

Chapter 2

Tools for E–Assessment Techniques in Education: A Review

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ABSTRACT

The chapter explains the basic definition and objective of e-assessment. Advantages and disadvantages of the e-assessment process are briefed. There are various techniques used for accessing online in an e-learning environment. Some of the techniques are explained with examples. To perform e-assessment using these techniques, there are tools available. Some of the tools are developed by individual organizations for their own purpose while others are public platforms which can be used by anyone. Most of the learning management systems (LMS) use e-assessment tools. This chapter focuses primarily on the e-assessment tools of various types used in education domain. Various techniques of e-assessment used by these tools are explained like MCQs, essay type questions, e-portfolios, discussion forums, blogs, wikis, etc. Tools specific to programming languages are explained in detail. Further, tools related to problems of mathematics are explained. There are various tools for peer-assessment. A detailed study of those tools is presented.

INTRODUCTION

Electronic assessment (or e-Assessment) is a medium by which we can assess one's cognitive skills, practical abilities & knowledge with the help of information technology (Baartman et al, 2007; Birenbaum et al, 2003). It is used as an effective means to measure student's learning at an e-learning platform. It uses digital technology to create, manage, distribute resources & materials and provide reviews & feedback during an assessment (Iahad et al., 2004). It provides many new ways and opportunities for different kinds of assessment related to myriads areas of knowledge (Baartman et al, 2007; Bostock, 2004; Broughton et al, 2013; Dochy, 1999; Brown et al, 2003; Birenbaum et al, 2003).

Assessment using technology helps students improve their knowledge and performance by providing immediate feedback which saves time (Dochy, 1999). It reduces the workload of learners and instructors, provides access anytime and anywhere. Generation of results and reporting is quick. An important aspect of e-assessment is that it can be reproduced easily and hence provides an excellent tool to re-assess and improve the performance of students. It provides a simple and affordable way of assessing. A simple computer system with internet connection is the only requirement to use e-assessment tools.

Inherent benefits of using e-assessment are enormous. Students can learn and access themselves at their own pace and speed. Multiple versions of same test can help in reducing the cheating cases. Human errors in grading and evaluation are almost negligible. Keeps the record in a digital media and hence helps in fetching it faster. Inclusion of graphics in e-exams can make it more interactive and easy to understand.

However, there are few disadvantages of e-assessment (Dochy, 1999). For essay writing or questions that involve analysis, e-assessment is difficult to use. Cognitive skills are also difficult to test using e-assessment. Teachers need to have prior training to use such assessments. Also information may be lost if system breaks down.

The purpose of this chapter is to discuss various methods of the e-assessment and the tools available for the same. The chapter focuses on the tools for e-assessment of MCQs, short answer and long answers, programming assignments, mathematics related assignments, portfolios etc. The chapter also discusses the tools used for collaborative learning like peer assessment, wikis, discussion forums and blogs.

TYPES OF ASSESSMENTS

Formative assessment, summative assessment and diagnostic assessment or self-assessments are three types of assessment which are commonly used to evaluate one's skills and abilities (Brown et al, 2003).

Diagnostic Assessment is the assessment of the student's strengths, weaknesses, knowledge, and skills beforehand, so as to prepare the teaching pattern and provides a base to keep track of the learning progress throughout the course. It helps the instructor to remediate candidates and transform the curriculum in order to meet each learner's unique needs.

Formative Assessment is an assessment in which constructive feedbacks are provided to a student regarding his/her knowledge and skills. Students use this assessment voluntarily to test their knowledge and to improve their performance as it does not affect their final assessment.

Summative Assessment is the final assessment or evaluation of a student's performance, which is used to make judgments and decisions about the overall knowledge and skills of an individual. In online courses it is used to decide whether or not to give a candidate a formal or genuine degree in the skill for which the course was pursued.

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