ASSESSMENT TO ADDRESS THE CHALLENGES OF EFFECTIVE TEACHING AND MEANINGFUL LEARNING IN AN ICT4D MOOC

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ABSTRACT–In this paper, the author introduces how she combined formative and summative assessment design, with the aim relating to research questions around addressing the challenges of effective teaching and meaningful learning of an Information and Communication Technologies for Development (ICT4D) Massive Open Online Course (MOOC), specifically in an open and distance learning context, including objectives regarding assessment for delivering ICT4D education. The paper proceeds to theoretical and conceptual frameworks, documenting concepts around applying transformative assessment linked to student needs, and presenting aspects relating to ensuring the validity and reliability of assessment practices. A literature review of references into different types of integrated assessment used in the study material and through research also describes development regarding innovation in assessment, as well as the application of creative assessment strategies, leading to improved student retention and success, including intervention strategies to improve assessment. A section follows that describes the mainly quantitative research design used and provides details about the survey as data collection instrument, sampling technique and sample, validity and reliability of the instrument and data analysis processes followed. A discussion of results is followed by conclusions regarding assessment to address the challenges of effective teaching and meaningful learning in an ICT4D MOOC.

Keywords: MOOC; Challenges of ICT4D Education in an Open and Distance Learning (ODL) context.

1. INTRODUCTION

Since Van Hentenryck and Coffrin (2014) are of the opinion that few papers discussed the design and teaching effectiveness of assessment for Massive Open Online Courses (MOOCs), in this paper, the author will provide a response by introducing her experiences regarding how she combined both a formative and summative assessment design, towards effective teaching and meaningful learning for an introductory Information and Communication Technologies (ICTs) for Development (ICT4D) MOOC (Goosen, 2014).

1.1 Aim, Research Question and Objectives

The aim of the research project reported on in this paper therefore relates to the following research question: How can assessment be used to address the challenges involved in effective teaching and meaningful learning of an ICT4D MOOC, especially in an Open and Distance Learning (ODL) context (Du Plessis, Marais & van Schalkwyk, 2011)? More specifically, and similar to the latter authors, the research study reported on in this paper set out to investigate all, but especially problematic, aspects related to assessment in the current model at one specific Higher Education Institution (HEI), for making recommendations with regard to the improvement thereof, in light of the objectives of the research reported on in this paper, regarding assessment for delivering ICT4D education (Pieterse & Du Toit, 2009).

Similar to the article by Du Plessis et al. (2011), the following section of this paper addresses the theoretical and conceptual frameworks relevant to the study, by documenting concepts related to the institutional Learning Management System (LMS), and a range of assessment activities, which were applied with regard to transformative assessment linked to student needs.

In terms of measuring assurance of meaningful learning goals (Murphy, Sharma, & Rosso, 2011), a review of literature presents aspects relating to activities aimed at ensuring the validity and reliability of assessment practices by academics and students, as well as on research into how different types of integrated assessment are being used in the study material and through research, and how the course had been developed regarding innovation in assessment. This section of the paper further also describes the application of creative assessment strategies, which could not only lead to the effective teaching of creative problem solving in a MOOC, but is, in fact, shown to be leading to improved student retention and success, including intervention strategies to improve assessment. Finally, this section will also discuss how the core challenges posed with regard to addressing effective teaching and meaningful learning of an ICT4D MOOC, specifically in an open and distance learning context, were addressed in terms of adaptation to a MOOC setting, by scaling assessment to huge numbers of students, including recreating the community dimension, which fuelled students' motivation to complete their course (Van Hentenryck & Coffrin, 2014).

Du Plessis et al. (2011, p. 24) "identified assessment as an aspect which needed further investigation. This was indicated by the fact that the participants" in that particular study "identified a number of negative aspects" with regard to assessment that they thought needed improvement. Van Rooyen (2010) was also of the opinion that further research was necessary to investigate assessment practices at higher education institutions, together with the effect that these might have in terms of leading to improved student retention and success rates. The results reported by Van Hentenryck and Coffrin (2014, p. 682) were still anecdotal and these authors hoped that their work would support and inspire innovative, rigorous studies into how "course design choices can create effective" teaching, leading to meaningful e-learning experiences at the scale of MOOCs. Finally, both Pretorius, Prinsloo and Uys (2009) and De Hart, Doussey, Swanepoel, Van Dyk, De Clercq and Venter (2011) completed investigations in an open and distance learning context at a higher education institution for students at an introductory level, in Africa and South Africa respectively - Pretorius et al. (2009), however, focused on student success in Microeconomics, while De Hart et al. (2011) investigated increasing programme throughput with regard to factors affecting the academic performance of undergraduate taxation students. The results reported in this paper therefore provide a response to various gaps thus identified in related literature.

