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# A Culture-Oriented e-Learning System (e-LS) for Higher Education Institutions in South Africa

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**Abstract:** The utilisation of e-learning system has added value to the South African (SA) educational system. South African (SA) educational system consists of learners (students) coming from different backgrounds, cultural settings and societies. This diversity possesses a great number of different characteristics, expectations and learning styles from the e-learning system. Globally, managing diversity among students is missing out from different literature studies and this is the result of lack of culture-oriented e-learning system which has affected easy development and effective usage of the e-learning system. In order to execute a culture-oriented e-learning system, this research sought to understand the challenges faced by the current e-learning system and how to implement an effective culture-oriented e-learning system. The research findings showed lack of cultural elements in e-learning system and it also showed that there is no solid collaboration among the developers and the users (learners) during the developmental phase. To arrive at this finding, the researchers employed quantitative research method (questionnaire) and performed data correlation on the collected data among students from the North-West University (Mafikeng Campus); 150 questionnaires were circulated and 141 were returned. The participants were randomly selected because they use e-learning system in their daily learning process. Generally, the solution to this underlying challenges lies with culture-oriented e-learning system.

**Key words:** E-learning, culture, cultural-factors, software, system

## INTRODUCTION

The proper execution of e-learning system that satisfies users' learning expectations and needs goes with the alignment of learners' culture, learning style and other components. Achieving this purpose and satisfying learners' expectations remain an issue of concern due to different reasons such as lack of culture, ineffective collaboration between developers and learners and lack of cultural benefits on e-learning system (Mohammed and Mohan, 2011; Olaniran, 2009; Andrews, 2011). As the literature suggests, the benefits, significance and barriers attached to culture in e-learning systems development cannot be over-emphasized (Mohammed and Mohan, 2011; Ngugi *et al*., 2007).

Nonetheless, the effective application of different components in the execution of any software remains a challenge and amounts to software crisis despite the availability of a number of researches that attempt to address these challenges (Higgins, 2006; Ngugi *et al*., 2007; Barik and Karforma, 2012; Mehanna, 2004; Olaniran, 2009; Chukwuere, 2013). The use of Software Development Methodologies (SDMs), e-learning frameworks and techniques, cultural factors and other educational platforms are fundamental fabric to a successful e-learning development. Using this tool in the education sector makes teaching and learning more efficient and effective. To realize this, Information Communication Technology (ICT) and the Internet are used as change-agents in making information and knowledge shareable and more accessible, in the education arena, especially in e-learning processes (Kummer *et al*., 2012; Ngugi *et al*., 2007).

This study highlights the need for e-learning design and implementation around learners' culture because of the great influence attached to the culture of e-learning, teaching and learning processes. According to Olaniran (2009), e-learning globally lacks culture. This can be seen as a challenge and problem at the developmental level and on the usability. The main research questions of this study focus on determining challenges and the effect of culture on the usage of e-learning systems and how culture-oriented e-learning system can be achieved during the design and implementation phase (see data discussion below).

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Part of the objective of this research is to understand the challenges of the usage of e-learning system and to identify the needed e-learning factors in strengthening e-learning development. Different researchers support the view of this research on culture focus e-learning systems (Georgouli *et al*., 2008; Bless *et al*., 2006). However, these findings are based on the views of the participants with support from the literature. Now, the rest of this study is arranged in the following manner: Background and context; the literature overview (An e-learning framework, the role of culture in e-learning, e-learning); the study objective; research methodology; variable correlation and discussion; data discussion; recommendations and further studies; conclusion and references.

**Background and context:** The South African (SA) education system consists of learners (students) coming from different cultural settings, ethnic backgrounds and societies and they possess a great number of characteristics and learning styles (Boondao *et al*., 2009). The cultural variation in SA is compressed into eleven official languages spreading across nine provinces (Crittenden, 2006). In the context of culture and this study, language is regarded as a fundamental mechanism that determines learner choices on a particular learning platform. According to Boondao *et al*. (2009), human ability to acquire knowledge lies in various factors like language and culture. Nonetheless, the literature shows that global e-learning systems lack culture-orientation (Olaniran, 2009; Osterweil, 2011; Calvo *et al*., 2007).

**Literature review:** The representation of learner cultures and the ideas in e-learning frameworks is a major gap in actual e-learning frameworks (Olaniran, 2009). This misrepresentation stands as an issue of concern in usage and developing effective e-learning systems. The literature overview is divided into an e-learning framework, the role of culture on e-learning and e-learning with an insight into what makes a workable and usable e-learning system that supports the learners' (users) concern.

