___ 0 Did not submit the paper

Student Demonstrates Analytical Skills

___ 3 Makes a clear and sound argument with supporting evidence; Clear evidence of analytical skills (e.g., applying lessons from the textbook or lectures to solve the problems and provide a reasonable explanation); provides constructive recommenda-tions
___ 2 Makes a clear argument without supporting evidence; Beginning analytical skills (e.g., attempting to apply lessons learned to solve the problems but does not provide rationale); provides constructive recommendations
___ 1 Does not make an argument, or makes vague arguments; Does not apply lessons learned to solve the problems; Does not provide a recommendation
___ 0 Did not submit the paper

Writing

___ 2 Grammatical and spelling errors are few to none.
___ 1 Grammatical and spelling errors are many.
___ 0 Did not submit the paper

each activity. Over 75 percent of the class members were satisfied with the use of rubrics and the clarity of the language in explaining each rubric criterion. In subsequent semesters, rubric use extended to other online courses in MIS and accounting, including rubric use for financial statement analysis tasks and team presentations that integrated analysis within PowerPoint presentations. Feedback received from online students is mostly positive, for example,

> *"Rubrics gave me better understanding what the instructor's expectation is."*

> *"Before I began to work on my assignment, I referred to the rubric to see what criteria I needed to meet. It made it a lot easier to complete the assignment."*

> *"I didn't know what rubric was so I was confused at first because the instructor had many different rubrics for different assignments. But after she showed how she used it to grade my assignment, I thought I understood what it was for. I think it is a useful tool."*

Each rubric emphasizes criteria considered as standards of excellence; when criteria are stated clearly, the rubric is useful in helping the entire class to identify and apply the preferred practices. The students are not compelled to compete against each other but with themselves to meet those criteria. In the meantime, students are not left guessing what is required in each activity. A majority of our online students have not previously been exposed to a rubric device in prior coursework, but they readily grasp the benefits to be derived from the tool. The rubric has made it easier for faculty to evaluate student work because of

Figure 2: Holistic rubric

Instruction: Write a short paper (1-2 pages) and incorporate answers to the following questions.

1. What is an information system?
2. On this campus, what are examples of information systems?
3. What would be an information system application that this campus needs in the future? Why?

Short Paper Rubric: A possible grade of A - F will be awarded based on the following levels of performance.

A - A submission integrates background knowledge to explain the questions, presents new and well-thought out ideas with a reasonable justification, and makes a clear and sound argument with supporting evidence. The submission shows clear evidence of analytical skills (e.g., applying lessons from the textbook or lectures to solve the problems and providing reasonable explanation) and provides constructive recommendations. Writing is free of grammatical and spelling error.

B - A submission integrates background knowledge to explain the questions mostly copied from other sources, presents new and well-thought out ideas with a reasonable justification, and makes a clear argument without supporting evidence. The paper shows beginning analytical skills (e.g., attempting to apply lessons learned to solve the problems but does not provide a rationale) and provides constructive recommendations. Writing is free of grammatical and spelling errors.

C- A submission contains incomplete background knowledge, is mostly copied from other sources, presents developing ideas not fully thought through (some ideas have major flaws), and makes a clear argument without supporting evidence. The paper shows beginning analytical skills (e.g., attempting to apply lessons learned to solve the problems but does not provide a rationale) and provides constructive recommendations. A few grammatical and spelling errors.

D - A submission contains incomplete background knowledge, is mostly copied from other sources, and presents old ideas that do not add value. Absence of analytical skills exhibited. The ideas are copied from other sources without applying them within the context of the paper. Lack of argument or making vague arguments. Fails to apply lessons learned to solve the problems; fails to provide recommendations. Many grammatical and spelling errors.

F- Did not submit the paper

a checklist and rating scale associated with each criterion; one benefit exists in forcing faculty to revisit their expectations with specificity. The introspection involved in the development and use of rubrics engages faculty members in honest self-assessment of their teaching style. It is important to keep track of the shortcomings and strengths for a given rubric as faculty move through the development process of testing and revision of the rubric.

RECOMMENDATIONS FOR FUTURE STUDY

The more work we do with rubrics, the more we become cognizant of how the rubric device can be adapted to varied courses and assignments. Once rubrics are in place, further investigation of the use of rubrics is beneficial, with some questions meriting further research. Does using a rubric in online courses improve student performance compared to other sections of the course that do not use this tool? Does inclusion of a rubric within each assignment achieve improved student awareness of assessment criteria compared to merely posting the rubric on the course management system with reference to that posted document in the assignment? For what types of assignments do students prefer the use of an analytical rubric or a holistic rubric? Do graduate students prefer the use of a holistic rubric to an analytical rubric? In online courses, are there an optimal number of assignments or tasks for which a rubric can be used before it loses its effectiveness? Once exposed to rubrics, will students vocalize their preferences in subsequent courses with the same instructor where the tool is not used? Is a one-shot use of rubrics in an online course detrimental to the assessment process? Will students voluntarily partake of involvement in rubric design in their online course when asked to do so? These and other questions pertaining to reliability and validity issues merit further investigation in the use of the rubric as an assessment device.

Compared with traditional assessment, performance assessment if used properly may be a more valid indicator of students' knowledge and abilities since it requires active demonstration of what they know (Sweet, 1993). This paper focused on how using rubrics, an online instructor can identify strengths and weaknesses of students and of their own teaching styles. When designed and implemented properly, rubrics are found to be effective tools in assessing teaching and learning.

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