



Impact of the ClassMarker App on the Performance of Undergraduates in Online Learning of ICT: The University of Ilorin Experience

By

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Abstract

Assessment and evaluation in the educational process have a profound and well-established link to student performance. This paper determines the impact of the ClassMarker app on the performance of undergraduates in online learning of ICT in the University of Ilorin. The study adopted a true experimental design of post-test only design. The population of the study consisted of all 300 level undergraduates of Educational Technology Department, University of Ilorin. The sample of the study was randomly selected 30 students, 300 level undergraduates of the Educational Technology Department, University of Ilorin. 15 students in the controlled group and 15 in the experimental group. Data collected were analysed using mean and standard deviation to answer the research question that guided the study. The three hypotheses raised were tested using independent samples t-test at 0.05 level of significance. Findings revealed that undergraduates' in the

experimental group performed better than their counterpart in the controlled group. Also, gender has no significant difference in the performance of undergraduates' in online learning of ICT. It was recommended among others that lecturers in the online learning environment should be encouraged to use the ClassMarker as a tool for assessment because it has a significant impact on the performance of the students.

Keywords: ClassMarker App, undergraduates, ICT, online learning.

Abstrait

L'appréciation et l'évaluation dans le processus éducatif ont un lien profond et bien établi avec la performance des étudiants. Cet article détermine l'impact de l'application ClassMarker sur la performance des étudiants de premier cycle dans l'apprentissage en ligne des ITC à University of Ilorin. L'étude a adopté une véritable conception expérimentale de conception post-test uniquement. La population de l'étude était composée des 300 étudiants de premier cycle du département de Technologie Educative de University of Ilorin. L'échantillon de l'étude a été sélectionné au hasard 30 étudiants de 3^e année au niveau de la licence du Département de Technologie Educative, University of Ilorin. 15 étudiants au groupe de contrôle et 15 au groupe expérimental. Les données recueillies ont été analysées en utilisant la moyenne et l'écart-type pour répondre à la question de recherche qui a guidé l'étude. Les trois hypothèses soulevées ont été testées à l'aide d'un test t d'échantillons indépendants à un niveau de signification de 0,05. Les résultats ont révélé que les étudiants de premier cycle du groupe expérimental avaient de meilleurs résultats que leurs homologues du groupe de contrôle. En outre, le genre a une différence si significative dans la performance des étudiants de premier cycle dans l'apprentissage en ligne des ICT. Il a été recommandé, entre autres, que les enseignants de l'environnement d'apprentissage en ligne soient encouragés à utiliser le ClassMarker comme outil d'évaluation, car il a un impact significatif sur les performances des étudiants.

Mots-clés: App ClassMarker, Etudiants de premier Cycle, ICT, Apprentissage en Ligne.

Introduction

Information and Communication Technologies (ICT) has revolutionised global educational practice in the range of Internet-tools that can be used for learning, evaluation and research. ICT is gradually bringing a reformation to the classroom as well as changing learning experiences and modes of assessment used for students. The constraints in time and space for learning and evaluation are bridged via information, online journals, e-books, students' portals and online assessment tools (Onasanya, Shehu, Oduwaiye, & Shehu, 2010). The teachers' main task in the teaching and learning processes is to promote and facilitate meaningful learning. A teacher would not have completed his task until he has determined the performance of his students in a given task. Therefore, the evaluation of students' learning outcomes is imperative in the instructional process (Onasanya, 2014).

Evaluation is the process of analysing, reflecting upon and summarizing assessment information, and making judgments or decisions based on the information collected. Whereas, Assessment of learning is the snapshot in time that lets the teacher, students and their parents know how well each student has completed the learning tasks and activities. It provides information about student achievement.

Assessment and evaluation are essential components of teaching and without an effective evaluation program, it is impossible to know whether students have learned and if teaching has effectively taken place or how best to address students' learning needs (Nilima, 2010). The quality of the assessment and evaluation in the educational process, has a profound and well-established link to student performance.

