The Extent of Web-Based Learning System Usage in Distance Learning Delivery in Ghanaian Universities

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Abstract

The aim of the research is to contribute to the body of knowledge in the area of web-based learning and distance education delivery. The study employed quantitative and survey design and discusses the extent of web-based learning system usage in Ghanaian distance learning institutions. The study sample consisted of three hundred undergraduate students from the University of Education Winneba, Institute of Distance Learning (UEW-IDL). The instrument for the research is a 13 item questionnaire and the data analyzed using the Special Software for the Social Sciences (SPSS version 17). The result showed that, the extent of the Web-based learning system usage at the University of Education Winneba, Institute of Distance Learning is very low. Future studies could focus more specifically on assessing the influence of prior experience (with computers and the Internet) and interest (in the knowledge domain) on the effect of choice.

Keywords: Web-based Learning System, Information Communication Technology, Distance Learning

JEL Classification Code: N7; O14; D83; L86

1. Introduction

In Ghana, most of the teachers who complete teacher training colleges find it difficult to further their education while teaching on the field. To solve this problem in the country, universities including University of Education Winneba introduced the undergraduate and postgraduate programs for both teachers and senior high school graduates through distance learning. It is observed that the rapid growth of the Internet has undoubtedly contributed to the wealth of literature written on the future of distance learning and distributed learning in higher education.

In recent educational setting, Information and Communication Technology (ICT) has begun to play a very important and indispensable role. Computers has strongly become involved in the delivery of education, a proposed definition identified the delivery of instructional materials, using both print and electronic media (Moore, 1990).

The integration of web-based learning into the traditional face-to-face distance learning has the potential in addressing most of the challenges encountered by distance learning students. Web-based learning (WBL) is defined as the application of a repertoire of cognitively oriented instructional strategies implemented within a constructivist (Lebow, 1993; Perkins, 1991) and collaborative learning environment, utilizing the attributes and resources of the World Wide Web.

However, in most of the developing countries including Ghana there are very few technical experts to implement and maintain ICTs (Bakari et al., 2001; National Committee for WSIS Prepcom II 2003). Appropriate strategies should be in place to ensure that integration of ICTs in teaching and learning process goes together with the recruitment, training, retaining and retention of required staff.
A lot of universities worldwide offering distance education programs try to integrate web-based learning into their traditional teaching and learning delivery. According to Lester et al (2005) integrating web-based learning into the traditional distance learning delivery “integrates online with traditional face-to-face classroom activities in a planned, pedagogically valuable manner”.

The purpose of the study was to identify the extent to which University of Education Winneba is using web-based learning in their traditional distance learning program. Specifically, the research objectives of this study were to:

- Ascertain distance learners awareness and usage of web-based learning.
- Investigate possible challenges learners face in using the blended learning.

The research is also guided by the following research questions:

- What is the current technology based instruction used at UEW?
- How are students coping with the integration of web-based learning with the traditional learning delivery?
- What challenges are students facing in using web-based learning system?

Workers on post are capable of furthering their education without going back to the classroom leaving their jobs behind thereby increasing productivity and reducing the illiteracy level of the country since students who don’t get direct admission into the regular campuses can also enroll into the distance learning program.

William (2000) stated that, “As communication and information technologies evolve, the roles and competencies to utilize such technologies for instruction are affected” therefore the findings of this research intern to help other universities who have the delight to organize distance learning programs to make informed decisions in order to facilitate successful and valuable distance learning in the country.

The study will also help administers in higher educational institutions to see the need to integrate web-based learning with the traditional face-to-face distance learning delivery to enhance students’ performance through effective teaching and learning process.

The findings of the paper are limited to the use of survey data. Because some of the respondents were not computer literates, most respondents felt reluctant to answer the questions to approve the implementation of the blended learning. The paper does not cover all the theories of blended learning but looks at only the positive effects of blended learning on distance learning students.

