

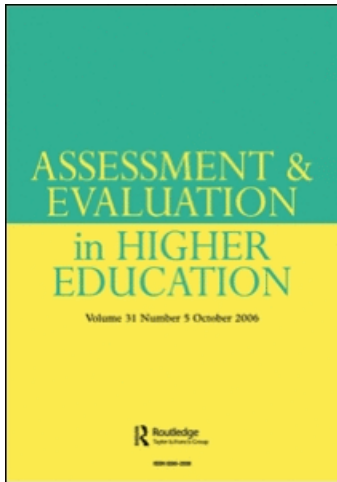
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Rhoda Cummings ^a; Cleborne D. Maddux ^a; Aaron Richmond ^b

^a University of Nevada, Reno, Nevada, USA ^b Metropolitan State College of Denver, Colorado, USA

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Curriculum-embedded performance assessment in higher education: maximum efficiency and minimum disruption

Rhoda Cummings^{a*}, Cleborne D. Maddux^a and Aaron Richmond^b

^a*University of Nevada, Reno, Nevada, USA;* ^b*Metropolitan State College of Denver, Colorado, USA*

Increasingly, institutions of higher education are required to evaluate student progress and programme effectiveness through implementation of performance assessment practices. Faculty members frequently resist performance assessment because of concerns that assessment activities will increase workloads, reduce time for scholarly activities, eliminate professional autonomy, and reduce faculty work into component parts or discrete technical competences. This paper describes how curriculum-embedded performance assessment can be used to evaluate student and programme effectiveness without placing an undue burden on faculty. Examples of the use of curriculum-embedded performance assessment strategies in a graduate-level educational psychology programme are provided.

Introduction

Higher education in the United States is increasingly subjected to demands to implement alternative assessment strategies that provide outcome measures of both student and programme effectiveness. Alternative assessment strategies go beyond traditional psychometrically driven testing, which Rubin (1996) has described as ‘simply not up to the job of describing student growth and achievement in complex domains’ (2). Further, the goal of such procedures is to reduce some of the biases usually found in norm-referenced standardised tests (Laing and Kamhi 2003). Unlike most traditional assessment procedures, alternative assessment strategies are designed to assess learning tasks that stimulate critical thinking skills and require students to produce or demonstrate knowledge rather than to simply recall information provided to them by others (Hunt et al. 2000; Chauncey 2004; Hanna and Dettmer 2004). Learning tasks may include activities such as writing essays, designing and carrying out experiments, giving speeches or playing a musical instrument. Comprehensive assessment of these tasks requires students to demonstrate competence through use of portfolios, learning logs, exhibitions, performances, and so forth (Rubin, 1996; Hunt et al. 2000).

Advocates of alternative assessment strategies do not call for complete abandonment of traditional psychometric assessment activities. However, they suggest that these should be combined with other kinds of assessment activities within a comprehensive assessment model that provides a more complete picture of students’ performance throughout their entire programme of study (Chen 2006). One way to accomplish this task is through implementation of performance assessment strategies.

Arguments for performance assessment

Performance assessment is thought to provide greater consistency for evaluating overall student performance within a specific programme or institution (Chen 2006). Traditionally, instruction

*Corresponding author. Email: cummings@unr.edu

and assessment have occurred on a course-by-course basis within the autonomous domain of individual professors, who are free to set standards for both learning and testing in their specific courses. However, with this approach, there may be no way to tell which students are well educated and which are not, or who is teaching well and who is not (Holyer 1998).

Another rationale for performance assessment is that it ensures that students are well equipped to participate in the increasingly complex world of work in a global economy (Bond 1995; Eisner 1999; Segers 1999; Jones 2002; Chen 2006). Because the dynamics of the business world change so quickly, specific skills that students acquire in college may no longer be relevant once they begin their careers. Accordingly, today's employers are asking that colleges and universities prepare students to be critical thinkers who have attained the higher-level cognitive, metacognitive and social competences necessary for them to engage in effective problem-solving, teamwork, communication and leadership (Eisner 1999; Segers 1999; Jones 2002).

