The Case for VLE in Life-long Learning, Capacity Building and Poverty Reduction

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ABSTRACT
The study seeks to find more efficient and sustainable ways to support life-long learning with ICT in the Ghanaian rural setting, to explore the possible impact of using Virtual Learning Environment (VLE) to support teaching and learning in rural community to promote consistent capacity building of residents, the impact of improved access to ICT on information literacy, usage and employability in the rural communities.

Action Case Study method – a hybrid extension to Action Case method was adopted as the appropriate research method for this study. Cycles were carefully planned, implementation and observations were made and data collected using participant observations, interviews, and focus group.

A multi-system pedagogy was adapted for the introduced technology-mediated learning. It was found out that level of technology available was unable to support content delivery using web conferencing; however, participants were able to take advantage of Moodle courseware aspect to improve learning and enrich learning experience. In addition, the study showed that technology-mediated delivery of teaching and learning raised facilitators and learners’ motivation, increased e-literacy level and information awareness of participants. The intervention opened avenues for employability of participants as well as socio-economic prospects for residents but revealed challenges that needed both public and private support.

Keywords

1. INTRODUCTION
Many definitions and descriptions have been given for Virtual Learning Environment (VLE) ([3]; [7]; [14]; [10]). VLE can be viewed as an environment in which e-learning can be conducted or simpler, as a superset of ICT tools to facilitate e-learning. Alternative terms that are frequently used for VLE includes Learning Management System (LMS), Content Management Systems (CMS) and Managed Learning Environment (MLE). I have given a simplistic and non-technical description of VLE to be a virtual or digital environment crated to facilitate e-learning and provides features to manage learning activities. It incorporates different media such as text, audio, video and collaboration tools such as IM, Blogs and Wikis. The main essence of VLE therefore is to provide e-learning.

Likewise VLE, e-learning has not had rigid definition. Authors have described it in many ways in the literature ([3]; [2]; [17]; [18]). Summarily, e-learning may be described as a modern learning technology that is used to communicate or transfer knowledge or platform for teaching and learning activities interactively from afar with the aid of ICT tools. The use of technology in teaching and learning dated centuries back. What is however unique about e-learning is its multi-modal methodologies. E-learning has come to revolutionize the way traditional distance learning was conducted and it is indeed learning “san frontier”.

Besides reasons advanced by [14], e-learning has other characteristics that makes it to stand out among all other learning technologies. E-learning is location independent as well as content independent. Knowledge can therefore be tapped from and taken to any corner of the world no matter how remote using appropriate network technology. It can also be time independent particularly in its asynchronous form. Cost is an important factor in deploying any form of technology, particularly to the rural communities. E-learning can attain a wide reach at low cost if implemented and managed properly and can also be maintained at minimal cost. Teaching process can be automated, thus minimizing the effect of lack of qualified teaching personnel. Informal training can be maximized giving rise to new opportunities for non-professionals to find new roles.

There are several modes or forms of e-learning that can broadly be categorized into two; namely synchronous and asynchronous. Synchronous e-learning is sometime referred to by other names like web conference, webinars, virtual classroom and online presentation among others. Asynchronous e-learning is often intermittent in form and always available to learner to access. What all these names have in common however, is the use of computer network and software to facilitate live, interactive learning transaction via the internet. In synchronous e-learning, learning takes place in real time, that is, instantly and interactively between the teacher and students. It is usually scheduled and time-specific. In asynchronous e-learning, collaboration, communication or access takes place intermittently. It is self-paced and available at any time.

It is the motivation of this study to explore the use of VLE in the provision of life-long and capacity building of rural residents also to determine its potential in efforts to reduce the poverty level in rural communities.