Research consistently shows that regular monitoring and feedback are essential for improving students' learning. What is assessed and evaluated, how it is assessed and evaluated, and how results are communicated are usually monitored using the ClassMarker App. Results send clear messages to students and others about what is really valued—what is worth learning, how it should be learned, what elements of quality are most important, and how well students are expected to perform (Havnes, Smith, Dysthe & Ludvigsen, 2012). The primary purpose of assessment and evaluation is to assess teaching, and to promote optimal individual growth. In order to provide vital

information to the teachers, assessment and evaluation is expected to be on-going and as integral part of the teaching/learning process. It is one continuous cycle which consists of collecting and collating data, interpreting data, reporting information, and making an application to teaching (Lawton, et al., 2012).

The three primary types of evaluation are: diagnostic, formative and summative. Diagnostic evaluation often precedes instruction, while formative is carried out and completed during instructional period. Summative evaluation is the most common and is conducted at the end of the unit or course. Formative assessment or diagnostic testing is a range of formal and informal assessment procedures employed by teachers during the learning process in order to modify teaching and learning activities to improve student attainment. It typically involves qualitative feedback (rather than scores) for both student and teacher that focus on the details of content and performance (Bennett, 2011). Birenbaum, 2007; Kaklauskas, et al., 2010; Lai and Hwang (2015), pointed out that students' assessment preferences play a crucial role in understanding the learning process.

Feedback is the central function of formative assessment. It typically involves a focus on the detailed content of what is being learned, rather than simply a test score or other measurement of how far a student is falling short of the expected standard. The rigorous process of marking by the teachers is now abated by the use of an online assessment tool which provides immediate feedback to the students. Students who continuously engage themselves in practicing and reviewing in online formative assessment mostly receive more rewarding immediate feedback, identify their mistakes, review and acknowledge misconceptions that they might have held in some specific subject matter or concept (Wang, 2011).

The online assessment is used in diverse ways in different sectors; educational, health, business and so on to achieve specific learning objectives. In learning processes, educational assessment is the chronological order of documenting and using empirical data on the knowledge, skills, attitudes, and beliefs. Online formative assessment is linked with gains in students' achievement scores (McLaughlin & Yan, 2017).

Online assessment or e-assessment is an online test conducted with the aim of evaluating, measuring and documenting the academic readiness, learning process, skill acquisition, or educational needs of the test taker. Earlier, the assessment was done in the conventional ways of paper prints, pen, and pencil. Currently, test, quizzes, the examination can be created online, share the link or code with your users and immediately receive feedback (results). Effective online formative assessment goes a long way in achieving learner-centeredness in online courses, enhances student participation in the course to realize purposeful learning experiences (Gikandi, Morrow, & Davis, 2011).

The use of online assessment saves teachers the tedious exercise of marking, often the assessments can be completed in less time, multiple candidates can complete the online assessment at the same time and there is no need for specialized personnel; the interfaces are easy to use, making the app accessible to students of all ages. Online assessment can take place in class or at home, with students using their own devices. The online assessment is a wonderful way to awaken young people to the educational dimensions of technology. It is a hands-on approach which helps students become more engaged, strengthens problem-solving and critical thinking skills, this helps the researchers, recruiters, teachers or trainers to learn more about users and adapt to their needs, strengths, and weaknesses (Clarkson, 2011).

Similarly, McCarthy (2017) stated that collaborative learning occurs as a result of formative assessment as well as peer-feedback in situations where students are tasked to critique other students' submission. Formative assessment-based mobile learning approach had a significant Impact on student learning interest as well as their learning achievement (Hwang & Chang, 2011). Notably, Lawton, et al (2012) state that students in the formative assessment test group basically learned more and showed more positive attitudes towards learning materials and future learning. Russell, Elton, Swinglehurst and Greenhalgh (2006) assert that an online learning environment enables to support learning, collaborative learning, and feedback between students and teachers.

For all aspects of embedded formative assessment, technology can be used to implement and foster enhanced student engagement with the

learning experience (Lowe & Hasson, 2010). In relation to this, self-assessment provides individual routing for each student and decreases some of the burdens on teachers and eliminates the barriers between teachers and students (McConnell, 2006). The process of integrating ICT into teaching and learning is a complex process that one may encounter a number of difficulties. These difficulties are known as constraints and in another word; barriers (Onasanya, 2012). There are been numerous factors affecting the utilization of ICT in education across the nations as identified by many scholars. Such factors include inadequate funding to support the purchase of the ICT facilities, lack of training to support the purchase of the ICT facilities, lack of training in the use of ICT facilities, lack of motivation for teaching personnel and the among teachers to adopt ICT as teaching tools (Onasanya, 2012).

