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Evaluating the Perceived Usability of Virtual Learning Environment in Teaching ICT Courses

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Abstract

This paper focuses in evaluating the perceived usability of Virtual Learning Environment (VLE) utilized as a blended learning tool in teaching ICT courses in Isabela State University. Descriptive research method using survey was employed to gather responses from a total of 120 third year students enrolled in IT59 course during the first semester, SY 2013-2014. Overall, the VLE's general interface design, VLE-site specific design, student-centered instructional design, and overall usability of the VLE were rated very satisfactory. This implies that the VLE conformed to the different usability issues presented and was satisfactorily accepted by the students. However, 95% of the students still preferred to use both VLE site and the classroom for learning. Taking online assessments were most liked. In contrast, deadline of submission were least liked. Other problems they found critical in using the VLE were insufficient time in answering activities, deadline of submission, and expensive computer/internet rental. The study concludes that the evaluation of the VLE conformed to the different usability issues presented. Also, students were positive regarding the usability of the VLE site and its support to learning. However, pedagogical issues such as incorporating learning activities that deal with active learning, problem solving, and authentic learning should be provided. It should also attempt to fully engage students in learning by incorporating activities that are interactive and collaborative; grades and other incentives should be promptly reported to continually motivate students; internet access should be addressed.

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Introduction

Along with the rapid advancement of ICT, education has become one of its primary applications. Consequently, ICT integration into teaching and learning is now one of the priority concerns among schools and universities. In order to address this need, the concept of e-learning has been established. E-learning as defined by Babo and Azevedo (2009) is an information system that processes, stores, and disseminates course materials and supports

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communication associated with teaching and learning. Accordingly, it provides several functionalities such as electronic distribution of course syllabi, ability to post hyperlinks to websites, forum for the exchange of ideas, wikis which allows student to swap ideas and information on projects, chat rooms for real time discussion, facilitate e-mailing and messaging (teacher-to-student, student-to-student), facilities for students to submit work assignments electronically, means to administer quizzes and tests online, and reports teachers' grades and feedback to students Janossy (2008). Today, the term e-learning has captured a wider scope from the use of personal computers and the Internet to the utilization of more advanced applications, as well as devices or tools for more effective teaching and learning.

Literature in the area of e-learning points out that the quality of educational software is significantly related to its interface quality (Buzhardt et al., 2005; Cantoni et al., 2004; Hinostroza and Mellar, 2001). Regardless of the technical type of the platform, such as desktop software or an internet website, the interface remains equally problematic when dealing with the behavior of the user. The interface quality of educational software or websites, moreover, has a serious impact on the learning outcome of the student (Gauss and Urbas, 2003). Crowther et.al. (2004) argue that the impact of a poor interface design in education is more serious than in business. It impairs a student's overall motivation, as well as their learning performance, and has serious moral and ethical implications. In essence, interactivity between student and interface has been considered as the most important aspect in several studies on how to improve the quality of education through e-learning (Cantoni et al., 2004; Ellis and Blashki, 2004; Chou, 2003; Gauss and Urbas, 2003). According to the interface consistency theory that deals with the interaction between the user and the interface, increasing the consistency levels of the user interface results in a significant decrease of error rates in computer and web-based tasks (Ozok and Salvendy, 2004).

Usability is the extent to which users can use a computer system to achieve specified goals efficiently and effectively while promoting feelings of satisfaction in a given context of use (ISO 9241). Usability evaluation (UE) consists of methodologies for measuring the usability aspects of a system's user interface (UI) and identifying specific problems (Dix et al. 2004; Nielsen 1993). Moreover, usability evaluation is an important part of the overall user interface design process which ideally consists of iterative cycles of designing, prototyping, and evaluating (Dix et al. 2004; Nielsen 1994). According to Melis, et.al. (2003) making an e-learning system usable basically involves two aspects: technical usability and pedagogical usability. Technical usability involves methods for ensuring a trouble-free interaction with the system, while pedagogical usability aims at supporting the learning process. Both aspects of usability are intertwined and tap the user's cognitive resources. The main goal should be minimizing the cognitive load resulting from interaction with the system in order to free more resources for the learning process itself.