In order to meet these workplace demands, Segers (1999) points out that institutions of higher education must develop more powerful learning environments that integrate instruction with appropriate assessment activities. Students then would be exposed to meaningful learning tasks requiring them to construct knowledge rather than reproduce information that others have discovered. Corresponding assessment activities would be directly related to the learning tasks and would tap higher level thinking and problem-solving abilities. Additionally, they would measure the extent to which students can apply knowledge to solve real-world problems and make appropriate decisions (Segers, 1999; Hunt et al. 2000).

Another, more pragmatic rationale for performance assessment is related to the need for post-secondary institutions to demonstrate accountability to the public as well as to state, regional and national agencies. Performance assessment activities are now also required for meeting standards developed by many professional organisations, accreditation agencies and legislative bodies (Hunt et al. 2000; Pecheone et al. 2005). Thus, efforts to implement alternative instructional and assessment strategies often occur in response to legislative and/or accreditation mandates.

Maki (2002) acknowledges the reality of this rationale for performance assessment, calling it a 'compliance approach' (1) that is based on the external motivator of institutional review. She proposes that in spite of these external pressures, assessment should be based on institutional curiosity, an internal motivator. According to Maki:

Institutional curiosity seeks answers to questions about which students learn, what they learn, how well they learn, when they learn, and explores how pedagogies and educational experiences develop and foster student learning. When institutional curiosity drives assessment, faculty and professional staff across an institution raise these kinds of questions and jointly seek answers to them. (1)

Faculty resistance to performance assessment

The purpose of performance assessment practices should be to provide a more comprehensive picture of students' learning over the duration of their programmes of study and to evaluate overall programme effectiveness. In spite of the purported advantages of performance assessment, however, faculty reactions to its implementation are frequently negative (Nyaumwe and Mtetwa 2006). The most common concerns are that such assessment practices will increase workloads, reduce time for scholarly activities, eliminate professional autonomy, and reduce faculty work into component parts or discrete technical competences (Atkinson-Grosjean and Grosjean 2000).

Although these are legitimate concerns, it is possible to use alternative assessment strategies for student and programme assessment without interfering with faculty autonomy or increasing workloads. As stated earlier, one of the most common alternative assessment practices requires development and evaluation of student portfolios.

A number of benefits of student portfolios have been described (Hunt et al. 2000; Wetzel and Strudler 2006). Portfolios provide a view of student learning over time. They allow students to reflect upon what they have learned and determine for themselves what evidence they will include in their portfolio to demonstrate learning. They allow students and instructors to work together to assess learning. Finally, through examination and scoring of student portfolios over the course of time, data accrue so that programmes may be evaluated and modified as the need arises. Because students are responsible for accumulating information to be included in portfolios, the primary responsibility for faculty is to evaluate portfolio contents once students complete their programmes. Even this commitment will be less cumbersome and time-consuming, however, if all faculty involved agree to practise *curriculum-embedded performance assessment*.

Curriculum-embedded performance assessment

Curriculum-embedded performance assessment integrates performance assessment requirements within individual courses. Curriculum-embedded performance assessment tasks consist of any representation of student work that demonstrates mastery of course content and attainment of course and programme learning goals. These may include written examinations, essays, research papers, presentations, online bulletin board activities, or group projects. Student work on curriculum-embedded performance assessment tasks is assessed as part of course requirements, but also can be used for portfolio assessment and programme review (Hintze et al. 2006).

There are a number of advantages to using curriculum-embedded performance assessment within individual courses as a component of the overall performance assessment process: (a) students are actively involved in the assessment process, (b) assessment activities are part of regular course requirements so that no additional faculty time is required for data collection, and (c) data can be collected from students' assignments in a specific course that can be used for both individual student evaluation and assessment of overall programme effectiveness.

Curriculum-embedded performance assessment in a graduate-level educational psychology programme

The educational psychology programme at a large Land Grant institution in the Western United States includes embedded assessment activities as part of performance assessment requirements in three areas of emphasis: (a) the general educational psychology master's programme (MEd), (b) the information technology in education master's programme (MS), and (c) the educational specialist (EdS) programme in school psychology. Assessment activities in all three areas of emphasis are designed to link specific course goals and objectives to student learning outcomes. For all three areas, performance assessment goals include the following: (a) mastery of course content knowledge; (b) growth in critical thinking and logical reasoning; and (c) attainment of specific skills in educational psychology, information technology in education and school psychology. An additional goal for the area of school psychology (EdS) is licensure attainment. Programme performance assessment occurs initially when students enter a programme, at midpoint in the programme and at programme completion.

