

# **Relationship between Formative and Summative Assessment in Open Distance Learning: University of South Africa: School of Engineering Case Study**

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## **Abstract**

Formative and summative assessments are an integral part of learning. As such, they have been emphasised by educational theorists, practitioners and policy-makers as critical to the success of educational curricula. Formative assessment can be defined as assessment for learning and summative assessment as the process of grading a learner. This paper delves into formative and summative assessment practices and instruments in an Engineering distance learning environment and seeks to correlate student performance in continuous assessment and final summative assessment. A case study of Unisa's School of Engineering is presented. The Unisa systems of assessment consist of a complex array of infrastructures and personnel. The processes of formative and summative assessment are described in this paper; first the ideal form of formative assessment is discussed, followed by the challenges of the system as experienced by lecturers and learners. This is followed by statistics of the learners' performance in formative assessment versus summative assessment in a third-year level Chemical Engineering course. A statistical comparison is made of the end-of-semester performance of learners who participate in formative assessment and those who do not.

**Keywords:** formative assessment, summative assessment

## **Introduction**

For student to be given a pass mark and considered competent for a course, they have to pass the modules that make up the course. Formative and summative assessments play a critical role in the grading of students. In a distance learning context formal and informal formative assessment are essential to ensure that lecturers get feedback from students and vice versa, and that the lecturers and students assess their status and understanding of the concept pertaining to the course at hand. The purpose of this research is to establish if there is a relationship between formative and summative assessment and to determine students' and lecturers' perspectives particularly in a distance learning context.

## **Literature Review**

Institutions that offer distance delivered courses and programmes share a compelling need to determine their quality. The many factors involved in the success of distance offerings makes the creation of a comprehensive evaluation plan a complex and daunting task (Lockee, Moore & Burton 2002). Despite the range of motivations associated with distance and open learning in recent years, which has successfully bridged the physical separation of teachers and learners, summative assessment activities seem relatively static and even conservative in comparison with assessment activities in face-to-face teaching contexts (O'Reilly 1998). As the methods used to assess students are some of the most critical of all influences on their learning, it is well known that assessment has a deep impact on what and how students study, how much they study and how effectively they study (Jimaa 2011). Distance teachers struggle with a range of logistics, including the geographic distribution of students, the difficulties in facilitating educational dialogue and inequities regarding access (O'Reilly 1998).

## **Materials and Methods**

The cohort studied is from the School of Engineering at Unisa. The analysis gives the results from 2009 to 2011. Unisa is a distance learning institute and the student pool is mostly from South Africa but also from other African counties, mainly Zimbabwe, Ethiopia and Angola. Isolated students from Dubai and Australia have also been

enrolled in the School of Engineering. The students are studying for their national diplomas and bachelor of technology degrees. Some of them are full-time students and others work in various industries. The range of abilities assessed in this paper is based on the Unisa database, which gives the assignment marks and the final exam mark. Three courses were selected for analysis, namely exit level Chemical Engineering national diploma courses, which have 12 credits each, Chemical Engineering Technology, Applied Thermodynamics and Chemical Process Industries. These courses, although from the same programme, are vastly different and thus present a good picture of the role of formative assessment.

### **Expected results**

- Impact of formative assessment on the performance of students and statistical conclusion derived from the data.
- Problems associated with formative assessment and how they impact students' performance in summative assessment.
- Testing of the hypothesis: Students perform better when they do 75% of the formative assessment regardless of the mark. We could possibly test this by using  $\chi^2$  test at a 95% significance and possibly also hypothesise that students perform better in summative assessment when they do their assignments well, using the same statistical test.
- Informal formative assessments and the extent of their usage in Unisa's School of Engineering.

### **Discussion**

Assessment at Unisa occurs in a sequence of steps. There are two types of formal assessments that are implemented: mainly the formative assessment that occurs throughout the study period and the summative assessment that occurs at the end of the study period. The first of the formal formative assessments is a mandatory first assignment which has a two-fold purpose. The student has to be actively engaged, participate and submit diagnostic, formative and summative assessments throughout

the duration of whichever module they are taking. A student's final mark will be based on the year mark from assignments and a three-hour (written) summative examination. Assignments are assessed by qualified lecturers and/or external markers. Where external markers serve as assessors, a representative sample of assessments is moderated by internal lecturers. Second examiners are used to moderate questions, the marking process and the marked scripts. Second examiners also assist in oral examinations.

In addition to the typical purpose of formal assessment, it also serves as a means of activating the students' registration and hence allowing admission of the student to the examination. Assessment 1 typically consists of multiple-choice or true/false questions and is submitted by all students that intend to sit for the end-of-course assessment. Feedback is instant and lecturers do not derive much information about the students' performance from the first assessment. Thereafter the students submit a series of assessments which are marked by the markers and posted back to the students with a memorandum attached to them. The final assessment at the end of the study period contributes 60% to the final mark and this affects the grading of the student.

### **References**

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