Chapter XVI
Formative Online Assessment in E-Learning

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ABSTRACT

This chapter provides an introduction to formative assessment, especially applied within an online or e-learning environment. The characteristics of four strategies of online formative assessment currently most widely used—online adaptive assessment, online self-assessment, online collaborative assessment, and portfolio—are described. References are made throughout recent research about the effectiveness of online formative assessment for optimizing students' learning. A case study in which a computer-assisted assessment tool was used to design and apply self-assessment exercises is presented. The chapter emphasizes the idea that all type of assessment needs to be conceptualized as “assessment for learning.” Practical advices are detailed for the planning, development, implementation, and review of quality formative online assessment.

INTRODUCTION

Assessment should be the first step in educational design (Stiggins, 1987). A significant body of research supports the view that the design of assessment is critical in determining the direction of student effort, and e-learning is no exception to this (see Black & William, 1998). Furthermore, when there is alignment between what teachers want to teach, how they teach, and how they assess, teaching is likely to be more effective (Sluijsmans, Prins, & Martens, 2006).

E-learning can be defined as the use of digital technologies and media to deliver, support, and enhance teaching, learning, assessment, and evaluation (Armitage & O’Leary, 2003). Never-
theless, it is not essential for the assessment of e-learning to be online, even if it is often appropriate, for example, when rapid feedback is required on progress and achievement testing (Macdonald, 2004). In any case, in this chapter, we focus on the formative power of online assessment. Formative assessment is associated with considerable improvement in students’ performance, though frequent testing and reporting of scores can be prejudicial to weaker students.

Institutions are increasingly turning to information and communication technologies (ICTs) to plan their teaching, learning, and assessment tasks. In e-learning environments it is necessary to develop assessment models appropriate for the object of assessment and the different contexts involved. By comparison with the use of computers to aid student learning, computer-assisted assessment (CAA) is a relatively new incorporation. In the assessment process, it is vital to provide a channel of communication between students and their mentors, and modern technologies offer many opportunities for innovation in educational assessment, through rich new assessment tasks and potentially powerful scoring, reporting, and real-time feedback mechanisms for use by teachers and students (Scalise & Gifford, 2006). Computer-based platforms permit high-quality formative assessments that can fit closely with instructional activities and goals, as well as contributing to e-learning assessment.

Therefore, the purposes of this chapter are:

- To provide guidance, from a pedagogical point of view, on the design of questions or activities for formative assessment in e-learning environments, and explore a 28-item categorization in order to reveal the broad potential of online assessment.
- To illustrate the four strategies of online formative assessment currently most widely used—online adaptive assessment, online self-assessment, online collaborative assessment, and portfolio—which are not mutually exclusive, and review recent research on their effectiveness for optimizing students’ learning.
- To present a case study about an innovative teaching experience in which a computer-assisted assessment tool (Hot Potatoes) was used to design and apply self-assessment exercises in higher education.
- To conclude by providing practical advice for the planning, development, implementation, and review of quality formative online assessment.

**THE CONCEPT OF FORMATIVE ASSESSMENT**

**Formative vs. Summative Assessment**

There is considerable debate within the higher educational community about assessment issues, given the proliferation of online classrooms and the emphasis on constructivist approaches to learning. Constructivist learning paradigms are learner-centred, and posit that learning occurs when students are actively engaged in making sense of phenomena as well as constructing and negotiating meanings with others (for an extensive review and analysis of this literature, see Comeaux, 2002).

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