This study evaluated the usability of Virtual Learning Environment in a blended learning modality of ICT courses offered at Isabela State University.

The VLE was evaluated with specific usability designs such as: interface designs, and student-centered instructional designs; and general usability in terms of the following: ease of use, efficiency, effectiveness, ease of remembering, and satisfaction. This is also to examine whether the users experienced any 'barriers to learning'. The usability of VLE's can have a huge influence on learning and this aspect is considered as the most influential in determining initial impressions of an interface.

Review of Literature

Heuristic Evaluation

A heuristic evaluation or guidelines-based expert evaluation may be the first assessment of an interaction design based on the user task analysis and application of guidelines for Virtual Environment (VE) user interface design. One of the goals of heuristic evaluation is to simply identify usability problems in the design. Another important goal is to identify the usability problems early in the development lifecycle so that they may be addressed, and the redesign iteratively refined and evaluated (Nielsen and Mack, 1994). In a heuristic evaluation, usability experts compare elements of the user interaction design to guidelines or heuristics looking for specific situations in which guidelines have been violated, and therefore are potential usability problems. The evaluation is performed by one or more usability experts and does not require users. A set of usability guidelines or heuristics that are either general enough to apply to any VE or are tailored for a specific VE is also required.

E-learning in HEIs

Bada and Khazali (2006) observed that most HEIs in Uganda such as Makerere University, Kampala International University, Kyambogo University, Makerere University Business School and Nkumba University have websites and they use wireless technology for internet connectivity. Most students are interested in e-learning, have access to internet and email and can use them very well. Most HEIs use the distance learning approach as one of the methods for degree courses, especially where students work and have little time to attend classes. The introduction of e-learning in HEIs should not totally take over from the traditional means of delivery. E-learning should be used to compliment the traditional means. This view is supported by Bada and Khazali (2006) who argue that online methods of content delivery should be blended with the traditional methods of learning. However, Ugandan institutions face several challenges whenever they try to use blended learning. For example there is lack of vision and poor management, lack of a clear integration framework, bandwidth limitation, resistance to change, inadequate training of staff, poor infrastructure and high software costs. In addition to that, recognition of e-learning as a feasible method of learning is also still a challenge. This is affirmed by Bada and Khazali (2006) indicating that the stakeholders believe face-to-face learning allows students to interact more with their instructors and also that there is more value for money.

Kim and Seo (2009) designed, developed and evaluated the usability of an e-learning platform supporting education for gifted children. An instructional model is created as basis of the e-learning platform's design and development. The e-learning platform is utilized in an actual classroom set-up for six months with a sample of 55 gifted students and 16 teachers evaluating the usability of system. Significantly, the authors' findings were appropriate both in instructional support and technical support. Further investigations were required to utilize learning content management system for offering gifted learners more highly individualized instructions and to provide the appropriate strategies for instructors guiding them according to their learning orientation and level of task commitment.

Al-sarrayih, et al. (2010) evaluated the Learning Management System of TU Berlin, Information System for Instructors and Students (ISIS) focusing on the ISO-9126

characteristics of usability, functionality, and reliability. The results indicated that the usability and functionality aspects of the system are well received. However, the perceived reliability of ISIS should be increased to improve user satisfaction.

Frameworks for integrating e-learning in HEIs: The E-Learning Framework

Designing an e-learning framework needs careful analysis and investigation of the resources available to the institution. Khan (2005) asserts that design, development, implementation and evaluation of e-learning systems require thorough analysis and investigation of how to use the attributes and resources of the Internet and digital technologies. Khan further reflects on various factors important to e-learning. He identified the following factors that cover various online learning issues; pedagogical, technological, interface design, evaluation, management, resource support, ethical, and institutional. These factors discussed in the eight dimensions of the framework can provide guidance in the design, development, delivery and evaluation of e- learning environments.

Another useful framework is a model for developing an integrated e-learning culture in a large organization by Newton and Ellis (2006). The integration of e-learning is influenced by the various activities relating to e-learning. These are organizational priorities, learning environment, instructors' roles and learners' needs for developing an integrated e-learning culture in a large organization. All the four factors should be considered so that the extent of e-learning integration suits the organization that wants to embrace e-learning integration. This is important because different organizations have different priorities, different learning environments, different roles and different needs. In addition to the four factors of integrating e-learning, Newton and Ellis (2006) suggest that the policy makers' views should also be considered.