This is followed by a section that describes how the empirical research was undertaken and the methodology in terms of the research design used in the investigation (Du Plessis et al., 2011). It also outlines the mainly quantitative data, which were collected using an online survey in a student course evaluation as a mechanism for improvement (Du Plessis et al., 2011). This section also provides details about the data collection instrument, sample and sampling technique, validity and reliability of the instrument and data analysis processes followed.

A discussion of the results starts with demographic details in terms of the student characteristics for the sample of 2 049 respondents from 22 different countries. Information is then provided on whether the overall mark allocation for the course was clearly explained, and the guidelines for assignments and portfolio preparation were adequate. This section also offers details on whether the assessment tasks provided valuable learning experiences, how promptly students received feedback on their marked assignments, whether the feedback that they received on their marked assignments had been useful and the marking process fair, and the procedure to query marks adequate. In summary of this aspect, results are provided with regard to what students' overall experience of the assessment had been like.

This paper thus discusses issues and lessons learned from developing innovation in assessment for a MOOC offered to almost 80 000 students over five semesters to date, which, despite the challenges

involved in delivering ICT4D education in an open and distance learning context, are leading to improved student retention and success. These enabled the assessment tasks in this course to provide valuable learning experiences, thus validating the design decisions taken regarding the MOOC version of the course. The value of the results could lie in significantly improving tutorial matter, and can be related to these being of use and providing guidelines around assessment to those academics who are considering embarking on a similar journey (Du Plessis et al., 2011). In terms of conclusions, a section presents possible opportunities for further investigation, and a concise summary of the results reported on in the paper is made available.

2. THEORETICAL AND CONCEPTUAL FRAMEWORKS

According to Van Rooyen (2010, p. 52), "educational design is underpinned by constructivist theories on the use of technologies to assist students in" an open and distance learning context. Du Plessis et al. (2011) therefore used socio-constructivist and situated learning theories in terms of theoretical and conceptual frameworks for evaluating the meaningfulness of learning and assessment by academics, teaching assistants and the students themselves. Laws (2013, p. 47), however, is of the opinion that it is important not to "ignore a large body of research" results "about the importance of active engagement." "The implication of the abovementioned" theories for assessment "is that the interactive nature of learning is" being extended to include the process of assessment (Du Plessis et al., 2011, p. 26).

2.1 An Open and Distance Learning (ODL) Context

Archer, Chetty and Prinsloo (2014, p. 68) expressed the opinion that one "particular gestalt of distance education actually claims to provide" an open and distance learning context, "depending on geopolitical contexts, legislation, and funding frameworks." These same authors go on to point out that recent developments at higher education institutions, "such as the massive open online course (MOOC) phenomenon have highlighted the role of open admission requirements".

Student support at higher education institutions that operate in an open and distance learning context "has existed for decades, and research has established that students' success and the success of" these higher education institutions "depend not only on the quality of the learning package, but also on the quality and scope of the support given to students" (Van Rooyen, 2010, p. 52). Especially academics working in an open and distance learning context at higher education institutions are therefore constantly being "challenged to increase the effectiveness of their teaching." To this end, for example, all of these academics "are undergoing comprehensive training focused on assessment" for higher education institutions and an open and distance learning context (Dreyer, 2010, p. 217).

Van Rooyen (2010, p. 54) also shared the opinion that studying without any communication with their fellow students requires the "integration of information technologies and communication tools to support" academics in effective teaching and "enable people to communicate regardless of their location" (Van Rooyen, 2010, p. 55). Many higher education institutions operating in an open distance and learning context are therefore also making use "of the new educational technologies that is currently in the news" (Laws, 2013, p. 46). "Notwithstanding multiple communications employing various modes of communication (learning management system, sms, e-mail)" being implemented by most higher education institutions, "some students still questioned the authenticity" of, and expressed fears regarding, the assessment (Archer et al., 2014, p. 76).

