Shifting sands of assessment mindset in open distance and E-learning (ODeL): exploring online evidence-based assessment model

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ABSTRACT

With the advent of open distance and e-learning (ODeL), examination cheating got its ugly claws into the new alternative to higher education (HE). Open Distance and e-Learning in its academic and fully online form is fairly new to open and distance learning (ODL) institutions of higher education in South Africa and worldwide. The study used a theory of reasoned action (TRA) underpinned by Open Data Kit (ODK) methodology to collect a body of narratives from 15 ODL assessor lecturers on their e-readiness to adopt appropriate ODeL assessment affordances; given the availability of a plethora of information and communication technologies (ICTs) such as computer and internet connectivity. Findings indicate that a large number of ODL assessor lecturers are not ODeL-ready to shift their assessment regimes to conveniently gather evidence from students for the purposes of making informed decisions about their (students) performance and skills outcomes. It is argued in this study that the failure by assessor lecturers to shift their assessment mindset in ODeL might compromise the accuracy, fairness and appropriateness of the collected evidence from assesses in ODL given the large student numbers.

Key words: Open distance and e-learning (ODeL), theory of reasoned action (TRA), open data kit (ODK), assessment modalities, open and distance learning (ODL).

INTRODUCTION

Distance education has always, and rather unfortunately, been defined by the primary technology used to support learning. This technological determinism leads to a debate on what e-learning or online learning really means. Open distance and e-learning (ODeL) is but one learning system designed to mediate teaching and learning in ODL. Facilitation processes in ODL are normally underpinned by connectivism. Connectivism promotes learning by supplementing the social construction of knowledge. Learning through connectivism can be described as: “a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning can reside outside [the individual] and is focused on connecting specialized information sets. [T]he connections enable us to learn more” (Siemens, 2004). ODeL communities provide a venue for both connectivism and constructivism to operate in the learning environment.

Explaining user acceptance of new technology is often described as one of the most mature research areas in modern-day information technology (IT) literature (Hu et al., 1999). Stepping back, it was noted that the first and most long lived of the distance education technologies was print combined with postal correspondence. This correspondence education was the only form of distance education from its beginnings in the middle of the nineteenth century until the development of radio and television (TV) programming in the middle of the 20th century. Because postal correspondence does not support cooperative or collaborative learning activities, correspon-
idence education also became associated with individualised learning. With the increasing number of academic institutions offering programmes in the Open and Distance-Learning (ODeL) mode of instruction, the formation of learning communities as critical ingredient of social construction of knowledge has challenged distance education (DE) practitioners.

E-learning, or online learning, can and does support the individualised and cooperative community of learning models. It can be free or very expensive, paced or self-paced. Online mediations enable a strong student-centred approach to learning and authentic assessment, as a result. Authentic assessment actively engages students and demonstrates to the mediator that they do not only understand the concepts, but can also apply them to real-life scenarios (Mueller, 2006). But ODeL assessment tools have remained conventionally rigid despite the rapid growth of the student body and the availability of tools that can be used for assessing the knowledge, skills and performance of students (Nyoni and Segoe, 2013; Nyoni, 2013). This article reports on the findings of a qualitative study of the 15 ODeL assessor lecturers on the use of ODeL-assessment modalities. The study analysed the text postings of assessor lecturers on the use of appropriate ODeL assessment modalities given a variety of enabling ICT affordances. Based on the study’s findings and research on assessor lecturer development in adopting and adapting appropriate assessment modalities through the use of ICT affordances, there are appears to be a gap between realia and intent.