**An e-learning framework:** An e-learning framework facilitates and guides usability and the development of e-learning in order to achieve a culture-oriented process. Previously, there has been literature on frameworks that demonstrate culture but the focus was largely based on organization and national culture (Hofstede, 1980) without a focus on how to present learner (student) culture on e-learning development. An e-learning framework is discussed in this research to show the strengths and weaknesses of existing frameworks in the use of e-learning system and also to show that effective e-learning design depends on a rich framework. Zachman (1987) regards a development framework as an 'architectural structure' procedure for designing engineering systems for various purposes and users. In the field of software development, a software development framework is a compound component that allows developers to formulate effective and efficient software that will serve users well. Korpela *et al*. (2002) also regard a framework as the design and construction of ideas for practical representation of concepts in the development. In this research, it is postulated that a development framework can guide the design of e-learning system that will be embedded in learners' culture with the alignment of cultural factors. In the field of Information Systems (IS) and in this research again, a development framework can also be regarded as a structural layer guide that models or integrates ideas and knowledge to deliver a workable software product (e-learning system).

Achieving effective design needs a robust framework that values culture from the beginning of the design (Choi *et al*., 2005). The most popular culture framework is the one initiated by Hofstede (1980) which focuses on organizational, national and individual cultures. Hofstede's framework is the base that other researchers such as Andersson and Gronlund (2009); Kaewkiriya *et al*. (2013) and Lee (2013) follow. Each of these researchers adds knowledge, views and idea to Hofstede's framework dimension but has failed to mention how to capture this culture when developing e-learning systems (Bergiel *et al*., 2012; Soares *et al*., 2007; Chukwuere, 2013). On this point, the bedrock for any successful e-learning design and development lies in development framework that can allow usability and integrate the importance of e-learning factors.

**The role of culture on e-learning:** Culture is a powerful element that impacts behaviour, belief and others in determining what is lawful information in any society (Leidner and Kayworth, 2006). The benefits, significance and barriers attached to culture in e-learning systems development cannot be over-emphasized (Mohammed and Mohan, 2011).The issue of the impact culture on Information Systems (IS) has been researched dated 1970's (Kummer *et al*., 2012). The notable literature in this regard is that of Hofstede (1980)'s cultural dimensions which solely focused on the national, organisation culture

role. Culture is an indicator of people's behaviour and norms in divers' environment even in learning. The inclusion of culture in learning will allow easy development of e-learning (Mayes and de Freitas, 2004).

According to Mohammed and Mohan (2011), e-learning and its contents were originally developed without being culture-oriented. Culture is seen at different levels of institutions and organizations and can be national, community or group with enabling factors. These factors influence the success and failure of e-learning usage and implementation in any sector (Sun, *et al*., 2008). The decision to use or implement software can directly or indirectly rest on culture (Leidner and Kayworth, 2006). In this research, culture is seen as a community, a societal and a general way of life that impacts on the attitude of learners on the use of an e-learning platform and the understanding of e-learning learning contents. Based on this role of culture, the next section discusses e-learning and how it can better deliver needed service to learners.

**E-learning:** According to Epignosis, e-learning history began back in the 1840's when the students of Isaac Pitman were taught shorthand using correspondence process. Since then, different forms of e-learning platforms have evolved. For instance, there has been a large number of literature studies published on how to use e-learning, its benefits, the design and the technical implications (Andrew, 2011). Then, e-learning is seen as good means/solutions, for educational purpose. But this e-learning platform lacks culture (Olaniran, 2009). Oyelami (2008) defines e-learning as the use of technology in learning materials and transmission which can be delivered using Internet or intranet.

ICT and internet have powered the advancement of e-learning to a wider audience. Before the inception of e-learning, the teaching and learning process was commonly undertaken behind classroom four-walls, correspondence and distance education programmes. Therefore, e-learning can be defined as a mixture and the use of electronic equipment in the learning process in order to improve learning reflection, perceptions, ideas and process (Nagarajan and Jiji, 2010).

The increase in e-learning usage demands the inclusion of learners' culture for easy understanding of learning contents. Sun *et al.* (2008), e-learning is educational content delivery using ICT. For the purpose of this research, e-learning is seen as a teaching and learning tool over the internet using ICT components and platforms. E-learning exists in an environment bound by culture. Then, e-learning is discussed at this level to show the place where learners' culture is needed in the learning process.

Currently, cultural consideration and its impact in setting-up e-learning systems have been ignored by many because of lack of e-learning development framework (Mohammed and Mohan, 2011). Once more, in accordance with Ngugi *et al.* (2007), the challenges confronting online learning materials and environment are in the area of dealing with students across different societies and cultures. According to Olaniran (2009), lack of learning culture is the major challenge to e-learning worldwide.

**The research objective and questions:** The centre of the objective of this investigation is culture-oriented e-learning. As shown in the literature, the presence of learners' culture is ignored even on the Hofstede (1980) framework dimension extension. E-learning systems are usually designed based on designers' cultures and value and learners cultures are disadvantaged and become a challenge on global e-learning systems (Olaniran, 2009; Mohammed and Mohan, 2011). Based on the learner's culture absences and for e-learning to be much productive, the inclusion of culture, its effect and factors are very necessary.

