USING OBJECTIVE ONLINE TESTING TOOLS TO ASSESS STUDENTS' LEARNING: POTENTIALS AND LIMITATIONS

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ABSTRACT

In this paper we argue that objective online assessment tools, mainly based on multiple choice questions, have various practical benefits. In fact, they are widely used to measure knowledge, comprehension and application of learning outcomes. However, this evaluation method is considered less effective in enhancing students' learning. Given this limitation, we believe that the assessment process is an activity in which a wide range of assessment styles and formats should be involved. Therefore, new mechanisms should be put forward to encounter potential problems.

Keywords: *e-learning, objective assessment, formative assessment, summative assessment*

1. INTRODUCTION

Due to the rapid and outstanding development of ICT in the last few years, e-learning has started to take off in a number of higher schools and universities around the world. These academic institutions have actually implemented or in the process of implementing e-learning as an alternative solution in order to expand their audience, reduce operational costs and provide better service.

Given the emergence of e-learning as a new form of education, a number of studies have been devoted to it. However assessment, which is an important, well established and popular slice of the e-learning universe, has not attracted the attention it deserves. Compared to the number of articles and research on e-learning, there are only a few that specifically address online assessment [1]. Therefore, our contribution in this regard is to shed light on this pertinent aspect of the learning process. Yet, our analysis here will be restricted to objective online assessment.

The remainder of this paper is organized as follows. In Section 2, we define assessment and examine its summative and formative modes. Section 3 deals with online assessment as a substitute to traditional paper-based assessment. In Section 4, we examine the potentials and shortcomings of objective online assessment. In Section 5, we give a brief conclusion.

2. ASSESSMENT AS A TEACHING TOOL

Assessment may be defined as that part of the learning process used to better understand the current knowledge that a student possesses. It is the process of identifying, collecting and interpreting information on students' achievement and progress. This implies that assessment may affect decisions about grades, placement, instructional needs, and curricula.

In the literature, a distinction is usually made between several forms of assessment many of which can be used hand in hand with each other. In this work, we will be concerned only with two major types: formative and summative assessments.

Formative assessment is intended to inform students how to improve in their learning experiences. It is an ongoing measurement designed to assess students' knowledge and skills. Formative Assessment often provides the student with written or oral feedback from the teacher

rather than a grade. The emphasis in formative assessment is to encourage students to understand their strengths, weaknesses, and gaps in knowledge. This can be through information gathered or collected from observations, interviews, and individual group discussions.

Summative assessment, on the other hand, is given to summarize the student's learning over a period of time, such as midterm and final exams. Summative Assessment is what most standardized tests are used for. They are not designed to give immediate or continuous feedback, but rather to give an overview of what has been learned to that point.

In both assessment methods, the teacher assumes two different roles. In the case of formative assessment, the teacher plays the role of a coach and facilitator so as to boost students' learning; but in summative assessment, he performs the role of a judge about students' attainment at a given period.

Taking into account the discussion above, it is quite clear that formative assessment is generally favored over summative assessment since it gives students an opportunity to have an idea about their strengths and areas requiring improvement as they proceed through a given course and provides teachers with pertinent information concerning the students' progress as well as the efficiency of the methods and materials used in teaching.

3. ONLINE ASSESSMENT

The increasing use of computers in universities and colleges has prompted educators, testing experts and test developers to look at ways of applying ITC to students' assessment. Learner assessments designed for traditional face-to-face instruction are inappropriate and often ineffective when transferred to an online environment. According to Anderson et al. [2], two major questions encounter educators in higher education aspiring to shift their courses to an e-learning environment: "what do we need to know about grading student work in the online environment? And what are ways we can do it?" The challenge is to devise authentic, reliable and ethical online assessment methodologies that engage the learner and promote learning [3].

For this reason, the scientific community has witnessed the development of new assessment methodologies and novel tools applying IT to the assessment process of students' learning. Recent studies have actually demonstrated that dozens of standalone and web-based applications are currently made use of to administer tests and exams [4]. In addition to this set of ready-made computer-based testing tools, numerous web sites offer freeware and shareware software programs that allow teachers to generate their own interactive on-screen quizzes with no need to do any programming, scripting or coding.

These computer-based assessment tools fall into a number of categories. However, our analysis in this paper will be restricted to objective online assessment tools. In particular, we will try to examine the potentials and limitations of this set of tools as well as their efficiency and effectiveness in examining students and enhancing learning. This will, actually, be the aim of the section that follows.

4. OBJECTIVE ONLINE ASSESSMENT

Objective computer-based assessment tools, which online education relies heavily on, use objective test questions. The marking process does not depend on any subjective judgment on the part of the marker as there are clear right and wrong answers [5]. Therefore, variations in marking due to subjective factors are eliminated. The most common type of these questions is 'multiple choice', where the learner has to choose the correct answer from a list of possible answers [6]. But there are a variety of other objective question types that can be used within the system. These include true/false, ordering, matching and fill in the blank questions. Candidates answer the questions by either pointing and clicking the mouse, moving objects around the screen, typing numbers, or a combination of these responses and the software can react with an appropriate result and feedback. More sophisticated programs can select questions based on the previous answers that the student gives - setting more demanding questions if answers are correct, or easier questions about the same topic if answers are incorrect.