THEORETICAL FRAMEWORK

The Technology Acceptance Model (TAM) is an adaptation of the Theory of Reasoned Action (TRA) to the field of ODeL assessment. According to the theory, the most important determinant of a person’s behaviour is behaviour intent. The individual’s intention to perform a behaviour is a combination of attitude towards performing the behaviour and subjective norm. The individual’s attitude towards the behaviour includes behavioural belief; evaluations of behavioural outcome; subjective norm; normative beliefs; and the motivation to comply. If an assessor lecturer perceives that the outcome of performing a behaviour is positive, he or she is likely to adopt a positive attitude towards performing that behaviour. The opposite can also be stated if the behaviour is regarded as negative. TAM posits that perceived usefulness and perceived ease of use determine an individual’s intention to use serving as a mediator of actual system use. Perceived usefulness is also regarded as being directly impacted by perceived ease of use. Researchers have simplified TAM by removing the attitude construct found in TRA from the current specification (Venkatesh et al., 2003) (Figure 1). Attempts to extend TAM have generally taken one of three approaches: by introducing factors from related models, by introducing additional or alternative belief factors, and by examining antecedents and moderators of perceived usefulness and perceived ease of use (Wixom and Todd, 2005).

TRA and TAM, both of which have strong behavioural elements, assume that when assessor lecturers form an intention to act, they will be free to act without limitation. In practice constraints such as limited ability, time, environmental or organisational limits, and unconscious habits will limit the freedom to act.

Since these criteria of openness have important implications in many dimensions for both assessors and mediators, I used narratives like ODL, ODeL, and other ontologies that allowed me to analyse the ODeL-readiness of assessor lecturers to use online-based assessment tools or systems to collect evidence from mediatees.

FLEXIBLE LEARNING STRATEGIES IN OPEN AND DISTANCE LEARNING

Open learning and distance learning are generic terms which cover a wide range of flexible learning strategies. Open learning programmes can involve drop-in centres, home study, work placements, day release and evening, weekend or summer classes. Support for and assessment of candidates could incorporate a variety of approaches such as flexi packs, timetabled tutorials, telephone support, virtualisation, tutor-marked assignments and supervised workplace assessment among others. Candidates taking these programmes might have chosen the open learning route, because they prefer to be responsible for organising some of their own learning and assessment at their own pace (Table 1).

ASSESSMENT IN OPEN DISTANCE AND e-LEARNING (ODeL)

Assessment in ODeL is as fluid as the ODeL system itself. The fluidity is characterised by the fact that the rapid introduction of ICT affordances makes assessment in ODeL continue to evolve rendering the identification of the most appropriate assessment tools illusive and far between. ICT is increasingly being used to support flexible learning programmes. It can offer benefits in enhanced flexibility, authentication and security. It can also be used to make communication, delivery, administration and assessment systems more robust.

On the other hand, access to the internet also makes plagiarism easier. If one is required to provide a description and analysis of concrete experiences of using and implementing new assessment methods and tools in open and distance education, using electronic systems for remote assessment, one will also have to consider the risk of impersonation. An ideal flexible learning programme might
be one which balances the freedoms and potential of new technologies with tried and tested flexible learning and quality assurance approaches. Often, the ideal programme will retain some degree of personal contact between assessor lecturer and candidates and among candidates taking the qualification.

**PRINCIPLES OF ASSESSMENT FOR OPEN AND DISTANCE E-LEARNING**

Assessment in ODeL should not be less valid, reliable or practicable than the assessment of qualifications delivered by the conventional route. The principles of assessment remain the same.

(a) **Validity**

Assessment instruments should be appropriately fit for purpose, contain clearly-defined assessment criteria, ensure coverage of the skills, competences and knowledge in the qualification and be capable of generating evidence appropriate for the outcomes to be assessed. Identifying or creating assessment instruments for ODeL can be challenging, especially where observation of candidate performance is the most valid method of assessment, but assessor lecturers are not in direct contact with candidates. Online assessment tools can be used either synchronously or asynchronously to collect evidence from self-paced mediates appropriately.