The main objective of this research is to determine the challenges to the usage e-learning system, the effect of culture in the usage of e-learning tools and to understand the different cultural factors that can be integrated into e-learning design to serve better the expectation and needs of learners. In order to achieve the research objective we have correlated the following variables against each other and here are the correlated variables.

These variables all focused on addressing the research questions, number one and two: (C27) think cultural factors have an impact on e-learning (the variable seeks to understand from learners whether cultural factors have an impact on e-learning system design). C28 = think community factors can help shape learning capacity (it aimed to determine the need of community factors on e-learning design). C29 = think administrative factors be considered in e-Learning design (also it seeks to determine if administrative factors are important in the design of e-learning system). C30 = think content factors are important to students on e-learning (the researchers seek to understand whether content factors are useful on the design of e-learning system). C33 = does Activity/Experience Factor (AEF) assist you to stay focused on e-learning field (AEF is presumed important in the design of e-learning system; the variables were

correlated to determine the need). C20 = have experienced technical problems using e-learning (it seeks to determine whether there are technical challenges faced by participants). C22 = e-learning forum supporting and encouraging my studies (understanding the support from using e-learning forum). C34 = think above-listed factors are important to e-learning system (the variable seeks to correlate all the factors as to determine their importance). B7 = prefer e-learning designed in home language (understanding whether participants would prefer e-learning system to be designed in their home language) and B8 = effective language for e-learning (understanding the language that improves effective learning on the e-learning system).Two questions have been asked in this resarch: What are the challenges and the effect of culture on the usage of e-learning system? How do we to implement the culture-oriented e-learning system to serve learners? The next section of this study discusses the main research methodology used in this research and how it was applied.

## MATERIALS AND METHODS

The research design is a controlled outline of how research is carried out, the purpose is focused on gathering quality information that answers the research questions in achieving the research objective(s) in this research. The methodology is a setup, plan, strategy and design that links methods (Raddon, 2010). Purposefully, achieving the objective of this research means the collection of data from students as the end-users of the e-learning system. There are three main kinds of research data methodology which are qualitative and quantitative (Bless *et al*., 2006; Oates, 2008) and a combination of both as the mixed methods. The choice of any methodology depends on the nature of the situation under investigation, researcher's knowledge and the ground purpose of the study. All these impact on the methodology selection (Bless *et al*., 2000). Quantitative research is the methodology used in this research. Quantitative research method is based on scientific reality and statistical data (Chukwuere, 2013). The methodology uses numbers rather than words or text. This research chose quantitative research method because of its richness in statistical data and ability to draw up an analysis using numbers, tables, graphs, charts, correlation and others from the learners. The quantitative data was collected from students in the North-West University (Mafikeng Campus) and they were randomly selected and data correlation was applied in extracting meanings from the data content (Table 1).

A number of steps have been followed to achieve the objectives of this research. The steps begin with sampling to determine the actual participants to engage in this research. According to Coyne (1997), sampling has an impact on research findings. It helps in determining the actual participants to provide the suitable answer to the research questions. The participants are students at North-West University (Mafikeng campus) who engage in the e-learning process in their studies and they are selected because of their experience in using the services of e-learning continually. Also, for the purpose of this research, the university consists of students across 22 countries (Joshua *et al*., 2015) excluding South Africa, the host country. From the sample population, 150 questionnaires were randomly circulated and only 141 were returned accounting to 94% return rate.

In other words, the actual data instrument used was a questionnaire. A questionnaire is a data instrument administered in the research to collect data from research participants and is completed by the participants without the researcher's assistance or influence (Bless *et al*., 2006). Questionnaire is used to collect quantifiable data and contains pre-set questions to provide information on the research under investigation (Oates, 2008; Joy and Kolb, 2009; Chukwuere, 2013). As a pre-set questionnaire, the questions are closed-ended and students are allowed to select from a list of multiple answers provided in the questionnaire. In addition, the collected data was analysed using Statistical Analysis System (SAS version 9.3) and Statistical Package for the Social Science (SPSS)) in the correlation analysis.

**Variable correlation and findings:** The ability to represent culture in the e-learning system is lacking (Olaniran, 2009) and this can be seen as a challenge to e-learning development (Osterweil, 2011; Calvo *et al*., 2007). This section of the research presents data discussion from the questionnaire which is made possible through the correlation of the variables in achieving the researches objectives and research questions. The age of participants in this research ranges from 15-25 and 26-35 but the majority of the participants' ages lie between 15-25 representing 62% (88) of the entire research. The finding indicates that the majority of the participants are young students.