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2. LITERATURE REVIEW

Access to computers and the Internet alone have been proved insufficient to make meaningful impact if individuals do not possess the basic skills and other resources to take advantage of technology ([8]; [12]; [5]). [5] argues that public access and computer training though justified, is not enough to address other “social forces” that may limit those endeavours. The issue is therefore not only about access but also about use or ability to take advantage of technology – needs that cannot be dissociated from other social and economic factors such as poverty and literacy level. Even in the light of the above discourse, contemporary ICT can be used to provide access to better education if only it is carefully planned and appropriately deployed.

Literacy acquisition requires variety of resources and the development of skills, knowledge with the right attitude, physical access to devices and motivation to make meaningful use of technology. All these are matters of not only education but also of power and privilege ([12]; [5]). [12] proposes range of resources that will need to be mobilized for ICT access for the social inclusion of disadvantaged communities.

These include:
1. Physical Resources: access to computers, accessories and the internet
2. Digital Resources: needed application software and relevant online or digital materials
3. Human Resources: trainers or instructors on education and literacy to provide basic skills needed for computer use and online communication
4. Social Resources: societal structures such as community or institution that provides support for ICT infrastructure (see Figure 1).

<table>
<thead>
<tr>
<th>Physical Resources (Computers and Telecommunications)</th>
<th>Digital Resources (Relevant Content in Diverse Languages)</th>
<th>Human Resources (Literacy and Education)</th>
<th>Social Resources (Community and Institutional Support)</th>
</tr>
</thead>
</table>

Figure 1. Effective Use of ICTs to Access, Adapt, and Create Knowledge

The combination of these set of resources and their proper management can contribute to effective creation and transaction of knowledge, access to and use of information, and eventually promote social inclusion and development.

Currently, many of the VLEs available support most of the learning pedagogies identified by [15] though to variable degrees and educators do not need specialist training or technical support to make use of them. Besides pedagogies, other factors that have been realized to play important role in the choice or uptake of VLE include finances or cost, time and resources, intended audience and course context. The advent of Web 2.0 comes with other non-VLE tools that have added to online learning experience. Among those that have gained prominence in recent times include instant messaging (IM), weblogs or blogs, wikis, podcasting, social software and e-portfolio. These new tools have introduced social dimension to online collaboration and knowledge sharing in contrast to the content-focused approach of the traditional VLE tools.

The researcher put forward a conceptual framework (Figure 2) within the context of this research: how to support teaching and learning, specifically for life-long learning and capacity building for rural residents using VLE. The purpose of the framework is to explain the key factors or elements, constructions or variables in the study and the presumed relationships among them [20]. This framework is the synthesis of [4] model for network learning and the model for internet-enabled student collaboration [19] adapted to fit the context of this research.
3. METHODOLOGY
This study applies Action Case study method – the combination of interpretive case study with participatory action research (PAR) to gain deep and contextualized insight into using virtual learning environment to support teaching and learning and making an intervention to effect a positive change. In recent years, PAR has emerged as a significant methodology for intervention, development and change within a system, organization, institution, communities or groups. PAR is not just research which is hoped that will be followed by action. It is action which is researched, changed and re-researched, within the research process by participants [21].

During implementation, the researcher assumes the role of participant/observer throughout various cycles of implementation to collect data. In each cycle, teaching was delivered from distance (Kwame Nkrumah University of Science and Technology campus) to students at the research location which is the local community school used as a resource centre for the project by the researcher acting as a resource person using online video-conferencing tool, WizIQ which is combined with a course management system, Moodle for content delivery. ‘Multi-system’ usage of technology and implementation of pedagogical innovation was adopted for content and lessons delivery, designed tasks and activities in line with the conceptual framework (Figure 2). The pedagogy employed combined the powers of resource-based, peer-to-peer, collaborative and problem-based learning ([15]; [7]) to motivate learners and challenge their acumen to improve upon their critical thinking and problem solving skills, their skills in communication and information search and processing, as well as collaboration, creativity and innovation. Data analysis was carried alongside data collection as the research progresses in conformity with standard practice in PAR ([21], [1], [2]).