3. REVIEW OF RELATED LITERATURE

The views conveyed by Du Plessis et al. (2011, p. 28) included that assessment at higher education institutions by academics "should be planned and conducted according to a constructive assessment approach that aims" towards meaningful learning. Pieterse and du Toit (2009, p. 116) added that

ensuring validity and reliability should be “central to the design of good assessment practices”. The latter authors therefore aimed “to compile a set of guidelines to address” challenges “related to miscomprehension of set questions, that can serve as a tool for” including intervention strategies to improve assessment, ultimately leading to improved retention and success in terms of “the performance of their students.” The paper by Van Hentenryck and Coffrin (2014, p. 682) reviewed their experience in effectively teaching “the creative problem skills required by” practitioners, which is considered to be a challenging task, in a MOOC - their course and assessment design was motivated by discovery-based learning and continuous feedback. Finally, according to Breetzke (2007, p. 200), assessment also needs to take place “within a framework of the policies adopted by the Academic Boards of the” specific higher education institutions.

3.1 Massive Open Online Course (MOOCs)

Laws (2013, p. 46) explained that in “the United States people are talking about MOOCs”, an acronym that stands for Massive(ly) “Open Online Courses. The proponents of MOOCs seem excited about the idea that a number of” educational technologies can be implemented for effective teaching and meaningful learning in an ICT4D MOOC in the 21st century (Goosen, 2015). Some of these technologies proposed by Cant and Bothma (2010, p. 71) included “Internet/WWW (websites used to support” course “information activities, frequently-asked questions (FAQs), simple assessments, multiple-choice questions, etc.”, as well as automated assessment.

With regard to the effective teaching of computer training and assessment tools (Murphy et al., 2011), Cooper (2011, p. 1) pointed out that myITLab “is a computer based training and assessment solution”, “created by Pearson Education to provide” training and assessment “for students that is integrated with” a possibly customised e-textbook (Cooper, 2011, p. 2). “Both the training and assessment in” myITLab can be “conducted online using simulations of Microsoft Office products.”

Cooper (2011, p. 2) was of the opinion that amongst several advantages that myITLab has for students, the “main benefit is the self-paced nature of the training and assessment”, which “provides feedback to students as they are completing the training” and assessment, which could prepare them for possible elements of summative assessment (Cooper, 2011, p. 1). Students log into a special customised website, so that their training and assessment can be tracked by their teaching assistants.

As similarly reported by Cooper (2011, p. 3), moving from a traditional laboratory-based “model to online assessment was reasonably seamless” and few challenges were encountered with myITLab. In term of options for course improvement, Cooper (2011, p. 4) indicated that myITLab “provide opportunities for students to test the knowledge they gained from” exercises and the myITLab “training and assessment. A combination of” myITLab and additional assignments within Microsoft applications were “implemented and their impact on” students’ satisfaction, retention and success analysed.

Since assessment “of situated learning can include a number of evaluation measures such as portfolios” or reflection, different types of integrated assessment methods were used in the study material and through research, such as portfolios and rubrics (Du Plessis et al., 2011, p. 27). With regard to reflection, students’ final formative assignment involves them in reflecting on what and how they have learned through the course in a blog post - as similarly described by Van Hentenryck and Coffrin (2014, p. 682), this “led to excellent threads where the best students shared their experience on the assignments”.

Similar to what was described by Breetzke (2007, p. 201), assessment for the course reported on in this paper “is in the form of self-assessed exercises that guide the student” through the “relevant

course material, and formal written assignments for each" course learning unit. "There are no conventional written" examinations. Assessment of students' "submitted work are undertaken by" teaching assistants, whose marking is moderated in line with the institutional guidelines by both internal and "in consultation with external supervisors … , and follow the numbered sequence of the" assignments for the course. Dreyer (2010, p. 217) pointed out that the "maximum turnaround time for assessment of assignments is 15 working days - to assist" academics with this, accredited markers (in this case, the teaching assistants) were appointed.

According to Laws (2013, p. 46), "one key to facilitating active learning is to take advantage of new technologies in ways that facilitate" meaningful learning about ICT4D by doing ICT4D. "Owing to the outcomes-based nature of the course, a sound knowledge and understanding of the relevant sections of the" Open Education Resources (OERs) e-text focusing on the contextual and conceptual aspects related to ICT4D "is required, but practical application remains critical. The more practice students have in applying their knowledge in practical situations, the better they will be at mastering the outcomes" of the course" (De Hart, et al., 2011, p. 183).