The above reviewed e-learning frameworks have been used to solve unique e-learning problems. Nevertheless, these frameworks do not address the issue of e-learning integration with other teaching methods in its entirety. They mainly cover issues of e-learning systems development, application, and adoption.

E-learning Integration Theories

Although some scholars have argued that the requirements for face-to-face learning are the same as those for e-learning (Díaz, 2009), and that the difference is only manifested in the effort put in by teachers, a number of scholars have argued otherwise (Kituyi and Kyeyune, 2012; Bada and Khazali, 2006; Sankale, 2006). In order to deepen the understanding on the subject of e-learning integration, some e-learning integration theories were consulted as seen in the following sub-sections:

Design Theory of Blended Learning. Designed by Huang et al (2007), the Design Theory of Blended Learning tries to explain how different types of learning including face-to-face and computer aided forms of learning can be used together for better performance. They argue that blended learning can be achieved if there is a well-designed curriculum showing the various activities involved in the learning process. In this theory, the proponents suggest various factors that influence the success of blended learning as flexibility, whereby a number of tools such as discussion forums, e-mails and boards are used to enhance learning. In addition, the authors argue that technology-based learning allows learners to undergo self-paced learning and monitor themselves without the direct supervision of the teacher. Therefore learners using

blended learning are provided with a variety of learning options from which they can adopt effective learning processes.

However, for successful blended learning to occur, there should be a series of activities executed through four phases, including pre-analysis, design of activities and resources, instructional assessment, and instructional verification. The analysis phase is aimed at studying the learners' characteristics, objectives and learning environment. In the design phase, the blended learning implementing institutions are supposed to come up with the overall design of the learning process, clearly showing the learning units, delivery strategies and required resources. In the instructional assessment phase, the implementing institution is supposed to carry out an evaluation of the learning process, curriculum evaluation, and evaluation of the learning activities identified in phase two. The deliverables of blended learning theory include the analysis report, design report, and evaluation report in each phase respectively.

Criticism of the Design Theory of Blended Learning. Generally, there is little literature that evaluates blended learning studies. This is perhaps because blended learning is a relatively new issue that has not yet attracted as much attention as other research areas. However, some scholars such as Hadjerrouit (2008) have argued against blended learning. In his 2008 paper, Hadjerrouit argues that "blending face-to-face learning with information technologies cannot provide effective teaching and efficient solutions for learning". Further, Díaz (2009) argues that there is no significant difference between face-to-face and online learning. Nonetheless, Hadjerrouit (2008) suggests that blended learning can be effective if research is conducted with an aim of developing appropriate pedagogy and in effect proposes a model through which blended learning can be implemented. The "successive cycle" model can help remove shortfalls in the process of integrating learning i.e. face-to-face learning, computer-based learning and online learning.

In addition to the above, the blended learning theory is limited in a number of ways. For example the model does not show the learning content for which different learning methods are designed. In fact, there is no mention of content design at all in the design phase. The various learning methods to be used in blended learning are unknown. None of the reviewed models (Huang et al. 2007; Hadjerrouit, 2008) did identify the relevant stakeholders for successful blended or integrated learning. Moreover Kituyi et al. (2012) argue that stakeholders must be identified and each given specific roles for successful e-learning to take place. Kituyi et al. (2012) identified the five most important stakeholders for e-learning are the government, the school, the private sector, the teacher and the learner.

Despite the weaknesses identified above, blended learning remains a method of choice for better teaching in HEIs (Carman, 2005). Therefore, it is important that appropriate frameworks are designed to guide the integration of various teaching methods in the learning process. Blended learning theory is a good initiative towards integration of learning, although it does not show how each learning method integrates with others as is the case of (Hadjerrouit, 2008) which highlights face-to-face, computer-based and online learning as the components of blended learning. The only and perhaps the most significant weakness of blended learning model by Hadjerrouit (2008) is the lack of activities, stakeholders and key deliverables of each component listed in the model.