A popular Computer-Assisted Qualitative Data Analysis Software (CAQDAS), Nvivo was used in analysing data generated from direct observations, interviews and focus group discussions.

The use of software in qualitative data analysis (QDA) provides the researcher with increased access to whole data as well as parts of data at the basic level. It also makes “live contact” [22] possible and easy thereby increasing researcher’s closeness to data. Additionally, the integration of different tools and features with software enables flexibility.

Data collected were organized following the three stages of organizing data proposed by [9]. In the first stage, all data gathered were organized to form Sources for the Nvivo ‘project’. Sources in Nvivo are collection of documents created from recorded observations of the researcher during the research implementation, interview transcripts of interviews conducted and focus groups discussions by participants. The second stage of ordering data proposed by [9] involves re-arranging data according to themes or concepts. [9] argue that the first step in theory building is conceptualizing. Concepts, themes or ideas emerging from data are packaged into nodes in Nvivo (Figure 5.1).
In reading through source documents at the third stage to restructure the data, I was guided by notions or indications of expressions that vindicated the viability, reliability and effectiveness (or otherwise) of the interventional actions that have been implemented. It was the aim of this study to assess the impact of the research project with respect to the following:

(i) Participants’ motivation/interest
(ii) Whether or not academic progress has been made (performance)
(iii) Motivation of facilitators
(iv) Work output or productivity of facilitator
(v) ICT awareness of participants
(vi) E-literacy skill development
(vii) Benefit of the project to the community
(viii) Overall socio-economic impact of the project to the community

Rational for these criteria was informed by the objectives of this study, which was to examine the feasibility or otherwise of using virtual learning environment to support teaching and learning and to facilitate life-long learning, capacity building, access to and promote use of information in the rural community. It was expected that criteria (i) to (iv) will lead us into the insight of feasibility and effectiveness of the technology mediation in the environment based on the notion that ICT has the potential to induce change in both content and pedagogy [3] and that computers and internet technologies can facilitate new and more effective ways to pursue teaching and learning. Criteria (v) to (viii) were expected to reveal the impact with respect to life-long learning and capacity building following discourses in the literature that it is access plus knowledge and skill development that can yield ‘digital citizens’ ([8]; [12]; [5]; [6]).

At this stage, selective categorization was made to identify main categories that elucidate the final explanatory model. This categorization therefore led to the generation of the nodes listed in Figure 3 and Figure 4.

Figure 4. Model showing the overview of project themes and sub-themes classification in Nvivo
4. FINDINGS

The impact of intervention on teaching and learning using VLE was measured with respect to motivation, academic impact, e-literacy, e-awareness, collaboration, learning experience. Effectiveness of the intervention which is the new learning system, was measured with respect to the feasibility of using virtual learning environment to support teaching and learning and facilitate life-long learning and capacity building in the community. By effectiveness we mean how successful especially in the way of improving teaching and learning among rural residents has the technology been. Themes that comprise the Digital Bridge tree node include Life-long learning, Accessibility, Correspondence, Information needs, Social networking and Equal Opportunity. Technical problems identified were categorized into three types namely problems due to power supply, problems due to computers and accessories and problems due to internet connectivity. The overall view of participants was sought on whether the technology can be deemed to be successful in its aim to support and improve teaching and learning and to facilitate life-long learning and capacity building in the rural community thus provide equal opportunities between rural and urban residents.

Majority of participants responded positively to the fact that the new technology has greatly motivated them and assisted them in their studies. It has enriched their learning experience generally. There has been considerable increase in their e-literacy skill and e-awareness levels. This is shown in the Informal group in Figure 5. The group also indicated the new technique has really helped them in academic work. This is backed by the technology’s motivational impact.