De Hart et al. (2011, p. 176) expressed the opinion that "South African research conducted by" Pretorius et al. (2009) "found evidence to suggest that the number of assignments passed for a particular course will affect final student pass rates." The analysis of variance obtained by Pretorius et al. (2009) "indicated that the highest F-ratio was obtained by grouping students according to the number of assignments (formative assessments) passed." The study reported on by De Hart et al. (2011, p. 182) therefore "investigated whether the completion of these assessments had an effect on" student success. Similar to what was described by De Hart et al. (2011, p. 182), students "who were enrolled for the" course reported on in this paper completed nine "formative assessments during the semester."

4. RESEARCH METHODOLOGY

This section will describe how the empirical research was undertaken in terms of the methodology that was used, by providing details about the research design, population, sampling technique and sample, data collection instrument, the validity and reliability of the instrument and data analysis processes followed.

4.1. Research Design

The research design used in the investigation reported on in this paper (Du Plessis et al., 2011) show similarities to that reported on by Goosen (2015): a non-experimental, mainly quantitative research design was implemented, with further aspects related to the descriptive survey used provided in section 4.3 of this paper.

4.2. Population, Sampling Technique and Sample

Similar to what was described by Du Plessis et al. (2011, p. 23), the study on which this paper "reports focused on the challenges associated with the assessment of open and distance learning (ODL)" students; their population, however, consisted only of student teachers. The population of the study reported on in this paper consisted of all students registered for the course at the time that the survey was conducted (12 721), who were all invited to participate in the survey. As opposed to Van Rooyen (2010, p. 60), who lamented that a "very low percentage of students answered the questions", 2 049 of the registered EUP1501 students (more than 16%) took part in this survey. With such a high number of respondents, representing a reasonable percentage of the population, the results could therefore possibly "be used to make generalised assumptions about the whole study population." The data thus gathered therefore not only "provide some insight into a small part of the study population", but could also "provide some insight into the possibilities of reaching more students" (Van Rooyen, 2010, p. 62).

4.3. Data Collection Instrument

The mainly quantitative data were collected by using an electronic survey (Du Plessis et al., 2011), which had enabled a wealth of "rich data that was gathered during the survey" in a student course evaluation as a mechanism for improvement (Pieterse & Du Toit, 2009, p. 116). Similar to what was described by the latter authors, the "respondents to the questionnaire were asked to reflect on" various aspects of the course.

4.4. Validity and Reliability

As suggested by Maree and Van der Westhuizen (2007), citing Joubert, particular questions were asked and answered in relation to the mainly quantitative research instrument referred to in this particular study, to determine the use, value and applicability to the study, including what reliability data and / or validity evidence were available. It is also important to indicate that the researcher ensured "reliability, for example by triangulating the data" (Maree & Van der Westhuizen, 2007, p. 38). These same authors, quoting Maxwell, stated that "validity is not an inherent property of a particular method, but pertains to the data, accounts, or conclusions reached by using that method in a particular context for a particular purpose".

4.5. Data Analysis

Although Archer et al. (2014, p. 68) referred to "the potential to harvest and analyse students' digital data in order to offer customised curricula, assessment, and support", that is not the route that had been taken for the data collected with regard to the research reported on in this paper. Rather, the "rich data that was gathered during the survey was analysed" (Pieterse & Du Toit, 2009, p. 116), especially with regard to the more qualitative aspects, using interpretive and content analysis.

5. DISCUSSION OF RESULTS

5.1 Responding Students' Demographic Details

Reflecting the composition of the course population, the overwhelming majority of students were from South Africa (See Table 1).

For the first semester of 2014, less than a third of students (618; 30%) indicated that they were repeating the course. In a previous paper (Goosen, 2015), the author reported that the percentage of students from a sample in the second semester of 2014 showed that only 23% of them were repeating this course - this combination seems to indicate that the application of creative assessment strategies is leading to improved student retention and success, as less students are progressively repeating the course.

Table 1. Student respondents' countries of residence

Countries	Number	Percent
South Africa	1962	95.75%
Zimbabwe	32	1.56%
Namibia	14	0.68%
Botswana	8	0.39%
Angola	3	0.15%
China	3	0.15%
Swaziland	3	0.15%
United Kingdom	3	0.15%
Zambia	3	0.15%
Lesotho	2	0.10%
Malawi	2	0.10%
Mauritius	2	0.10%
Nigeria	2	0.10%
United Arab Emirates	2	0.10%
Bahrain	1	0.05%
Cyprus	1	0.05%
Kenya	1	0.05%
Niger	1	0.05%
Seychelles	1	0.05%
Singapore	1	0.05%
South Sudan	1	0.05%
Tanzania	1	0.05%

5.2 Quantitative Data relating to Assessment

Table 2. The overall mark allocation for the course was clearly explained

Option	Number	Percent
Strongly Disagree	196	10%
Disagree	313	16%
Neither Agree nor Disagree	280	14%
Agree	898	45%
Strongly Agree	300	15%

Almost two-thirds of respondents (1198; 60%) agreed or strongly agreed that the overall mark allocation for the course was clearly explained.