It does not also focus on the use of a particular electronic learning system to be used by students.

2. Review of Related Literature

- Distance Learning

In 1973 Moore (1996) introduced the theory of independent study. An important foundation of distance education, it suggests that successful teaching can take place even though teacher and learner are physically separated during the learning process (Galusha, 1997). Moore (as cited in Owoeye, 2003), defined distance education as the form of planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements. Greenberg (1998) defined contemporary distance learning as “a planned teaching/learning experience that uses a wide spectrum of technologies to reach learners at a distance and is designed to encourage learner interaction and certification of learning”.

Distance education offers opportunities for students who cannot travel to a campus for their classes. Teaster and Bliesner (1999) said “the term distance learning has been applied to many instructional methods; however, its primary distinction is that the teacher and the learner are separate in space and possibly time”.

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According to Keegan (1996) Distance education is a form of education characterized by:

- The quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education).
- The influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services (this distinguishes it from private study and teach yourself programmes).
- The use of technical media – print, audio, video or computer – to unite teacher and learner and carry the content of the course.
- The provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education).
- The quasi-permanent absence of the learning group throughout the length of the learning process so that people are usually taught as individuals rather than in groups, with the possibility of occasional meetings, either face-to-face or by electronic means, for both didactic and socialization purposes.

If we accept that online education represents a subset of distance education we may define online education by accepting Keegans’ definition and changing the third and fourth points to the following:

- The use of computers and computer networks to unite teacher and learners and carry the content of the course.
- The provision of two-way communication via computer networks so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education).

Distance Learning Theories

In recent years, researchers and theorist has figured out a number of distance learning theories. In 1995 Tebeaux (1995) reviewed four theories of distance learning. First, Keegan's (1996) theory of distance learning, in it, he “emphasizes the independence of the student through technology”. Tebeaux (1995) describes Keegan's (1996) theory of distance learning by stating: “The system should free students and teachers from the need to inhabit the same physical space, allow students choices in learning formats, incorporate use of proven teaching methods, combine media and methods so that the subject is taught in the best way possible, employ multimedia, allow students to adapt material to their individual learning difference and learning speeds, and allow accurate evaluation of student achievement.”

The second theory is Peters' theory of distance learning, similar to Keegan's (1996) theory, Peters (2002) focuses on the impact of technological changes on distance learning. According to Peters (2002), technology will redefine the roles of instructor and student. The instructor will become less authoritarian and more of a facilitator or counselor supporting student learning while the student will become more autonomous and self-directed in study. The third theory is Holmberg's (1985) theory of distance learning, which expands on Peter’s (2002) idea of instructor and student role changes. Tebeaux (1995) states “Holmberg (1985) proposes that distance learning will promote more motivated and interested students.

This increased motivation, he says, will result from increased student interaction with content, better student access to the information, more student opportunity to shape and manipulate course material, and, consequently, more personal educational choices.” The final theory Tebeaux (1995) reviewed is Perraton's (1998) work, which included many of the ideas of Keegan (1996) and Peters (2002) and extends their theories by emphasizing that “effective distance learning requires multimedia programs, regular activities, feedback, and a carefully organized delivery systems.”

These theories show how distance learning differs from traditional learning in its focus on student autonomy, instructor role changes, and technological impact. These theories can assist instructors in conceptualizing courses and more particularly in establishing educational objectives. Moreover, if the instructor’s goal is to promote student learning as well as student interactivity with the content and with
each other, then distance learning theories can assist the instructor in course design and develop interaction activities.

**Blended Learning (BL)**

Integrating web-based learning with the traditional face-to-face distance learning is also termed as blended learning. Singh and Reed (2001) see blended learning as a learning programme where more than one delivery mode is being implemented for optimization of learning outcome and cost. Garrison and Vaughn (2008) describe the basic principle of blended learning as a situation where face-to-face oral communication and the online written communication are optimally integrated so that the strengths of each are blended into a unique learning experience congruent with the context and intended educational purpose. Also, blended programmes are seen as enhancing faculty and student satisfaction through a more efficient use of learning time (Bourne & Seaman, 2005) by reducing commute times.