Research Methods

The study used the quantitative descriptive survey research method. A sample size of 120 Bachelor of Science in Information Technology (BSIT) students (N=120) enrolled in IT59 ICT course during the second semester, school year 2013-2014. They served as respondents to evaluate the perceived usability of the VLE used as a blended learning tool in teaching and learning ICT course. The delivery of the course passed took a total of 18 weeks (equivalent to 90 hours). A usability evaluation questionnaire adapted from the work of Ssemugabi and de Villiers (2010) consisting structured and unstructured questions was used. The instrument consists of four categories namely: Category 1 General Interface Design; Category 2 VLE-site Specific Design; Category 3 Student-centered Instructional Design; and Category 4 The Overall Usability of the VLE site. It has 24 sections with 76 questions/statements structured using the 5-point Likert scale format and one (1) statement structured using Nominal scale. In addition, open-ended questions were also asked to reinforce their answers. The questionnaire is available in a paper-and-pencil format which is self-administered.

Descriptive statistical tools such as mean/weighted mean, percent frequency distribution and percentage were presented to analyze the results of the study. SPSS (Statistical Package for Social Sciences) version 20 and Microsoft Excel 2007 are the software used in computation.

The item mean/weighted mean of responses per criterion reference were computed and interpreted such as 5 (4.20-5.00) means strongly agree; 4 (3.40-4.19) means agree; 3 (2.60-3.39) means neither agree nor disagree; 2 (1.80-2.59) means disagree; and 1 (1.00-1.79) means strongly disagree.

Results

Table 1 presents the summarized mean perception of respondents on Category 1- General Interface Design. A grand mean of 4.38 or equivalent to “strongly agree” shows that the general interface design of the VLE site is satisfactory accepted by the students. Interestingly, two sections have the highest mean rating, one is help and documentation (4.54) where facilities such as online help and glossary and links to other resources are found to be helpful and useful. Moreover, flexibility and efficiency of use (4.53) evaluates how the VLE site sufficiently guides new users and customization of settings to suit users’ needs.

Though rated “strongly agree”, one of the least rated section is match between the VLE system and the real world (4.28). This evaluates use of languages naturally, use of terms properly, and correspondence to real-world objects. Another is user control and freedom section (4.28) which focuses on user’s control over the site and availability of buttons, icons, hyperlinks, and logouts to freely manipulate the site.

Table 1. Summarized Mean Perception of Respondents on General Interface Design Category.

General Interface Design Section	Weighted Mean	Descriptive Equivalent
1. Visibility of system status	4.46	Strongly agree
2. Match between the VLE system and the real world i.e. match between designer model and learner model	4.28	Strongly agree
3. User control and freedom	4.28	Strongly agree
4. Consistency and adherence to standards	4.36	Strongly agree

5. Error prevention, specifically prevention of peripheral usability-related errors	4.36	Strongly agree
6. Recognition rather than recall	4.34	Strongly agree
7. Flexibility and efficiency of use	4.53	Strongly agree
8. Authenticity and minimalism in design	4.37	Strongly agree
9. Recognition, diagnosis, and recovery from errors	4.33	Strongly agree
10. Help and documentation	4.54	Strongly agree
Grand Mean	4.38	Strongly agree

Table 2 presents the summarized mean perception of respondents in terms of Category 2- VLE Site Specific Design. It shows that the VLE site specific design is satisfactorily complied with a grand mean of 4.46 described as “strongly agree”. The simplicity of VLE site navigation, organization and structure (4.45) pertains to adaptation of the site interface, and proper link to pages and documents. On the other hand, relevance of VLE site content for learning (4.48) evaluates appropriateness of the content as to level of understanding and viewing of grade books.

Table 2. Summarized Mean Perception of Respondents on VLE Site Specific Design Category.