**The correlation:** In this research, correlation is used to measure the frequent correlation coefficient and displays the strength and linear relationship directions between chosen variables as explained in section 4 above. The level of significance for the variable relationship is tagged at 0.05 (5%). In accordance with Pearson's correlation, the

Table 1: Correlation table

| Parameters | C27 | C28 | C29 | C30 | C33 | C20 | C22 | C34 | B7 | B8 |
|---|---|---|---|---|---|---|---|---|---|---|
| B11 | - | - | - | - | 0.00611 | 0.10517 | - | - | 0.13788 | - |
| Able to customise | 0.12180 | 0.12490 | 0.18119 | 0.06895 | 0.94270 | 0.21450 | 0.02249 | 0.05305 | 0.10300 | 0.08473 |
| eLearning to | 0.15020 | 0.14000 | 0.03150 | 0.41650 | | | 0.79130 | 0.53210 | | 0.31780 |
| home language? | | | | | | | | | | |
| B12 | 0.08045 | 0.05656 | - | 0.02675 | - | 0.01377 | 0.87130 | 0.01259 | - | 0.05724 |
| Ever consulted by eLearning | 0.3430 | 0.50530 | -0.00540 | 0.75290 | 0.02715 | 0.08713 | 0.30420 | 0.88220 | 0.15971 | 0.50020 |
| developers? | | | 0.94930 | | 0.74930 | | | | 0.05850 | |
| B18 | 0.09007 | 0.16581 | - | 0.03043 | 0.13733 | 0.13790 | 0.14652 | - | 0.10635 | 0.02048 |
| Cultural impacts on eLearning | 0.28810 | 0.04940 | -0.06418 | 0.72020 | 0.10440 | 0.10290 | 0.08300 | -0.07768 | 0.2094 | 0.80950 |
| | - | - | 0.44960 | - | - | - | - | 0.3599 | - | - |
| B9 | 0.03586 | 0.05858 | 0.08951 | 0.01108 | 0.06361 | 0.03646 | 0.05857 | 0.10561 | - | 0.16783 |
| Preferred eLearning | 0.67290 | 0.4902 | 0.2912 | 0.89620 | 0.45030 | 0.66770 | 0.49030 | 0.2126 | 0.01708 | 0.04670 |
| over classroom? | - | - | - | - | - | - | - | - | 0.84070 | |
| B15 | 0.07383 | 0.06211 | 0.06454 | 0.011303 | 0.17487 | 0.16852 | 0.00501 | - | - | 0.03420 |
| e learninig challenges | 0.38430 | 0.4644 | 0.44700 | 0.182000 | 0.0381 | 0.04580 | 0.95300 | 0.10192 | 0.11483 | 0.68730 |
| compare to classroom | - | - | - | - | - | - | - | 0.2291 | 0.17510 | |
| B14 | 0.03215 | 0.17466 | 0.12329 | 0.21385 | 0.20616 | 0.13226 | 0.25104 | 0.16567 | 0.00372 | 0.16104 |
| Perception about state of learning | 0.70510 | 0.03830 | 0.14320 | 0.01100 | 0.0142 | 0.1180 | 0.00270 | 0.0496 | 0.96510 | 0.05640 |
| A7 | 0.00831 | - | - | - | - | - | 0.11790 | - | 0.18782 | 0.07494 |
| Home languages | 0.92210 | 0.00852 | 0.8310 | 0.37640 | 0.7121 | 0.5440 | 0.16380 | 0.05303 | 0.02570 | 0.37710 |
| | - | 0.09202 | 0.3272 | 0.65760 | 0.8365 | 0.5217 | - | 0.53230 | - | - |

C27 = Think cultural factors have impact on eLearning; C28 = Think community factors can help shape learning capacity; C29 = Think admin. factors be considered in eLearning design; C30 = Think content factor are important to students on eLearning; C33 = Does Activity/Experience Factor (AEF) assist you to stay focused on eLerning field; C20 = Have experienced technical problems using e-learning; C22 = E-learning forum supporting and encouraging my studies; C34 = Think above-listed factors are important to eLearning system; B7 = Prefer eLearning designed in home language; B8 = Preferred language for eLearning; P-value = 0.05; Pearson Correlation Coefficients, N = 141; Prob > |r| under H0: Rho=0

correlation range indicates as adopted from Higgins (2006): - 0.70 = strong downhill (negative); - 0.50 = moderate downhill; - 0.30 = weak downhill; 0 = no linear relationship; 0.30 = a weak uphill (positive); 0.50 = moderate uphill; 0.70 = a strongly uphill; 1 = a perfect uphill.

In this research, the correlation coefficient is set at 0.05 absolute value (Table 1) and then any relationship above the mark is measured as a strong relationship. The p-value was used to show the probability of the current result and it is met when the correlation coefficient strength is zero. Table 1 below shows the analysed variable correlations from the questionnaire data collected for this research, however, not all data were correlated because they are useful on the objective and correlated variations are as a result of its importance to this research.