At the Sloan-C Workshop on blended learning, Laster et al., (2005) defined blended learning as courses that integrate online with traditional face-to-face class activities in a planned, pedagogically valuable manner; and where a portion (institutionally defined) of face-to-face time is replaced by online activity.

Studies have shown that students enjoy the blended learning experience (Akkoyunlu & Soylu, 2006, 2008; Balci & Soran, 2009) and that students in higher level academic work do not want to continue their education only in the traditional face-to-face learning environments nor do they want a purely online learning environment. They would like to meet and discuss the course content with their instructors and peers, but would like to use information technology as a learning tool as well (Orhan, 2008).

McCampell (2001) emphasizes that blended learning will be a suitable approach for incorporating online applications into an existing course programme for the first time, but at the same time keeping some interaction. He goes on to highlight that some parts of the course content should be transferred to the online environment (e.g., forum, e-mail, web environment) without offering the whole courses online, as this could affect students’ performance and satisfaction.

It is important, therefore, to establish some level of balance between the face-to-face delivery and delivery in the online environments, in view of the advantages and drawbacks of both methods.

**Web-Based Learning**

Almost 3.5 million students (20 percent) were taking one or more online courses in most countries (Allen & Seaman, 2007). Universities, continuing education institutions and commercial organizations are turning to online learning for valid reasons (Taylor, 2002). Various scholars have defined Web Based Learning (WBL) as “a hypermedia-based educational program which utilizes the attributes and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported” (Khan, 1997); “the application of a repertoire of cognitively oriented instructional strategies with a constructivist and collaborative language learning environment, utilizing the attributes and resources of the World Wide Web” Relan and Gillami (1997) also defined Web-based Learning as “individualized instruction delivered over public or private computer networks and displayed by a web browser”. All of these definitions have a common feature: internet or the World Wide Web.

Maddux (1996) has stated that some unique characteristics of the web include: information on the WWW can be made interactive in nature; and it often makes use of multimedia, including graphics, sounds and animation. The web also provides effective and efficient searching tools than traditional searchers in libraries and the pages retrieved from the web are more attractive and appealing than traditional printed media. These characteristics make the web more attractive to more students.

In terms of pedagogical features of the web, WBL facilitates communication, enhances interactions, provide student-centered, self-paced, and collaborative learning, disseminates shared information, and reaches out to global communities (Downing and Maddux, 1996; Chellappa, et al., (1997). McCarthy and Grabowski (1999) have also stated that, incorporating Web-based lessons and traditional classroom
activities is a new way for teachers to utilize computer technology to enhance learning and student’s performance.

- **Acceptance of Web-Based Learning**

  Hong, Lai and Holton (2003) investigated a web-based course at University Malaysia Sarawak and reported that more than half of their participants had high level of acceptance with the web-based course. The students who had high level of acceptance indicated that the web-based course was convenient and flexible. Nonetheless, some students faced difficulties with the web-based learning environment. They found the web-based course to be a new learning experience and felt that they needed more guidance and time to adapt to the learning environment (Hong et al., 2003). Meanwhile, Poon et al. (2004) studied web-based learning environments at several local universities in Malaysia and reported that their participants were not fully comfortable with e-learning. Likewise, Poon et al. (2004) posited one possible reason was that the students were unfamiliar with the e-learning medium.

  On the positive side, Hong et al. (2003) and Poon et al. (2004) reported that students generally agreed that e-learning helped in their studies. However, past research showed that a number of factors such as students’ and instructors’ characteristics (Hong et al., 2003; Ndubisi, 2004; Poon et al., 2004), technology support and system (Poon et al., 2004; Rafaeli & Sudweeks, 1997), institutional support (Passmore, 2000; Latifah & Ramli, 2005), course content and knowledge management (Selim, 2005; Rosenberg, 2001), and online tasks and discussion groups (McDonald, 2001; Webb, Nemer, Chizhik, & Surgue, 1998) could influence learners’ acceptance of e-learning.