VLE Site-specific Design	Weighted Mean	Descriptive Equivalent
11. Simplicity of VLE site navigation, organization and structure	4.45	Strongly agree
12. Relevance of VLE site content for learning	4.48	Strongly agree
Grand Mean	4.46	Strongly agree

Table 3 presents the summarized mean perception of respondents on Category 3 - Student-centered instructional design. As shown from the result, it indicates that the VLE site as a tool offers highly acceptable student-centered instructions with a grand mean of 4.51 equivalent to strongly agree. Remarkably, the VLE recognizes students’ cognitive level (4.68) and there is feedback mechanism and assessments (4.67) provided by the VLE site to students. Though rated “strongly agree”, one of the least rated section was collaborative learning (4.41). This evaluates facilities for group activities, collaboration among students, role of instructor in the team, and availability of discussion forum with co-learners. Another was motivation, creativity and active learning section (4.39) which focuses on self and external motivation; engagement to VLE site and its look-and-feel; attraction to content and interactions, short rather than long quizzes; and enjoyment and interest in doing learning assessments.

Table 3. Summarized Mean Perception of Respondents on Student-centered Instructional Design Category.

Student-centered Instructional Design	Weighted Mean	Descriptive Equivalent
13. Clarity of goals, objectives and outcomes	4.51	Strongly agree

14. Collaborative Learning	4.41	Strongly agree
15. Appropriateness of the level of learner control	4.45	Strongly agree
16. Support for personally significant approaches to learning	4.53	Strongly agree
17. Cognitive error recognition, diagnosis and recovery	4.68	Strongly agree
18. Feedback, guidance and assessment	4.67	Strongly agree
19. Meaningful context	4.50	Strongly agree
20. Motivation, creativity and active learning	4.39	Strongly agree
Grand Mean	4.51	Strongly agree

In addition to the evaluation results of the three categories presented, students were also asked to evaluate Category 4- Overall usability of the VLE site and its support for learning.

Table 4 shows the weighted mean responses of students for each statement/question relating to the overall usability of the VLE site. The responses of the factors associated with ease of use (4.23); efficiency (4.27); effectiveness (4.58); easy to remember (4.62); and satisfaction (4.38) got a total weighted mean of 4.42 described as “strongly agree”.

Table 4. Mean Perception of Respondents on Category 4- Overall Usability of the VLE site.

Statement	Weighted Mean	Descriptive Equivalent
A. Ease of use: I found out the VLE system easy to use.	4.23	Strongly agree
B. Efficiency: The VLE system is fast to work with.	4.27	Strongly agree
C. Effectiveness: The VLE system performed tasks properly.	4.58	Strongly agree
D. Easy to remember: Once I learn how to use the VLE system it will be easy to use it the next time.	4.62	Strongly agree
E. Satisfaction: I was satisfied with the VLE system.	4.38	Strongly agree
Total Weighted Mean	4.42	Strongly agree

Interestingly, students were also asked as to their preference in learning. It was revealed that 95% of students preferred to use both class and VLE site for learning, compared with 3% who would prefer the VLE site only and 2% who preferred class instruction only.

Further, as presented in Table 5, a very good rating of 4.37 was noted when asked “how well the operation of VLE site as a supplement to class instruction” and a highly commendable rating of 4.43 on “overall rating of the VLE site”.

Table 5. Mean Perception of Respondents on Statements F and H of Category 4- Overall Usability of the VLE site.

Question	Weighted Mean	Descriptive Equivalent
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F. How well did the VLE site work as a supplement to class instruction? 4.37 Very Good

H. What is your overall rating of the VLE site? 4.43 Very Good

In general, the statistics in the previous paragraphs show that students were affirmative regarding the usability of the site and its support for learning. This is confirmed further by some of their remarks:

- "I am attracted with the graphics, text used and the GUI of the site."
- "A pop-up dialog box informs me before and after taking an exam/quiz."
- "I am motivated and felt worthy when my instructor provides positive feedback about my work."
- "I enjoy doing self-test, assignments, projects in VLE because it makes me realize that I can do things on my own."
- "I love doing assignments, activities, and learning by reading assignments shared by my classmates."

However, remarks and feedbacks that should be addressed include:

- "Some of the terms defined are confusing leading to the misunderstanding of the concept/topic."
- "Due to poor Internet connection, I don't have enough time to finish my learning activities especially the online quiz."
- "Some part of image does not easily load due to size of the image."
- "The module is too long; modules and activities must be separated."
- "I don't enjoy doing projects and assignments because I don't understand the instructions/examples."