In 2017 Steven Angie designed and developed the class marker. The class marker is online testing software that offers a free version that is very complete in providing teachers with interesting opportunities for formative and summative evaluation. Getting started is simple and only requires setting up an account. Users (teachers) are taken directly to their dashboard, where users can create a test, manage groups and assign test, analyse test results, etc. Although the software is English by default, the interface can be changed, making it accessible to French users as well.

Creating a test begins with entering questions, much the same as other types of online response systems. Questions can be entered in different ways. Either individually as standalone questions or they can be entered directly into a test. All questions are automatically saved in the question bank, making them easily accessible for multiple tests without having to re-enter questions, which saves time! Questions can be organized into categories, which make finding questions for the creation of tests simple (Siegle, 2015).

The class marker has diverse question features, which makes the tool ideal for various disciplines. The types of question options are multiple choice, multiple response, true or false, Free text (short answer), matching, essay, and grammar. Questions can be made up of text, Images, files, and videos to make questions more interactive and

descriptive. For each question type, there is an option for indicating the correct answer. Free text and essay questions can have a manual correction, which removes the frustration of having a wrong answer to a question because of spelling mistakes or word choice (Jaber, et al., 2016).

Each question is automatically corrected, and free text questions permit the teacher to enter multiple answers that could be acceptable. As mentioned previously, there is also the possibility to go back to the tests once they are taken and manually correct them. Feedback can be provided immediately at the end of the test or after the teacher has had a chance to review the answers. This option might be used for essay type questions and free text, to verify the answers that have been given. Test results can be sent to students by email, with registered users only. The Dashboard is where teachers can find test results. Results are displayed by group or individually and analysis can be done across tests and categories of questions (Steven, 2017). Gender also plays an active role in the performance of online assessment.

Gender in any given context is seen as a socio-economic variable for analysing men and women roles, responsibilities, constructs and needs. It refers to the behaviors, characteristics, and values attributed to men and women through the social and cultural constructs each society assigns to them (Meyer, 2017). The online assessment tool is an innovation that is gradually finding its place in the educational system because of its simultaneous ability to access and provide instantaneous feedback to different groups of learners regardless of age, gender, educational background, and culture. However, it has been discovered that variable like gender among others plays a key role in shaping students' performance in online learning.

Meyer (2017) argues that gender differences appear in online exchanges as they would in regular situations. Males were more likely to control online discussions, posed more questions, express more certainty in opinions and more concrete, whereas females were more emphatic, polite and agreeable. Karadeniz (2011) studied impacts of gender and test anxiety on student achievement in mobile-based assessment' on showed that the students' gender and level of test anxiety did not have significant Impacts on their achievement. However, the test scores of male students were found to be higher than those of female students.

This finding could be interpreted as male students' tendency towards technology and willingness to learn about technology is higher than their female counterpart. As a result of this, the study is in line with (Onasanya, 2012), which asserted that men continue to outnumber women and this goes hand in hand with the fact that even the purpose for which males and females uses ICT for and the sophistication with which they do it also varies. Onasanya (2012) further states that women had to struggle to maintain their own confidence and interest because male exhibit a high level of interest in ICTs even when their competency levels are similar to those of females.

The ClassMaker App makes assessment learners centred, collectively improve student performance, it allows an individual student to become invested and involved in his or her own learning assessment, learners can receive immediate feedback for his assessment because this will bring about a behavioural change. Despite several benefits which online assessment offers, empirical studies are still needed to explore the benefits of the online assessment methods (Spivey & McMillian, 2014). Presently, teachers still go through the rigorous process of grading using the pen-paper assessment. External variables such as economic recession, marital conflict, and gender inducement could influences teachers in awarding appropriate scores to the students. At times, a low mark could be awarded students that performed well and vice versa (Alufohai & Ibhafidon, 2015).