  - **Characteristics of Students**

    Poon et al. (2004), Folorunso, Ogunseye, and Sharma (2006), Selim (2005) and Volery and Lord (2000) reported that students’ characteristics such as their satisfactions with time and place flexibility of the system; students’ involvement and participation; students’ cognitive engagement; students’ level of self-confidence; students’ technology self-efficacy; students’ initiative and motivation and students’ anxiety could influence acceptance of e-learning among students.

  - **Characteristics of Instructors**

    Hong et al. (2003) and Shea, Swan, Fredericksen and Pickett (2001) believed that lecturers played an important role in successful e-learning experience. Lecturers must ensure an optimum level of interactions and discussions with students to enhance the e-learning experience. Moreover, lecturers could influence and motivate students to accept e-learning environment (Ndubisi, 2004; Ndubisi & Chukwunonso, 2004; Selim, 2005). According to Salmon (2000) and Abouchedid and Eid (2004), instructors’ characteristics such as confidence, positive behaviours, facilitation, knowledge sharing and creativity could promote interactions and motivate students to learn in an e-learning environment.

- **Benefits of Web-based Learning**

  The benefit of incorporating web-based learning into traditional classroom learning is that it overcomes barriers of physical distance and time. It also makes possible learning experiences that are open, flexible, and distributed, providing opportunities for engaging, interactive, and efficient instruction (Kahn, 2001).

  Lowers costs and increases institutional enrollment; From an institutional or organizational perspective, web based education is cost-effective. Many institutions are offering web based education courses or programs in order to save money. Delivering education to students that are unable to attend classes because of time or distance increases the institution’s enrollment numbers without increasing the overhead (Valentine, 2002). The need for permanent teaching facilities is also reduced since the students can access the online information from the convenience of their own homes. Employers utilize online courses as a way of reducing the cost of training their employees as well as increasing productivity since the employees spend less time away from the office (Taylor, 2002). Cook (2007) asserts that web based education also permits economies of scale. Once an online course has been developed the class size is
only limited by server capacity and bandwidth (Cook, 2007). The course resources such as entire courses or individual components like reusable learning objects may be shared in order to avoid the redundancy in developing course materials (Cook, 2007; Candler & Andrews, 1999).

Offer convenience and flexibility; Online learning provides education to students in a more time-efficient and convenient manner. Berge (2000) asserts, “Online, web-based classes can often ‘fit around’ students’ lifestyles and obligations”. Students can access the instructional materials at a time and place that is convenient to them (Cook, 2007; Smallwood & Zargari, 2000). Online instructional modules are available for use at any time. This is especially important for non-traditional students whose lifestyles value “part-time study” and therefore need the flexibility of online learning (Berge, Collins, & Dougherty, 2000).

Reach remote students; Online education allows instructors to reach students in different geographical areas as well as students who would otherwise be unreachable (Taylor, 2002; Valentine, 2002). Students such as working adults, stay at home moms, the military deployed, and the elderly and handicapped now have unlimited opportunities to take courses and attain degrees from a distance because they are no longer limited to educational opportunities which are within driving distance of their home (Truluck, 2007). This in and of itself has far-reaching implications in that it helps students obtain an education.

Promote individualized learning; Web based education allows students to take control of their own learning and therefore learn at their own pace. Students can be given greater control over the learning environment by allowing them to select from the learning modules or course material which best assists their own understanding and retention (Cook, 2007). In addition, material can be reviewed at a later time or as many times as necessary in order to master specific skills or retain knowledge (Berge, Collins, & Dougherty, 2000).

The rest of the paper looks at the methodology, empirical results and discussions and conclusions.