(b) **Reliability**

In order to be reliable, assessment decisions should be based on evidence generated by valid assessment instruments that are consistently applied over time, across a range of candidates and assessors, and in different situations and contexts. It is fundamental that the online assessment modalities in ODeL are as reliable, and seen to be as reliable, as those offered through other modes. You must be satisfied that assessment decisions are as consistent as possible to ensure the credibility of flexible learning provision. The online assessment instruments that you use should be subject to internal checking and anyone who assists the assessor lecturers in the assessment process (such as invigilators or assessment supervisors) should be provided with clear instructions on the conditions for assessment which apply in any given situation.

(c) **Practicability**

For assessment to be practicable it must be capable of being smoothly administered; and it must be cost-effective. Adequate resources, time, and communication channels must be available to ensure that assessment and re-
assessment can take place at a time and place that is appropriate for candidates and centres. Open and distance learning will probably present you with more challenges than other delivery modes in terms of practicability, because it may mean that you have to involve other centres and/or individuals in the assessment process. In order to meet our requirements for quality assurance, you must be able to show that your internal quality system can extend to encompass all the various assessment arrangements, locations and individuals involved. These situations can create logistical problems and solutions must be workable and cost-effective for everybody involved.

(d) Fairness

The need for fairness is implicit in each of these principles. In all learning and assessment situations, candidates have the right to have access to: support from a tutor; learning and assessment materials; equipment and resources; and assessment opportunities. In flexible learning situations, especially those where candidates are studying remotely, it is important not to underestimate the amount of planning and resources required to provide these things.

TRADITIONAL ASSESSMENT

Traditional examinations and tests no longer seemed adequate for the needs of learners. "The process of gathering evidence to make inferences about student learning communicates to students ... what is valued in ... education and how students are progressing towards specific goals" (Pennington et al., 2001:2). Because assessment is based on an "interrelated set of philosophical beliefs and theoretical assumptions" (Anderson, 1998:7), we have to critically investigate these beliefs and assumptions. The motivation to try something new comes from the frustrations that resulted from a high rate of student failure. "The standard paper and pencil tests were not getting to the heart of what I was trying to teach ..." (Combs, 1997:3).

i. E-Learning

E-learning means the, "The delivery of a learning, training or education programme by electronic means. E-learning involves the use of a computer or electronic device (e.g a mobile phone) in some way to provide training, educational or learning materials". These definitions materialise, some through conflicting views of other definitions, and some just by simply comparing defining characteristics with other existing terms. In particular, Ellis (2004) disagrees with authors like Nichols (2003) who define e-learning as being strictly accessible using technological tools that are either web-based, web-distributed, or web-capable. The belief that e-learning not only covers content and instructional methods delivered via CD-ROM, the internet or an intranet (Benson et al., 2002; Clark, 2002) but also audio and videotape, satellite broadcast and interactive TV is the one held by Ellis. Although technological characteristics are included in the definition of the term, Tavangarian et al. (2004) as well as Triacca et al. (2004) felt that the technology being used was insufficient as a descriptor. Tavangarian et al. (2004) included the constructivist theoretical model as a framework for their definition by stating that e-learning is not only procedural, but also shows some transformation of an individual’s experience into the individual’s knowledge through the knowledge construction process.

Both Ellis (2004) and Triacca et al. (2004) believed that some level of interactivity needs to be included to make the definition truly applicable to describing the learning experience, even though Triacca et al. (2004) added that e-learning was a type of online learning. As there is still the main struggle as to what technologies should be used for referencing the term, some authors will either provide no clear definition or a very vague reference to other terms such as online course/learning, web-based learning, web-based training, learning objects or distance learning believing that the term can be used synonymously (Dringus and Cohen, 2005; Khan, 2001; Triacca et al., 2004; Wagner, 2001).

ii. Assessment in open and distance e-learning (ODEL)

On the other hand, the use of ICT and, particularly, the internet allowed us to introduce a very important improvement in learning and, by extension, in assessment: the possibility of relationships among students. Learning in virtual environments widen the options for developing a real learning community in cyberspace in which formative assessment should be the most important.