Table 3. The guidelines for assignments were adequate

Option	Number	Percent
Strongly Disagree	196	10%
Disagree	309	15%
Neither Agree nor Disagree	269	13%
Agree	992	49%
Strongly Agree	256	13%

Similarly, almost two-thirds of respondents (1248; 62%) agreed or strongly agreed that the guidelines for assignments had been adequate.

Table 4. The guidelines for portfolio preparation were adequate

Option	Number	Percent
Strongly Disagree	209	11%
Disagree	294	15%
Neither Agree nor Disagree	323	16%
Agree	865	43%
Strongly Agree	298	15%

As similarly described by Du Plessis et al. (2011) and Terblanché (2010), this course used a portfolio as an alternative to traditional assessment in an open and distance learning context. More than half of students (1163; 58%) indicated that they either agreed or strongly agreed that the guidelines for portfolio preparation had been adequate.

Table 5. The assessment tasks provided valuable learning experiences

Option	Number	Percent
Strongly Disagree	169	8%
Disagree	177	9%
Neither Agree nor Disagree	274	14%
Agree	1036	52%
Strongly Agree	343	17%

Similar to what was described by Van Hentenryck and Coffrin (2014, p. 682), one of the 'unofficial' goals of this ICT4D MOOC had been "to provide a challenging course where dedicated students would learn a lot." Statistics from the course evaluation survey by students (n = 2049) indicated that this goal was achieved: more than two-thirds of students (1379; 69%) indicated that they either agreed or strongly agreed that the assessment tasks provided valuable learning experiences. These results also resonate with those of the former authors, whose students "reported similar learning experiences in terms of" overall experience and meaningful "learning, which suggests that the learning experience … was effectively replicated in the MOOC version" of the course.

Table 6. I received feedback on my marked assignments promptly

Option	Number	Percent
Strongly Disagree	315	16%
Disagree	443	22%
Neither Agree nor Disagree	317	16%
Agree	690	35%
Strongly Agree	231	12%

In comparison to the result obtained by Dreyer (2010, p. 217), "that it takes too long" for students to receive feedback on their marked assignments, less than two-fifths of students (758; 38%) indicated that they either disagreed or strongly disagreed that they received feedback on their marked assignments promptly. Information reported for the second semester of 2014 (Goosen, 2015) indicated that intervention strategies included to improve assessment seem to be bearing fruit: there had already been a slight improvement by then, with only 37% students disagreeing or strongly disagreeing with this same statement in the following semester.

Table 7. The feedback I received on my marked assignments was useful

Option	Number	Percent
Strongly Disagree	321	17%
Disagree	394	20%
Neither Agree nor Disagree	401	21%
Agree	596	31%
Strongly Agree	213	11%

Similar to information reported for the previous item, less than two-fifths of students (715; 37%) indicated that they either disagreed or strongly disagreed that the feedback they received on their marked assignments had been useful. Again, in the second semester of 2014, an improvement was seen with regard to this aspect, with only 34% of students disagreeing or strongly disagreeing with this statement (Goosen, 2015).

Table 8. The marking process was fair

Option	Number	Percent
Strongly Disagree	258	14%
Disagree	257	14%
Neither Agree nor Disagree	546	29%
Agree	618	33%
Strongly Agree	176	9%

Just over a quarter of students (515; 28%) indicated that they either disagreed or strongly disagreed that the marking process had been fair. Yet again, information reported for the second semester of 2014 (Goosen, 2015) indicated that there had already been a slight improvement by then, with only 25% students disagreeing or strongly disagreeing with this same statement.

Table 9. The procedure to query marks was adequate

Option	Number	Percent
Strongly Disagree	270	16%
Disagree	256	15%
Neither Agree nor Disagree	594	36%
Agree	430	26%
Strongly Agree	109	7%

Just less than a third of students (526; 32%) indicated that they either disagreed or strongly disagreed that the procedure to query marks had been adequate.