The respondents were also asked on question "What attracted and you like most in the site?" Two topmost answers were Assessment (28%) and Motivation (23%) indicating that students were most attracted with different assessment activities and motivated to use the VLE site because of the graphics, text, and graphical user interface. On the contrary, lower percent frequencies were recorded for Active Learning (2%), Problem Solving (3%), and Authentic Learning (3%).

The students' response on question "What did you like least about the Site?", the deadline of submission (42%) and answering the quiz (15%) were least liked. On the other hand, least rated items were the following: paying internet fee (1%), no available laptop (2%), loading the site (2%), VLE site design (2%), lack of time (3%), and use of forum (5%). On the positive note, 7% of the students mentioned that they do not have problems with the VLE.

Further, based from the answers of the students on the question "What problems you found most critical in the VLE system.", the researchers were able to identify serious problems that students encountered while using the VLE site. It appears that time duration of quizzes is

not sufficient (35%), computer/internet rental is expensive (13%), and deadline of submission of activities (13%) were among the critical concerns that the researchers should address. On the other hand, very minimal responses were drawn on the following: focus on other social network site (2%) and not learning from the site (2%). In spite of the critical issues recognized, 8% of the students stated that they did not encounter problems in using the VLE.

Discussions and Conclusions

By evaluating the usability of the VLE in teaching ICT courses, each category reveals the following analysis of the results:

Category 1 - General Interface Design

The overall general interface design of the VLE is satisfactorily accepted by the students. It was revealed that help and documentation section is highly acceptable. This implies the VLE is very suitable and useful in providing online help facilities and links to other resources helpful in learning. Similarly, the VLE site guides novice users/students sufficiently and it is flexible enough to enable students to adjust settings to suit their needs such as customizing profile settings.

Though rated “strongly agree”, one of the least rated section was the “user control and freedom”. It was revealed that students’ inability to exercise control over the VLE resulted to uncomfortably using the VLE for the first time –i.e. accessing, downloading lessons, uploading their learning tasks, and communicating with their instructor and co-learners. In addition, the VLE pages must have the required navigation buttons or hyperlinks and an exit (log-out) must be clearly marked. These should be dealt with accordingly to address user control and freedom over the VLE site. Another least rated section although rated “strongly agree” was the “match between the VLE system and the real world”. The students encountered different web terminologies, icons, and symbols on the VLE site that lead to confusion. Consequently, languages, metaphors, and terminologies used in the VLE site should also be improved to ensure understandable and meaningful symbolic representations used within the context of the performed tasks.

Category 2 - VLE-site Specific Design

The overall VLE site specific design is satisfactorily accepted by the students. It was revealed that VLE site-specific design conformed to simplicity of VLE site navigation, organization and structure which means that students always know where they are and which options to go to next in the VLE site. Also, available links are directed to correct documents/pages and that related information is placed together. In terms of relevance of content for learning, the result shows that the content is appropriate to what is to be learned and to their level of understanding. Likewise, students are interested to view records of their learning activities and grade book. However, it was noted that students were more familiar and found it easier to use the course menu structure rather than course maps. This means that students should be oriented/trained in the use of course maps to navigate the site.

Category 3 – Student-centered Instructional Design

The overall student-centered instructional design of the VLE indicates that the VLE site as a teaching and learning tool offers highly acceptable student-centered instructions. It was worth mentioning that the respondents satisfactorily agreed that the VLE provides feedback regarding learning activities and appreciates quantitative feedback in terms of activity grades. This directly associates with their responses that the VLE has the capability of recognizing students' limitations of knowing wrong concepts but tries to correct as part of learning considering the instructor as the intervening factor. Majority of the students agreed that the VLE system recognizes that every student is entitled for every mistake and lessons learned from that mistake are worthwhile.

Further, findings that were evident and worth mentioning were: the course e-syllabus is useful; calendar provides useful information; different strategies support learning; knowledge in meaningful context is presented helpful in learning; and the VLE site provides intrinsic (self) motivation to learners.