ISSUES AND CONCERNS ABOUT ASSESSING IN ONLINE EDUCATION

Several issues around the appropriateness of organisational systems and models of distance education and e-learning institutions and experiences are still arising, namely faculty organisation, electronic platforms feasibility, multimedia teaching materials are elements of online distance education which are not only under permanent debate, but are discussed in-depth from some hypothesis which consider that face-to-face educational practices are more efficient than distance and online ones.

These trends are stronger within the framework of learning assessment. Even if some studies have been able to cast doubt on whether the apriorism of face-to-face
methods are better than online ones (Russell, 1999), there is the need for finding solutions to increase not only the quality of online learning, but also its social perception.

CONSIDERATIONS ON THE COURSE DESIGN

My point of departure is the synthesis of the instructional principles of Savery and Duffy (2006) alongside with my own considered contributions (Mateo, 2007; Guàrdia et al., 2007) to identify the way the online model should incorporate the basic defining models derived from the new approach in its instructional design. Also, Sluijmans et al. (2006) approach on competence-based performance assessment has been taken into account. The ODeL system is more efficient and effective when its curricular structure is fundamentally based on the execution of activities. To renounce to structure instruction based on topics is, in my opinion, fundamental in the field of ODL in general and particularly in ODeL. In my opinion, the most plausible alternative is the model of "learning based on activities" – the activities have to be authentic.

Authentic experiences are very important for the individual to build mental structures that work in significant situations (Herrington et al., 2003). Even so, my concept of authenticity refers to the type of cognitive challenge proposed by the activity more than to the genuine character of the context. All activities that are part of the educational programme are related to activities with greater range. An assesse has to be aware of the fact that the representations of reality are very complex and that all the activities are part of an enormously wide macro-universe. Inserting knowledge in a wider context to establish a "learning situation" (Sangrà and Guàrdia, 2006) in line with the already mentioned "application situation" helps to provide my closest learning situations with real significance. The designed activities have to be a real challenge for the assesse's development of thinking. Everything related to knowledge, abilities and skills that have to be applied, and the contexts in which the application takes place has to be relevant and significant to the assesse.

The instructive process has to be designed in such a way that it offers possibilities that the assesse takes over the development of the activity. It is fundamental that the assesse takes over the solution to the problematic elements embedded in the activity. At this point, I would like to underline the role of the teacher in the sense that he or she can offer support to the student, but he or she can never provide solutions to the problem. The activities have to imply some type of social negotiation and intervention. Knowledge is a socially negotiated product. The importance of the social contexts in the learning process is a clear contribution of constructivism based on Vigotsky's (1978) interpretation. The use of collaborative learning groups or the most recent and innovative experiences in communities of online learning (Carrol, 2001) provides very clear elements regarding the positive nature of the issue. It is necessary to create learning situations which facilitate a group analysis of the acquisition of knowledge and the processes that support the acquisition. One of the most important objectives of an instructional model is the development of skills that allow the self-regulation of the students. To achieve this, teachers should foster working models that activate the simultaneous group reflection about "how" and "what" students are learning (Clift et al., 1990).

It is necessary to gather assessment information on every activity and introduce activities designed based on the assessment logic. Assessment has to allow the dynamisation and guarantee the individual and collective learning processes of students. All activities have to be designed so that they can provide information that allows analysing them from a position of evaluative reflection. This consists of highlighting the key elements of how own learning is taking place.

METHODOLOGICAL APPROACH

The study used a theory of reasoned action (TRA) undergirded by Open Data Kit (ODK) methodology to collect a body of narratives in the form of texts from 15 ODL assessor lecturers on their e-readiness to adopt appropriate ODeL assessment affordances provided for by a plethora of information and communication technologies (ICTs) such as computer and internet connectivity. Open Data Kit (ODK) is free and open-source set tools that help researchers, field workers and so forth to manage mobile data collection solutions. ODK provides an out-of-the-box solution to users in order to:

(i) Build a data collection instrument,
(ii) Collect the data on a mobile device and send it to a server,
(iii) Aggregate the collected data on a server and extract it in useful formats.