Table 10. My overall experience of the assessment was positive

Option	Number	Percent
Strongly Disagree	268	14%
Disagree	235	12%
Neither Agree nor Disagree	400	20%
Agree	754	38%
Strongly Agree	304	16%

In contrast to some of the other survey items relating to assessment presented in Tables 6 to 9 previously, more than half of the students (1058; 54%) indicated that they either agreed or strongly agreed that their overall experience of the assessment had been positive.

Table 11. As this is an online course, what is your average for the assignments you have completed so far?

Option	Number	Percent
Have not received my marks yet	96	5%
Less than 50%	274	13%
50-60%	533	26%
61-74%	510	25%
75% or more	524	26%
Have not handed in any assignments or completed any activities	106	5%

The fact that only 96 (5%) of these students indicated that they had not yet received their marks again confirms information already discussed with regard to Table 6 - the overwhelming majority of students' assessments are being marked and returned to them timeously.

More than three-quarters of students (1567; 77%) indicated that the mark they received in the case of this online course as average for the assignments they had completed so far, had been a pass mark - 50% or more. The fact that only 106 (5%) of these students indicated that they had not handed in any assignments or completed any activities is taken as evidence, as also indicated by Van Hentenryck and Coffrin (2014), that the vast majority of these students were active in the course.

In their study, Pieterse and Van Rooyen (2011, p. 62) found that many "of the questions that students asked were broad but not particularly stimulating, for example asking for advice on how to prepare for upcoming tests and assessments." Van Rooyen (2010, p. 53) therefore suggested that higher "education institutions use mobile devices to provide their students with information about timetable changes, assessment deadlines and other urgent administrative details" - again, from the

fact that only 106 (5%) of these students indicated that they had not handed in any assignments or completed any activities, it would appear that the information was communicated effectively to students.

Table 12. What final mark do you expect for this course?

Option	Number	Percent
Less than 50%	206	10%
50-60%	402	20%
61-74%	608	30%
75% or more	830	41%

Table 12 shows that exactly half of the students (1010) expected a final mark of between 50% and 74% for this course, while almost as many were of the opinion that they would obtain a distinction. Although many of these students might have been slightly optimistic (!), the figures for average assignment marks (Table 11) do correspond fairly well to those for the final mark - since multiple assignments "provided an additional opportunity to practise the application of the knowledge gained, students who allocated time in their study programme to" complete as many of these formative assessment assignments as possible "were, therefore, better prepared for the summative assessment" (De Hart, et al., 2011, p. 183). This was also confirmed by a student in one of the open question sections, with the following comment: "The number of assessments contributes to an adequate basic knowledge of this module."

5.3 Qualitative Perspectives

Similar to what was reported by Van Hentenryck and Coffrin (2014, p. 682), the most telling evidence with regard to assessment for addressing the challenges of effective teaching and meaningful learning of an ICT4D MOOC, specifically in an open and distance learning context, "appears in the thousands of free form text that" students produced via the discussion "forums and surveys, which are difficult to summarize (adequately) in this paper. Hundreds of students shared similar sentiments to" these representative comments:

1) "The module external assessments made (me) realize that Microsoft package is very interesting as long as you understand what to do and apply it well."
2) "Computer Assessments - especially excel. I have learned a lot."

The second student quote above also again confirms information already discussed with regard to Table 5.

6. CONCLUSIONS

Similar to the opinion expressed by Van Rooyen (2010, p. 54), the author is convinced that the results as reported in this paper "may assist in planning more effective" teaching and meaningful "learning interventions, which will have a positive impact on" especially the assessment experiences of ICT4D MOOC students in an open and distance learning context.

"A first look at the data provided by the MOOC suggests that the course design choices… had a positive effect on student motivation and" has led to meaningful online learning (Van Hentenryck & Coffrin, 2014, p. 682). Similar to some of the conclusions that the latter authors had come to, 54% of the students in the study reported on in this paper agreed or strongly agreed that their overall experience of the assessment in the course was positive, with 15.5% of them strongly agreeing, while the majority of responding students (794; 43%) agreed or strongly agreed that the marking process had been fair.

Despite the apparent benefits of using assessment to address the challenges of effective teaching and meaningful learning in an ICT4D MOOC as discussed in this paper, however, the author shares the opinion of Van Hentenryck and Coffrin (2014, p. 682), that "this topic could be expanded significantly with further study and analysis."

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