We reject $H_0$ if $P \leq 0.05$. This means the relationship is reliable and can be used to mark predictions. Also, the data is significant at the 0.05 level. Importantly, if the data from the research results in a p-value of less than that specified in advance (0.05), the research outcome is significant and it enables the researcher to reject the null Hypothesis ($H_0$) and conclude that a relationship really exists.

The correlation between B11 and C27 variables is 0.12180 which implies there is a weak and negative correlation relationship between the two variables. The p-value is 0.1502 which is greater than the significance level of 0.05 which indicates that the factors are insignificant. Then, the researcher fails to reject the null Hypothesis ($H_0$); even though there is a correlation, it is a weak relationship between a participant's ability to customise e-learning to home language and the impact of cultural factors on e-learning. This correlation suggests a relationship between students' ability to customize e-learning system to home (B11) and students' thinking whether cultural factors have an impact on e-learning (C27), although the relationship is viewed as weak, as a result of lack of customization features on the e-learning system.

The correlation between B11 and the C28 variable is -0.12490 which indicates that there is weak and negative linear correlation relationship between the two variables. The p-value is 0.1400 which is greater than significant level of 0.05 indicating that the correlation coefficient is insignificant. Therefore the researchers failed to reject the Ho and there is a correlation but it is weak. This suggests a weak relationship between student's ability to customize e-learning system to home (B11) and their belief that community factors such as group discussion forum, chat-rooms, news, announcements, wiki and bulletin can help shape their learning capacity (C28). There is a relationship but the connection is weak.

The correlation between B11 and C29 variables is 0.18119 showing a weak and negative relationship between the variables. The p-value 0.0315 which is less than significance level of 0.05 indicates that the

correlation coefficient is significant. Therefore, the researchers reject the Ho although a relationship does exist. This indicates that the ability of students to customize e-learning system to home language (B11) has a significant impact on administrative factors considered in e-learning design (C29) in regard to culture-oriented e-learning system but either the administrators or students are unable to customize e-learning features.

The correlation between B12 and B7 variables is -0.15971 indicating a weak and negative relationship between variables. The p-value 0.0585 is greater than the significance level of 0.05 which indicates that the correlation coefficient is insignificant. Therefore, the researchers reject Ho; however a relationship does exist, although weak. This indicates that students have been partially consulted by e-learning developers (B12) hence this has a significant impact on e-learning designed in home language (B7) in regard to culture-oriented e-learning systems. This shows that the relationship between developers and students is very weak.

The correlation between B18 and C28 variables is 0.16581 which is a strong relationship between variables. The p-value 0.0494 is less than the significance level of 0.05 which indicates that the correlation coefficient is significant. Therefore the researchers reject Ho although a relationship does exist. This shows a good significant relationship between the cultural impacts on e-learning (B18) and students believing that community factors can help shape their learning capacity (C28) in regard to culture-oriented e-learning system, however the relationship between them is weak.

The B9 and B8 show the correlation between the two variables as 0.16783 indicating a strong relationship between the variables. The p-value 0.0467 is less than the significance level of 0.05 indicating that the correlation coefficient is significant. Therefore, the researchers reject Ho. However, a relationship does exist, although it is weak. This shows a good significant relationship between students' preference on e-learning over classroom (B9) and students preferred language on e-learning (B8) in regard to culture-oriented e-learning systems.

The correlation between B15 and C33 is 0.17487 which shows a strong relationship between the variables. The p-value 0.0381 is less than the significance level of 0.05 which indicates that the correlation coefficient is significant. Therefore, the researchers reject $H_0$. However, a relationship does exist but it is a weak relationship. This portrays that e-learning is challenged compared to a classroom (B15) and has a significant impact on the ability of Activity/Experience Factor (AEF) assisting students to stay focused on e-learning field (C33) in regard to the culture-oriented e-learning system.

The correlation between B15 and C20 variables is 0.16852 which shows a strong relationship between the two variables. The p-value 0.0458 which is less than the significance level of 0.05 shows that the correlation coefficient is significant. Therefore, the researchers reject Ho, although a relationship does exist but it is weak. This indicates that e-learning is challenged compared to the classroom (B15) and students experiencing technical problems using e-learning system (C20) in regard to culture-oriented e-learning systems.

The correlation between B14 and C28 variables is 0.17466 which shows a strong relationship between the variables. The p-value 0.0383 which is less than the significance level of 0.05 indicates that the correlation coefficient is significant. Therefore the researchers reject Ho. Though a relationship does exist, nevertheless, the relationship is weak. This indicates that student's perception about the state of e-learning (B14) has a significant relationship on them believing that community factors can help shape their learning capacity (C28) in regard to culture-oriented e-learning systems.