Hence, the present study attempted to feel the gap by introducing the ClassMarker App, an online assessment tool to examine the impact of the application on the undergraduates' performance in online learning of Information and Communication Technology at the University of Ilorin. A similar research was conducted by Ogame, Agak and Okelo (2018) on students' perceptions of the impact of formative assessment in an online learning environment. Their result indicated that students received more prompt feedback from peer assessment and computer-marked assessment, compared to teacher-marked assessment. However, the current study found no single research looking at impact of ClassMarker App on the undergraduates' performance in online learning of ICT at the University of Ilorin. The previous study was a survey design while this study is an experimental design.

Research Objectives

This study is specifically designed to:

- i. evaluate the performance of the students in the experimental and control groups
- ii. ascertain if there is any significant difference between the performance of experimental and control groups
- iii. determine if there is any significant difference between the performance of male and female students in the experimental group
- iv. examine if there is any significant difference between the performance of male and female students in the control group

Research Question

What are the levels of the performance of students in the experimental and control groups?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

Ho₁: There is no significant difference between the performance of students in the experimental and control groups respectively;

Ho₂: There is no significant difference between the performance of male and female students in the experimental group; and

Ho₃: There is no significant difference between the performance of male and female students in the control group.

Material and Methods

This study employed an experimental design which involved a post-test only design. The study involved two randomly assigned groups: experimental and control groups. Neither group is pretested before the implementation of the treatment condition. Students' ClassMarker test instrument on the introduction to ICT was validated by educational technology experts. The reliability coefficient value of 0.85 was obtained using the Cronbach's alpha method.

The experimental group was assessed with 20 multiple choice questions using the ClassMarker with duration of 30 minutes. Students outside the classroom logged in to the platform with a code to answer the questions. The control group was assessed with printable version via the

traditional mode of assessment (paper and pen). A total of 30 undergraduate students were randomly selected from 300 level students of Educational Technology Department, University of Ilorin. The 30 students were randomly assigned into two groups of 15 students for experimental and 15 students for the control. The concepts of ICT were taught to the groups in their regular lecture hours for 4 weeks. In the 5th week, the experimental group was introduced to the ClassMarker App environment using their mobile devices while the Control group went through classroom revision on the ICT concepts. The tests were conducted for the groups in the 6th week with the experimental group using the ClassMarker online test while the control group was treated with the conventional pen and paper.

Table 1: Distribution of Respondents by Gender

Gender	Frequency	%
Male	14	46.7
Female	16	53.3
Total	30	100

Table 1 shows the distribution of respondents by gender 14(46.7%) were male while 16(53.3%) were female

Result

Research question 1: What are the levels of the performance of students in the experimental and control groups?

Table 2: Performance of Students in the Control and Experimental Groups

Group	N	Mean	SD	Mean Gain
Experimental	15	77.3	14.9	
Control	15	50.3	14.3	27

Table 2 shows the mean score and standard deviation of students in the control and experimental group. The result shows that the experimental group has a mean score of 77.3 and a standard deviation of 14.9 while the control group has a mean score of 50.3 and a standard deviation of 14.3 the mean gain between the experimental and control groups was 27. The result revealed that the experimental group has the highest mean rating out of the two groups. The implication of this is that the class marker is impacting on online testing software that is very complete in providing students with interesting opportunities for formative and summative evaluation.

H₀₁: There is no significant difference between the performance of students in the experimental and control groups respectively

Table 3: T -test Analysis of Mean Performance of Students in Control and Experimental Groups

Variable	N	Mean	SD	Df	t-cal	P value	Mean Gain	Decision
Control group	15	49.0	15.3					
				28	21.2	.000	23.3	Rejected
Experimental group	15	72.3	13.2					

From table 3, it can be deduced that there was a significant difference between the performance of students in the experimental and control groups. This is reflected in the findings of the hypotheses tested as (t=21; df=28 p<.05). Thus, the hypothesis which states that there is no significant difference between the performance of students in the experimental and control groups was rejected.

H₀₂: There is no significant difference between the performance of male and female students in the experimental group

Table 4: T-test Analysis of Mean Performance of Students in Experimental Group

Variable	N	Mean	S.D	Df	t	P value	Decision
Male	7	80.0	14.1				
				13	.642	.532	Accepted
Female	8	75.0	16.0				

Table 4 shows the T-test analysis of the mean performance of students in the experimental group the result shows that gender has no significant influence on students' performance in using the class marker ($t=.642$; $df=13$; $p<.05$). This implies that no difference exists in the performance of male and female students however, the females' mean score is slightly higher than their male counterpart.