As stated earlier, curriculum-embedded assessment activities occur as part of individual course requirements and as part of overall programme assessment. Within all three areas of emphasis, individual course goals and objectives are tied to overall College of Education goals, and individual course assignments are tied to both course and programme objectives. Embedded assessment activities that occur as part of overall programme assessment include the following: (1) evaluation of student-selected work included in portfolios (MEd, MS, EdS), (2) faculty observations of

student test administration (EdS), (3) individual interviews with educational psychology faculty members (MEd, MS, EdS); and (4) ongoing evaluation of students' strengths and weaknesses throughout their courses of study.

Performance assessment procedures

Programme performance assessment activities include both quantitative and qualitative measures.

Quantitative assessment activities

Quantitative measures include GPA and GRE scores (entry), a multiple-choice content exam (entry and exit), and standardised tests of critical thinking and logical reasoning, including the Defining Issues Test (DIT) (Rest, 1979) and Hunt's Paragraph Completion Test (Hunt et al. 1978) (entry, exit).

To be admitted to the educational psychology master's programmes, students must have a GPA of at least 2.75 or better, or 3.0 in courses taken the last half of their undergraduate programme and a GRE score of at least 750 (combined quantitative and verbal scores). To be admitted to the educational specialist programme, students must have a master's degree in a related field, a GPA of at least 3.5, and a minimum of 900 combined verbal and quantitative score on the GRE.

During their first semester in the programme, students take the pre-test comprehensive examination, which includes a multiple-choice exam, the Defining Issues Test and Hunt's Paragraph Completion Test, which are both measures of critical thinking. For students in the MEd and MS areas of emphases, the comprehensive examination includes 100 questions in a multiple-choice format. The examination is divided into five sections of 20 questions each. The five sections represent the five educational psychology core courses (human growth and development, statistics, learning theories, research methods, and cognitive learning). Test questions are submitted by professors who teach core courses. Students in the EdS area of emphasis take a 50-question multiple-choice test over core coursework with questions submitted by the coordinator of the EdS area of emphasis. Students in all areas of emphasis complete the DIT and Hunt's Paragraph Completion Test.

Upon completion of their programmes of study, to demonstrate mastery of core course content, students take the same multiple-choice test given originally as part of pre-test activities. Students who do not pass the exam are required to take either an oral or written essay exam encompassing areas of determined weaknesses. They also take the *Defining Issues Test* and the *Paragraph Completion Test* as post-test measures. These tests are not intended to evaluate individual student performance but to evaluate overall programme effectiveness in improving student growth in critical thinking and logical reasoning processes.

Qualitative assessment activities

Qualitative assessment activities occur when students enter the educational psychology programme, at the midpoint of their programme and upon completion of their programme. When students apply to the programme, they must include examples of previous written work, a statement of career goals and their career-related experiences, and three professional recommendations.

At the time of pre-test activities, students are informed of the need to maintain a portfolio that includes representative samples of items that demonstrate knowledge and skills in the six domains of advanced professional competence in educational psychology. These domains include (a) human growth and development; (b) cognition, information processing and human

learning; (c) social and cultural diversity; (d) individual and/or group counselling; (e) research, assessment and evaluation; and (f) information technology in education. The six domains are adapted from standards of (a) the Council for Accreditation of Counseling and Related Educational Programs (CACREP), (b) the National Association of School Psychologists (NASP), and (c) the International Society for Technology in Education (ISTE).

After students have completed between 12 and 15 credits of course work, they complete a formal programme of study that includes a listing of courses in their area of emphasis and signatures of their three-member committee. Before committee members sign off on the programme of study, students must submit a midpoint portfolio (preferably in digital format) that is evaluated by at least two members of the educational psychology faculty. Portfolios are evaluated based on inclusion of selected materials that demonstrate knowledge and skills that have been attained to that point within each of the six domains of professional competence. If weaknesses are noted in the portfolio, the adviser will meet with the student to determine remedial procedures, which may include retaking a course, writing a paper, taking additional coursework or other relevant tasks.