Thanks to these attributes, this type of assessment tools have proven to be the most popular category of online assessment methods in the sense that they enable the teacher to assess a large number of students within short timeframes. They provide the instructor with an opportunity to gauge students' understanding in a fairly quick and efficient manner. They also are easy to analyze in that incorrect responses can be clustered as percentages and teachers can easily determine which of the incorrect responses students most commonly selected. Moreover, the marking is automated and so feedback and results can be provided quickly for even the largest class sizes. For this reason, these tools are widely used for teaching and evaluating many different disciplines.

Although credited with numerous advantages, objective online assessment seems to suffer from a number of shortcomings [7]. As we saw in Section 2, assessment should provide not only a description of students' level of attainment upon completion of an activity, module, or course (summative assessment) but also diagnostic feedback to students and instructors at short-term intervals (formative assessment). Nevertheless, upon examination of a sample of software programs dedicated to testing and assessment, we found out that the great majority of objective computer-based assessment tools are not designed to provide the immediate, contextualized feedback useful for helping students and teachers during the learning process. In these tools, it is the summative function which predominates. This means that the main reason behind using such programs is simply to measure learners' knowledge, skills, and aptitudes and to rank order students.

In addition to these purely summative online assessment tools, there is another set of applications which is both summative and formative. This implies that besides allocating scores or grades, these assessment systems provide both teachers and students with the information which is to be used as feedback to adjust the teaching and learning activities in which they are engaged [8]. In this way, formative assessment tools provide both teachers and students with the necessary information at a point when timely adjustments can be made. Nonetheless, the feedback provided in some of these computer-based tools is usually limited to a score indicating the proportion of right answers obtained. In others, the student receives a 'right' or 'wrong' instant message depending on whether he/she answers each question correctly or incorrectly. In Learning Management Systems (Moodle, Claroline, etc), however, the tutor can provide the feedback as to why each question option is correct or incorrect.

According to Narciss [9], the effectiveness of formative assessment depends on the effectiveness of the feedback, which in turn depends on its informativeness. Narciss defined three feedback conditions: feedback about result (low informativeness), feedback about mistakes (medium informativeness), and feedback about how to process (high informativeness). Narciss further pointed out that the informativeness of feedback affects both information processing and learner motivation [10]. Yet, we discovered in our investigation that most objective online assessment tools tend to provide the feedback belonging to the category of 'medium informativeness' defined by Narciss.

Another limitation of online objective assessment is that it prompts students to use low-level cognitive skills, in which learners are required to memorize facts and identify correct answers from incorrect ones. In this range of assessment tools, students are not given a chance to show creativity and imagination because they are asked to 'converge upon the right answer and not to diverge on a range of possibilities which a question may open up' [11].

Recent studies have demonstrated that students mostly use superficial study techniques to prepare themselves for such tests. As such, some researchers argue that the educational effectiveness of objective online assessment that concentrates primarily or exclusively on objective questions is highly questionable in a higher education environment. This, actually, implies that the use of objective online assessment tools can have direct negative effects on students' approaches to learning by encouraging narrow reproduction rather than the development of higher order cognition abilities of synthesis and evaluation.

Another weakness of objective online assessment is that it encourages guessing. In other words, a student may answer a question correctly not

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because he or she knows the answer, but simply because the student has guessed the correct answer. For instance, in an exam which consists of 100 multiple choice questions with five options per question, a student who has never been to class and does not know any of the material may get 20% of the answers correct just by guessing.

In order to discourage students from blind guessing, some scholars usually introduce a marking scheme that involves subtracting points for incorrect answers. As a refinement to negative marking, an abstain or "don't know" option which carries no marks is advocated. By opting for the latter option, the student is not penalized for being apprehensive or ignorant and does not have to resort to guessing.

From the foregoing discussion, we can stipulate that although objective online assessment has numerous advantages, it has been proven that it is less efficient in encouraging and facilitating students' learning. To overcome the limitations inherent in objective online assessment, new sets of computer-based assessment systems which assess a variety of cognitive skills are popping up in the educational community [11]. Therefore, we strongly believe that objective online assessment tools alone cannot enhance students' learning. Assessing learning and teaching in e-learning environments will not be effective unless different assessment formats and mechanisms are involved.

5.   CONCLUSION

In this paper an attempt was made to examine the efficiency and effectiveness of objective online assessment in testing students and enhancing their learning. However, after an examination of a sample of software programs available on the market, we found out that this range of assessment tools tend to be built for the purpose of measuring students' performance rather than providing opportunities for further learning. Henceforth, we suggested that the assessment activity should involve not only the use of objective online assessment but also other sets of assessment methods and formats, since this wider scope would enable students to demonstrate an ampler range of intellectual skills.

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