The correlation between B14 and C30 variables is 0.21358 which shows a strong relationship between variables. The p-value 0.0110 is less than the significance level of 0.05 and indicates that the correlation coefficient is significant. Therefore, the researchers reject Ho. Though a relationship does exist amongst the variables, it can be regarded as a weak relationship. This indicates that students' perception of the state of e-learning (B14) has a significant relationship in the content factors important to students on e-learning (C30) in regard to culture-oriented e-learning systems.

The B14 and C33 show that the correlation between the two variables is 0.21358 indicating a strong relationship between the two variables. The p-value 0.0142 which is less than the significance level of 0.05 indicates that the correlation coefficient is significant. Therefore, the researchers reject Ho although a relationship does exist among the variables. This indicates that students' perception about the state of e-learning (B14) has a significant relationship on the ability of Activity/Experience Factor (AEF) assisting them to stay focused on the e-learning field (C33) in regard to culture-oriented e-learning systems, although the relationship is still weak among the relationship variables. The correlation between B14 and C22 variables is 0.25104 which shows a strong relationship between variables. The p-value 0.0027 is less than the significance level of 0.05 which indicates that the correlation coefficient is significant; therefore, the researchers reject Ho. However, a relationship does exist. This correlation indicates that students' perception of the state of e-learning (B14) has

a significant relationship on e-learning forum supporting and encouraging students in their studies (C22) in regard to culture-oriented e-learning systems. The weak relationship between the two variables may be as a result of the e-learning system lacking cultural factors.

The correlation between B14 and C34 variables is 0.16567 which displays a strong relationship between variables. The p-value 0.0496 is less than the significance level of 0.05 which indicates that the correlation coefficient is significant, therefore, the researchers reject Ho, yet a relationship does exist. This correlation shows that students' perception of the state of e-learning (B14) has a significant relationship with all the e-learning factors (C34) in regard to culture-oriented e-learning systems. In reality, this relationship is weak or non-existence.

The correlation between B14 and B8 variables is 0.16104 which shows a strong relationship between the variables. The p-value 0.0564 which is greater than the significance level of 0.05 indicates that the correlation coefficient is insignificant. Therefore, the researchers fail to reject Ho. There is a correlation, however; it is weak. This correlation indicates that students' perception of the state of e-learning (B14) has a significant relationship with students preferred language for e-learning (B8) in regard to culture-oriented e-learning systems. Although the relationship is weak, it also lacks cohesion among the variables.

The A7 and B7 show the correlation between the two variables is 0.18782 indicating a strong relationship between variable. The p-value 0.0257 is less than the significance level of 0.05 which indicates that the correlation coefficient is significant; therefore the researchers reject Ho. Although a relationship does exist between the variables, yet it is weak. This indicates that home language (A7) has a significant relationship with students preferred language for e-learning (B7) in regard to culture-oriented e-learning systems. Nonetheless, the association between the variables shows that respondents are still undecided on the preferred language for e-learning design.

The above-correlated variables informed a significant and insignificant correlation coefficient among the variables with a great importance to the research and on e-learning design at large. The future looks promising and bright for e-learning usage and its support for teaching and learning (Osterweil, 2011). The promising future is reliable through the embedment of cultural factors in e-learning as rightly noted by learners in this study. The following factors: cultural factors, community, student, teacher/lecturer, administrative, content, learning style, Activity/Experience, static, individual, collective and dynamic culture are worth incorporating into the e-learning system. To support participants on their interest for the inclusion of these cultural factors on e-learning system, Georgouli *et al.* (2008) and Blanchard, realize the need for e-learning system to be grounded in the above mentioned factors for a quality and effective system that meets learners' expectation and needs to be delivered.

## RESULTS AND DISCUSSION

**What are the challenges and the effects of culture on the usage of e-learning system?:** The primary objective of this research was to understand e-learning challenges in relation to the usage and the effect of culture on the e-learning system, in order to assist learners in teaching-learning process. The research questions indicated above aimed to mitigate the e-learning usage and design challenges through variable correlation among each other. The findings show that challenges like lack of collaboration, culture-orientation or mind, factors and others have a great implication on e-learning usage and application in practice. All the responses provided by participants in respect of the question showed that the aim was achieved and participants face all kinds of challenges. This question was able to provide ways to address the challenges as agreed to by other researchers and provided a future path. Against all odds the challenges confronting e-learning development and implementation shown in this research are supported by Dac and Bregman (2010), Arman (2010), Garcia and Esteban (2013). They all accept the challenges confronting e-learning but Oye *et al.* (2012) argue for the removal of all these challenge for the e-learning potentiality to advance. Again, Wang *et al.* (2012) encourage collaboration and developers consulting learners (students) during development as a bridge for the challenges. From all indications, the research question meets expectation in offering solution to the advancement of the e-learning development platform.