Final performance assessment procedures

At the end of their programmes, students once again submit a completed portfolio that includes selected materials from courses taken up to that point. The portfolios should demonstrate proficiency in each of the six domains of professional competence. The portfolio evaluation, combined with a score of at least 70% (out of a possible 100%) on the 100-question multiple-choice post-test, determines the final comprehensive examination score. If weaknesses are noted, students may be asked to retake coursework, write a paper or work individually with faculty. At this time, Educational Psychology faculty also conduct structured exit interviews with students to determine satisfaction with their programme.

Administration of assessment activities

An assessment coordinator oversees all assessment activities and procedures. This individual is a member of the educational psychology faculty and is given a course release each semester. The coordinator is assisted by a doctoral-level graduate assistant who administers and scores the tests, records all assessment data, and submits a final report to the office of the dean and the university assessment office. These data are included in both college- and university-level accreditation documents. Faculty involvement includes evaluation of mid-point and final portfolios for their advisees and attendance at annual meetings to discuss programme changes in response to evaluation results.

Unanticipated problems and unexpected benefits

Although procedures for implementing curriculum-embedded assessment activities were carefully planned, reviewed and approved by the educational psychology faculty, once activities actually were initiated a number of unanticipated problems surfaced. In the process of addressing these problems, we became aware of an unexpected benefit. The value of performance assessment was not only summative in evaluating students (to fulfil various regulatory mandates) but also was formative in that it increased awareness of best practices in terms of ongoing programme modification and improvement. Following are specific examples of assessment and programme changes that resulted from our experiences.

- (1) The first notable problem surfaced with an early small group of five students who took the comprehensive examination at post-test. All five students failed the exam and had

to take the written essay exam (which all fortunately passed). This experience led us to examine more closely questions in the multiple-choice test. We discovered that many of the questions missed by students did not correspond to actual course content covered by instructors. As a result, instructors revised questions so that they more closely represented course content. After revisions were made, a greater percentage of students have since passed the examination. Now, instructors review questions on a regular basis to ensure that they represent important concepts and actual course content. As one instructor stated, 'I now routinely review questions on a regular basis to make sure they represent critical concepts and ideas and to make sure I am actually teaching these in my course'.

- (2) Initially, portfolios were evaluated by all members of the educational psychology faculty. However, this process was not efficient because it took too long for the portfolios to make the rounds. Now, only the student's major adviser and one other faculty member evaluate the portfolios. The process now is accomplished much faster and more efficiently.
- (3) Another problem related to portfolio evaluation is that the first portfolios were all submitted in hard copy in voluminous three-ring binders. Even when only two evaluators examined the portfolio, the process took up too much time and a storage problem quickly developed. Now, students are required to present digital portfolios, which they learn to develop in a required course in information technology in education. Many of these portfolios are creatively produced and much more interesting than paper versions. Some students have placed their digital portfolios on the web in order to make them accessible to potential employers.

These problems and solutions are the ones we have so far experienced in the four years we have been involved in curriculum-embedded performance assessment activities. Now, with the help of the graduate student, assessment activities are closely monitored. Careful records are kept of test results, test questions are evaluated and modified on a regular basis, and annual reports are written that are sent to the office of the dean and to the University Office of Assessment. Thus, as a result of emerging problems and their solutions, we not only have a stronger programme, but faculty members are more engaged in the process.

Conclusions

Use of curriculum-embedded performance assessment activities within individual courses and as part of overall programme evaluation has provided the educational psychology faculty at this institution with useful and ongoing information about both individual student performance and overall programme effectiveness. Student learning is tied to overall programme goals and objectives, faculty–student involvement is enhanced and meaningful ongoing programme modification occurs. Perhaps most importantly, performance assessment activities do not require large blocks of faculty time and therefore do not interfere with other academic and scholarly activities. As a result, faculty are much more engaged and interested in programme development.

Notes on contributors

Rhoda Cummings is a professor of educational psychology. She teaches graduate courses in human growth and development. She has served as assessment coordinator for the Counseling and Educational Psychology Department.

Cleborne D. Maddux is foundation professor of counseling and educational psychology. He teaches courses in statistics and information technology.

Aaron Richmond is an assistant professor of psychology at Metropolitan State College of Denver. He teaches courses in Educational Psychology.

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