Data collection took place through the use of HTC G1 smartphones running Google's Android operating system. The phones were equipped with Open Data Kit (ODK) software; a system that immediately digitised data for analysis, allowed for remote monitoring of the collection progress and facilitated data gathering, eliminating the need for paper trails and reducing fieldwork times significantly. The ODK-structured open chats are written in xml format and can be created manually or generated automatically using an online interface. Studies that require larger forms with more questions, fewer enumerators, and a variety of data types (i.e., GPS, photos, etc.) can benefit from more adaptive technologies, such as EpiSurveyor or Open Data Kit (ODK).
DISCUSSION OF FINDINGS

The technology acceptance model (TAM) which is an adaptation of the Theory of Reasoned Action (TRA) was used to analyse the aggregated data. The findings were obtained from 15 assessor participants who were purposively selected from one particular ODL institution which is in the process of rolling out the ODeL system of delivery. The phones that were used were equipped with Open Data Kit (ODK) software; a system that immediately digitises data for analysis, allows for remote monitoring of the collection progress, and facilitates data gathering, eliminating the need for structured interviews common with qualitative research approach and therefore significantly reducing data collecting times. Six (6) themes were generated from the aggregated data on a server which were subsequently extracted, analysed and interpreted and are discussed hereunder.

E-Learning design implications

Because e-learning largely requires that courses are designed in advance of teaching, the instructor, as the developer, has an opportunity to not only plan situations to embed assessments in the instruction, but also to review the instructional content and planned experiences prior to implementing the e-learning programme. This can ensure the validity of the assessments. They cannot rely on interpersonal skills during teaching to compensate for the weaknesses of an organisation in the course or the lack of substance or timeliness of the content, as is possible in traditional courses. Nor can well-structured learning experiences compensate for a lack of communication skills in the e-learning teaching process. In the majority of cases assessor lecturers (primary facilitators) embedded their assessment plans that included; (a) multiple-choice questions (Assignment 1) (b) short answers based on scenarios (Assignment 2) (c) end semester or year examinations. Higher value was placed on the end of year/semester results (60 – 70%). (a) and (b) for about 20 – 30%. Clearly these kinds of assessment modalities are inappropriate for the ODeL system. The system heavily relies on evidence-based assessment strategies to collect data on student performance and learning outcomes of which findings indicate to the contrary. Assessor lecturers indicated the following: “We are simply complying with assessment policy and there are no flexibilities. Assessments are similar to those that mainstream traditional face to face universities”.

The flexibility of time and place valued by students in asynchronous e-learning facilitates the use of assessment strategies as integral aspects of instruction. With face-to-face instruction, the same level of assessment may be viewed by instructors and/or students as excessively time consuming and even detracting from instruction. In view of the range of assessment options available through e-learning, it was easy to say that they were little different from those routinely employed in face-to-face instruction. For example, Morgan and O’Reilly (1999) describe five different types of assessment activities that are familiar:

(i) Ungraded activities and feedback built into study materials,
(ii) Self-assessment quizzes and tests that allow learners to check their own learning,
(iii) Formal feedback on assignments from instructors, peers, or work place colleagues or mentors,
(iv) Informal dialogue with instructors, peers or others,
(v) Ungraded tests that prepare learners for formal graded assessments

While these are familiar and not unique to e-learning, the difference lies in how technology makes them more feasible and possibly and more effective to plan and execute.