**How to implement culture-oriented e-learning system to serve learners?:** This research question aimed to identify the possibility of designing culture-oriented e-learning. Participants' responses were positive enough through the correlated variables in showing different cultural-factors and components that could be used in the development of e-learning system as shown in the research objective and questions above. The inclusion of all the factors in the correlation variables in the e-learning system will ensure that the much-needed system project is delivered to learners in meeting their effective learning demand. Participants suggested through the correlation findings and they advocated for culture-oriented e-learning system during the developmental level.

The positive insight from the correlation truly confirms the views of researchers like Georgouli *et al.* (2008) and Blanchard that the factors or things that promote culture-oriented e-learning system should be

included in the design of the e-learning system. Their responses demonstrate that the best way to serve learners (students) in the learning process is to consider their cultural values and their concerns in the design and also to add all these identified components or factors in the development process. However; the information obtained from the analysis, revealed that culture and its factors and other elements (community, student, teacher/lecturer, administrative) should be incorporated into e-learning systems to yield needed goals. There are many literature studies and researchers like Georgouli *et al.* (2008) and Blanchard who strongly advocate and recommend that any e-learning system should consider cultural factors in the design of e-learning systems.

**Recommendations and further studies:** In accordance with the previous section on data discussion, the researchers recommend that the e-learning system should be open for customisation and not conventionally tied to a single language. Also, the developers should consider the following factors: cultural, community, administrative, AEF and content, because each of them impacts, shapes and assists in the design of the culture-oriented system, that achieve focus on learners demand and expectations. The researchers recommend a solid collaboration between the developer(s) and learners and other stakeholders because it will allow developers to elicit more expectations from the learners. However, in order to achieve these factors on e-learning, there is a need for a framework that can incorporate these factors and needs and there is a n eed for researchers to develop a culture-oriented e-learning framework that can handle all the factors.

## CONCLUSION

Culture has a great impact directly and indirectly based on learning attitudes and preferences. The findings of this research have shown that learners face different challenges in engaging with developers during the implementation and the design phase of e-learning and that e-learning lacks culture-oriented mechanism. The investigation revealed that learners preferred e-learning system to be designed in both English and their Home Language and they also preferred e-learning more than classrooms. Their e-learning preference over classroom means there is a need for e-learning system to be more user-oriented and culture-oriented. This shows that learners also accept that language, communication, values, attitudes and religion have the power to influence the usage of e-learning systems and they also perceive e-learning as a positive tool as it assists them to learn, think and understand learning materials better. Moreover, the findings of this research have also indicated that there are a misunderstandings and lack of collaboration between the developer(s) and the learners (users) and also there is a lack of essential factors during the development phase.

In order to overcome these challenges and many others, there is a needed integration of learners' cultures and preferences in the development of e-learning and to make the system customizable. In all these challenges that exist, education institutions have tried to building standards, ICTs capacities and technologies and skills that will enable access to technological tools (Ngugi *et al*, 2007). In regard to these challenges and benefits, this research has discovered different issues or problems and, therefore, proposed some solutions and steps that can be undertaken to tackle this problem in order to advance e-learning system and to make sure that learners are well served. In future, a study can be conducted to determine the effective implementation of culture on e-learning development.

## REFERENCES

Andersson, A.S. and A. Gronlund, 2009. A conceptual framework for e-learning in developing countries: A critical review of research challenges. Electr. J. Inf. Syst. Dev. Countries, 38: 1-16.

Andrews, R., 2011. Does E-learning require a new theory of learning? Some initial thoughts1/erfordert E-learning eine neue theorie des lernens? Einige erste uberlegungen. J. Educ. Res. Online, 3: 104-121.

Arman, N., 2010. E-learning materials development: Applying and implementing software reuse principles and granularity levels in the small. Int. J. u-and e-Serv. Sci. Technol., 3: 31-42.

Barik, N. and S. Karforma, 2012. Risks and remedies in E-learning system. Int. J. Network Secur. Appl., 4: 51-59.

Bergiel, E.B., B.J. Bergiel and J.W. Upson, 2012. Revisiting hofstede's dimensions: Examining the cultural convergence of the United States and Japan. Am. J. Manage., 12: 69-79.

Bless, C., C.H. Smith and A. Kagee, 2006. Fundamentals of Social Research Methods: An African Perspective. 3rd Edn., Juta and Company Ltd, South Africa,.

Boondao, R., A.J. Hurst and J. Sheard, 2009. Understanding cultural influences: Principles for personalised E-learning systems. Intl. J. Behav. Cognit. Educ. Psychol. Sci., 1: 66-70.

Calvo, A.R., R.A. Ellis, N. Carroll and L. Markauskaite, 2007. Informing E-Learning Software Development Processes with the Student Experience of Learning. In: Transforming a University: The Scholarship of Teaching and Learning in Practice, Brew, A. and J. Sachs (Eds.). Sydney University Press, Sydney, Australia, pp: 175-185.

Choi, B., I. Lee, J. Kim and Y. Jeon, 2005. A qualitative cross-national study of cultural influences on mobile data service design. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, April 2-7, 2005, ACM, Portland, Oregon, USA., ISBN:1-58113-998-5, pp: 661-670.