![Figure 5. Chart showing Impact themes coding by Group](image)

About three-quarters of the participants – 6 out of 9 – of the participants indicated that the technology has proven effective and easy to use. About a half also agreed that they find it to be feasible in the prevailing circumstance. Few participants – 2 out of 9 – however expressed the technology was difficult to use. No participant in this group claimed the technology has not been effective (see Figure 6).

All participants indicated that the technology has impacted positively in respect of life-long learning, capacity building and in creating equal opportunity between rural and urban residents. Coding on the themes in this category shows the ‘enthusiasm’ across all the themes as interviews and focus group discussion transcripts were vibrant on all the themes (Figure 7).

The problems recognized under technical problem namely, problems due to power supply, problems due to computers and accessories and problems due to internet connectivity and mentioned by all participants were recognized and mentioned by all participants. Analysis of the transcripts however showed different levels of endurance or reaction to the problems by each of the participants. Concern on how the project will be sustained at the end of the research happened to be the dominant theme.
Figure 6. Model depicting codings on sources coded under Effectiveness

Figure 7. Model depicting Digital Bridge themes coding density by Participants
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![Figure 8. Model showing the Overall View and sub-themes](image)

The overall view of participants was sought on whether the technology can be deem to be successful in its aim to support and improve teaching and learning and to bridge the digital divide between the rural community and the urban cities and thus provide equal opportunities for the rural people, particularly students. Participants’ responses were analyzed and summarized under the tree node, Overall View with sub-themes indicating acceptability or approval, non-acceptability or disapproval and approval with reservation (Figure 8). Participants that indicated approval with reservation raised issues such as the need of political will or support, private and/or community support, technical support and student levy to sustain the project.

In spite of the technical hitches, analysis showed majority participants did express satisfaction and therefore indicated their acceptability or approval of the intervention technology. On issues raised by those with reservation, there was general consensus on affordability issue and the need for political will or support for the project to realized its full aims. The need for technical support was also mentioned by participants. Analysis showed little faith in securing private or community support for funding the project and also by levying student even though they were mentioned as means of support.

5. DISCUSSION AND CONCLUSION

The intervention mechanism in this study involves technology-mediated delivery of teaching using WizIQ and Moodle. Since the research method chosen for this study is action case with participatory action research as the base research method, the researcher was fully immersed in the research environment acting as a resource person. This has an added advantage of getting a first-hand measure of the research outcomes in the light of expectations and academic demands on using virtual learning environment in the context of this research.

Ease of use of the learning system with respect to the setting up, creation of courses and student support were the main demands of academic staff in the learning environment. This concord with the notion of [15] that this factor often determines the viability and acceptance or otherwise of any learning environment.

Secondly, the interactive nature of the web in enabling communication from distance in audio-visual form proved initially beneficial in the live beaming of tuition. Even though this characteristic of e-learning was highly beneficial, it was found to be too dependent on the access or availability of adequate infrastructure, particularly high speed internet connection. The internet is seen as a sustaining technology in the sense that it fosters improved performance. Without the intervention of technology in the circumstance under which intervention in this study was carried out, participants would have had to go without a facilitator and which would have greatly hampered the project.

Participants showed increased level of e-literacy skills and e-awareness. There was also general consensus that their learning experiences with the new teaching method have been positive. Motivational impact of the technology was indicated as impetus in participants’ desire for lifelong learning. In fact, motivational impact was only second to academic impact in the analysis of the coding references. These factors are backed by e-literacy skills and e-awareness which may be considered indirectly as academic in context. This was also evident in the findings from Focus groups discussions of participants.
The significance of this study would be the revelation of the above mentioned facts from this study that can be put forward as strong case for the use of VLE in facilitating life-long learning, capacity building and the provision of equal opportunity for rural residents thereby aiding poverty alleviation. Relevance of the study can also be attested to in the way research in e-learning has been linked to practice in the way the study was implemented with methodology that is rooted in literature. Relevance of the study can also be extended to highlighting how others researchers and practitioners can implement and use VLE in different communities to benefit residents

6. REFERENCES