Feedback

With the exception of the examinations these are constructivist activities that engage students in demonstrating continuous progress and each one provides the instructor with the opportunity to intervene, as necessary, via reinforcement, directions, and/or correction through feedback. The findings indicate that assessor lecturers were overwhelmed by volumes of assignments from students. It was evident that very little if at all adequate paper-based feedback was communicated to students. The online platform provided for such purposes was cumbersome and offered very few drop-down options for the assessors to click on the appropriate feedback line. The student portal was very slow to open and frustrating to assessor lecturers. Most common texts indicated that, “Despite the fact that we use ODL mode of delivery, we only used paper based communication with our students. The postal system is mostly preferred by the institution and delays are common particularly postal workers are on strike. Imagine the impact it has on students! Eeish”. A teleTOP can be used to facilitate feedback to students. Collis et al. (2001) go on to describe TeleTOP, a web-based, support system. Inherent in the system is the capability to link to types of responses, thus reducing demands on the instructor while maintaining effective feedback to the students. Examples of links include:

(i) Personal feedback by the instructor to an individual assignment
(ii) Model answers provided by the instructor
(iii) Peer evaluation provided by the student(s)
(iv) Automatic direct feedback provided by the computer

If assessment is to be an integral part of instruction, feedback is central to the assessment process. E-learning makes this more achievable than traditional forms of
instruction when factors of time and access to information are concerned.

Examinations

The examinations are a mixture of essay and objective items depending on the nature of the course content. Since the courses are self-paced, students are not allowed to take the examinations at different times. Examinations follow a semester or annual systems where all the students enrolled for a particular course simultaneously sit for the examinations that are never staggered.

Student Reports in Real Time

A vehicle for assessing student performance that has proven to be helpful in evaluating performance in ODeL-learning is the team report. In order to be effective, it requires a synchronous experience. For this reason, assessor lecturers commented as follows: “We have not even use it in the asynchronous courses or online seminar or any system that mixes synchronous with asynchronous techniques”. The study further revealed that most of the assessor lecturers did not use any ODeL system to assess students hence reports on real time never existed.

Electronic portfolio development

The monitoring of student progress via electronic portfolio development facilitates two primary types of evaluation: formative and summative. Formative evaluation can be used to identify strengths that can be built on and weaknesses that need prescriptive feedback that will encourage both instructor and student reflection on ways of improving professional development and training. Summative evaluation serves more of a retrospective function in that it is the documentation of achievements and professional skills. Findings showed that the use of electronic portfolios was never a priority. Essentially, portfolio and performance-based assessment are both ways of evaluating activities or products that are representative of skills applied to a performance task, whether that task is job-related or associated with a series of instructional goals and objectives. In addition to providing evidence of depth and breadth of knowledge and skills, the professional portfolio, when done thoughtfully, can serve as a “knowledge resource” for future reference.

assessment. The ODeL environment creates opportunities for assessment and possibly demands more intensive assessment. That is, while technology adds a level of efficiency to assessment in ODeL environments, it must also compensate for the lack of easy access to personal observation. They are as follows:

(i) Assessment instruments and activities should be congruent with the learning goals and skills required of the learner throughout a distance education programme or course.
(ii) Assessment and management strategies should be integral parts of the learning experience, enabling learners to assess their progress, identify areas of review, and re-establish immediate learning or lesson goals.
(iii) Assessment and measurement strategies should accommodate the special needs, characteristics, and situations of the distance learner.

Conclusion

TRA and TAM which have strong behavioural elements suggest that when assessor lecturers form intentions to act, they are free to act without limitations. As findings would indicate, assessor lecturers are not Ode-L-ready to use online assessment as at times systems themselves are not ready to comply. Resources such as digital media (audio and video cassettes, CDs, DVDs), satellite broadcasting, online distribution of content and information, corporate websites, audio, video podcasting, streaming, possibly radio and television can be used to facilitate the process of collecting evidence from ODe-L students. Asynchronous technologies such as wikis, blogs, social networking facilities and e-portfolios can be used effectively to support teaching and learning. Therefore, ODeL learning communities need to provide flexibilities for such situations so that the process of communication, collaboration and cooperation will not be disrupted as a result of changing community members. My argument is that the failure by assessor lecturers to shift their assessment mindset in ODeL might compromise the accuracy, fairness and appropriateness of the collected evidence from assessesess in ODL given the large student numbers.

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