Chukwuere, J.E., 2013. An Empirical Investigation of Rigour Versus Relevance in Information Systems (IS) Research. North-West University, South Africa,.

Coyne, I.T., 1997. Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? J. Adv. Nursing, 26: 623-630.

Crittenden, E., 2006. Grounded theory: A research methodology for eLearning. Malaysian J. Distance Educ., 8: 1-13.

Garcia, A.M.F. and A.P. Esteban, 2013. Mobile learning and Scorm: Case study for educational contents reuse. J. Inf. Technol. Appl. Educ., 2: 125-131.

Georgouli, K., I. Skalkidis and P. Guerreiro, 2008. A framework for adopting LMS to introduce E-Learning in a traditional course. Educ. Technol. Soc., 11: 227-240.

Higgins, J., 2006. The Radical Statistician: A Beginners Guide to Unleashing the Power of Applied Statistics in the Real World. 5th Edn., Jim Higgins Publishing, New York, USA.,.

Hofstede, G., 1980. Cultures Consequencess: International Differences in Work-Related Values. Sage Publication, USA.

Joshua, C.E., M. Nehemiah and M. Ernest, 2015. A conceptual culture-oriented E-Learning system development framework (E-LSDF): A case of higher education institutions in South Africa. Int. J. Trade Econ. Finance, 6: 259-265.

Joy, S. and D.A. Kolb, 2009. Are there cultural differences in learning style?. Int. J. Int. Relat., 33: 69-85.

Kaewkiriya, T., R. Saga and H. Tsuji, 2013. Framework for distributed E-learning management system. J. Comput., 8: 1635-1647.

Korpela, M., A. Mursu and H.A. Soriyan, 2002. Information systems development as an activity. Comput. Supported Cooperative Work (CSCW), 11: 111-128.

Kummer, T.F., J.M. Leimeister and M. Bick, 2012. On the importance of national culture for the design of information systems. Bus. Inf. Syst. Eng., 4: 317-330.

Leidner, D.E. and T. Kayworth, 2006. Review: A review of culture in information systems research: toward a theory of information technology culture conflict. MIS Q., 30: 357-399.

Mayes, T. and S.D. Freitas, 2004. Review of E-learning theories, frameworks and models. Joint Information Systems Committee, London. http://www.jisc.ac.uk/whatwedo/programmes/elearningpedagogy/outcomes.aspx.

Mehanna, W.N., 2004. E-Pedagogy: The pedagogies of E-learning. Res. Learn. Technol., 12: 279-293.

Mohammed, P. and P. Mohan, 2011. Integrating culture into digital learning environments: Studies using cultural educational games. Caribbean Teach. Scholar, 1: 21-33.

Nagarajan, P. and G.W. Jiji, 2010. Online educational system (E-learning). Intl. J. Serv. Sci. Technol., 3: 37-48.

Ngugi, C., N. Irungu, B. Muwonge, P.V. Langa and J. Pederson *et al*., 2007. Status report on ICTs and higher education in Africa. Centre of Educational Technology, University of Cape Town, South Africa.

Oates, B.J., 2008. Researching Information Systems and Computing. Sage Publications, London, England, UK.,.

Olaniran, B.A., 2009. Discerning culture in E-learning and in the global workplaces. Knowl. Manage. E Learn. Int. J., 1: 180-195.

Osterweil, L.J., 2011. A process programmer looks at the spiral model: A tribute to the deep insights of barry W. Boehm. Int. J. Software Inf., 5: 457-474.

Oye, N.D., M. Sallah and N.A. Iahad, 2012. E-learning methodologies and tools. Int. J. Adv. Comput. Sci. Appl., 3: 180-195.

Oyelami, O.M., 2008. Development of Igbo language E-learning system. Turk. Online J. Distance Educ., 9: 39-52.

Raddon, A., 2010. Early stage research training: Epistemology & ontology in social science research. Centre for Labour Market Studies, University of LEICESTER, Leicester, England. https://www2.le.ac.uk/acl_users/credentials_cookie_auth/require_login?came_from=https%3A//www2.le.ac.uk/colleges/socsci/internal/students/research-training-for-research-student

Soares, A.M., M. Farhangmehr and A. Shoham, 2007. Hofstede's dimensions of culture in international marketing studies. J. Bus. Res., 60: 277-284.

Sun, P., R. Tsai, G. Finger, Y. Chen and D. Yeh, 2008. What drives a successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction. Comput. Educ., 50: 1183-1202.

Wang, M., F. Brown and J.W. Ng, 2012. Current instructional design models and principles for effective E-and mobile learning. Open Educ. Res., 18: 25-35.

Zachman, J.A., 1987. A framework for information systems architecture. IBM. Syst. J., 26: 276-292.