On the other hand, though rated "strongly agree", least rated issues that should be resolved were related to presentation of knowledge presented in authentic way; engagement to the VLE site; and collaboration with other learners/students initiated or supported by the VLE site. Thus, to address the issues, sufficient learning activities that is interactive and collaborative in nature should be presented; frequent instructor's support and feedback; external motivation to learn and accomplish course requirements (i.e. display of grades on time, incentives and positive feedback) should be strengthened; and to promote creativity by engaging students in the different activities available in the VLE site.

Further, the study also recognized that instructor's delay of providing feedback and reinforcement is due to the unmanageable time schedule and poor Internet access as well.

Category 4 - The Overall Usability of the VLE site

The responses for Category 4- Overall usability of the VLE site factors associated with ease of use; efficiency; effectiveness; easy to remember; and satisfaction were highly commendable. Overall, the students highly accepted that the VLE site is fast to work with, performed tasks properly, and once they learned how to use it, it is easier the next time, and that they were satisfied using the VLE site.

Although highly accepted, a lower mean rating was noted on the "ease of use" factor which means that students are faced with normally occurring problem of using a new system. This issue will eventually be remedied as the students gain more exposure to the system. The study also revealed that 95% of the students still preferred to use both class and the VLE site for learning over use of VLE site only and use of class instruction only. It was also reported that despite of some general interface design constraints and less effective motivational factors identified, still a highly commendable rating was reported on how well the VLE is operating as a blended learning tool in learning ICT courses. Similarly, respondents also had high regards to the overall rating of the VLE site. The results can be associated with their preference of using both class and the VLE site for learning.

In general, the students were positive regarding the usability of the site and its support for learning. This is further confirmed by some of their constructive remarks such as the use of graphics, text and the GUI of the VLE site; use of dialog boxes to inform users; feedback and positive reinforcement, and enjoyment and passion of doing learning tasks. However, issues

that should be addressed include: inconsistency of using language, terms, and representation; slow loading of images due to size; long modules/lessons; and poor internet connection. It was revealed that Assessment and Motivation were most liked by the respondents. They are interested in doing different assessment activities like online quiz, exercises, projects, assignments, and forum done in the VLE site. Moreover, students were motivated to use the VLE site because of the graphics, text, and graphical user interface. Also, they were encouraged to improve their skills and to study well while using the VLE. On the contrary, lower percent frequencies were recorded for Active Learning, Problem Solving, and Authentic Learning. These implied that few students used other website to acquire more resources, acquire more knowledge while surfing the VLE, and discovering things in their own initiative. This further means that students relied heavily on the available learning resources, learning activities, and the used learning methodologies provided in the VLE.

Majority of the respondents' least like were deadline of submission of learning tasks and answering the quiz. These issues relatively correlate to most critical problems encountered in the VLE site. It is quite ironic that they are interested in doing learning activities but they least like submitting the activities on time and answering time-bound quiz online. This indicates that there is a need to still motivate and encourage the students of the purpose of taking and submitting tasks on time. On the other hand, no available laptop; loading the site, VLE site design, lack of time, and use of forum were minimally rated. It is therefore notable that the VLE site is satisfactorily compliant in terms of technology, instructional design, and time aspects. It is also worthy to note that some mentioned that they do not have problems with the VLE.

Overall, based on the findings of this evaluation, the Usability of the VLE satisfactory conformed to the different usability issues presented. Moreover, it was determined that students were affirmative regarding the usability of the VLE site and its support for student-centered learning. The evidences of this study and other studies (Janossy, 2008; Picolli, 2001; Kim and Seo, 2009; Al-sarrayrih et al, 2010; and Lee, et al 2009) indicate that perceived ease of use, along with perceived usefulness, teaching materials, design of learning content were identified as factors related to usability of the VLE site. In addition, this study found out that help and documentation, flexibility and ease of use, relevance of VLE site content for learning, cognitive error recognition, diagnosis and recovery, feedback, guidance and assessment, effectiveness, and ease of remembering were the strongest factors of the VLE's usability. However, pedagogical issues such as incorporating learning activities that deal with active learning, problem solving, and authentic learning should be provided. It should also attempt to fully engage students in learning by incorporating activities that are interactive and collaborative in nature; display of grades on time, other incentives, and positive feedback should be promptly reported to continually motivate students; internet access should be addressed.

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