H₀₃: There is no significant difference between the performance of male and female students in the control group.

Table 5: T -test Analysis of Mean Performance of Male and Females Students in the Control Group

Variable	N	Mean	S. D	Df	t	P value	Decision
Male	7	53.6	14.1				
				13	.812	.432	Not Rejected
Female	8	47.5	14.9				

Table 5 revealed the T-test analysis of the mean performance of male and female students in the control group. The male students in the control group have a mean of 53.6 and a standard deviation of 14.1 while the female students in the control group have a mean of 47.5 and a standard deviation of 14.9. The result also shows a calculated value of (.812) at $df=13$ and P-value of .432. Since the P-value is greater than the significant value of 0.05, the null hypothesis was not rejected. The implication of this is that there is no significant difference in the male and female performance in the control group.

Discussion of Findings

In this section, the findings of the study were discussed based on the research question raised and three research hypotheses formulated in the study.

Research question one attempted to find out the performance of the students in the experimental and control group. The result revealed that the experimental group has the highest mean rating. The implication of this is that the ClassMarker App is impacting on online testing software that is very complete in providing students with interesting opportunities for formative and summative evaluation. The finding is in line with that of Shivani (2009) who found that a significant difference exists in the two groups' performance (experimental and control) in online assessment; the treatment groups which are exposed to daily online quiz outperform the control group.

Research hypothesis one also attempted to find out whether there is no significant difference between the performance of students in the experimental exposed to the ClassMarker and the control group that was exposed to the traditional method of assessment. From the result, it was deduced that, there was a significant difference between the performance of students in the experimental and control groups. The findings of this study are in agreement with (Pede, 2017) whose study reported that the ClassMarker just like Kahoot increase the focus and attention of students with learning disabilities in a middle school inclusion physical science classroom. The finding from this study is also in harmony with the findings of Kennedy, Deshler and Lloyd (2015) which found that the students who received evidence-based multimedia vocabulary instruction outperformed the students who received multimedia instruction but not through an evidence-based model.

Hypothesis two attempted to investigate if there is a significant difference between the performance of male and female students in the experimental group. The null hypothesis raised was accepted. The result shows that gender has no significant influence on students' performance in using ClassMarker. This study does not support the argument of Meyer (2017) who contended that gender differences appear in online exchanges as they would in regular situations. Males were more likely to control online discussions, posed more questions, express more

certainty in opinions and more concrete, whereas females were more emphatic, polite and agreeable.

Hypothesis three revealed that though the male students in the control group have a higher mean and standard deviation than their female counterparts, the P-value was greater than the significant value (.812) at $df=13$ and P-value of .432) at 0.05. The implication of this is that there is no significant difference in the male and female performance in the control group. This is an agreement with Karadeniz (2011) whose study showed that the students' gender and level of test anxiety did not have significant impact on their achievement. However, the test scores of male students were found to be significantly higher than those of female students.

Conclusion

Based on the findings as revealed by the data analysed, it was concluded that the ClassMarker is impacting on online testing software that is very comprehensive in providing students with opportunities for formative and summative evaluation. Students in the experimental group performed better than the students in the control group. Hypothesis one was not accepted because there was a significant difference between the performance of students in the experimental and control groups. In addition, hypotheses two and three were not rejected because it was revealed in the study that gender has no significant influence on students' performance in the experimental group and control groups respectively.

Recommendations

1. ICT skills acquisition on the use of ClassMarker App should be encouraged through training, seminars, and workshops for Lecturers in order to improve their skills and competences on the use of online assessment tool in online learning environment.
2. Lecturers in the online learning environment should be encouraged to use the ClassMarker App as a tool for assessment because it has a significant impact on the academic performance of the students.
3. Male and female undergraduate students should equally be encouraged to adequately inform them that no gender disparity exists in online assessment with the use of ClassMarker App,

hence, it is imperative that they equally hold a positive insight towards the use of ClassMarker App in online learning and testing environment.

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