3. Methodology

The University of Education Winneba, Institute of Distance Learning (UEW-IDL) was the distance learning tertiary institution investigated, with approximately 1,150 students at its Kumasi Center in 2013 as the targeted population. 13 item questionnaires were distributed to 350 selected students randomly from the bachelor and diploma programmes (Basic Education and psychology), and the special teachers bachelor programmes (Special Education) the total number of questionnaires returned was 300. A quantitative approach was selected for the study focusing on the development of structured questionnaire used as instruments for gathering information from students. Data were collected from the participants using questionnaires. The first part of the questionnaire gathered information pertaining to the participants’ background such as age, gender and computer use experience. The second section of the questionnaires determined the learners’ awareness and acceptance of using web-based learning. The final part also gathers information on the challenges learners in using the blended learning (incorporating web-based learning into the traditional classroom distance learning). The data obtained from the questionnaires were analysed and presented using the special software for the social sciences (SPSS) version 17.

4. Analysis of Results

In analyzing the background information of the students in order to find out if it has an effect on the usage of the web-based learning in distance education; it was found out that, the gender of the students had an effect on how effective the students use the web-based learning system. Out of the 300 respondents, (70.7%) were female while (29.3%) were male, therefore the system was not effectively used since it is widely accepted that males enjoy using technology in learning more than females. Majority of the students (71.7%) were between the ages of 36 – 45 years, (20.3%) were between the ages 334
of 26 – years while only (8.0%) were between the ages of 18 – 25years. It was therefore noticed that, most of the distance learning students were old teachers who want to further their education and because of that they don’t have the time to use the web-based learning system as used by the young ones.

When the learners were asked where they live and work (teach), it was known that (54.3%) of the total respondents live and teach at the villages, (26.3%) teaching in small towns while only (19.3%) were teaching at the cities. This made it known that those living at the villages dominated those in the small towns and cities where they have poor access to internet, electricity and even communication network to enable them use the web-based learning system when they are in their various homes, thereby reducing the effective use of the web-based learning system being integrated with their traditional distance learning in order to enhance their leaning and performance.

Further, the respondents were asked if they have access to internet café, communication networks in their villages, towns and cities where they teach. It was derived that (65.0%) said they have access to communication networks and internet cafés while the remaining (35.0%) said they have no access to internet café and communication network which will enable them to use the web-based learning system effectively. Because computers are indispensable when it comes to the use of web-based learning by students, it was necessary to find out from students if they have computers. Out of the 300 respondents, 126 learners representing (42.0%) responded that they have computers while the remaining 174 learners representing (58.0%) said they don’t have computers. Respondents were again asked if they are even aware that the University of Education has a school management system which is incorporated with school management system that enables students to download their study material from and upload their assignments to, it was known that (66.0%) of the respondents are aware of the existence of such system while (34.0%) said they were not aware.

When respondents were asked how they receive their study materials, (27.3%) of the total respondents said they download it from the University’s website, (38.3%) said they take them from their study centers while (34.3%) said they take the soft copy from friends who have downloaded it from the school’s website. In order to be more convinced, the students were again asked how they submit and receive course assignments. It was also derived that (34.3%) of the respondents said they download assignment online from the school’s website and upload finished assignment back to lecturers on the website, (38.3%) said they receive and submit their assignments by manually taking it from lecturers during lecture meetings at their study centers, while the remaining (27.3%) also said they submit their assignments to lecturers through their personal e-mails.

Respondents were asked if integrating web-based learning into the traditional face-to-face distance learning is helping them. The response showed that, (89.0%) of the respondents liked the integration while (10.7%) were against the integration. Because of this, the researcher tried to find out how the integration of the web-based learning system is helping the students. Out of the 300 respondents, 160 (53.3%) said the integration help reduce the hardship students go through to submit assignments to lecturers which sometimes requiring them to visit lecturers at their various working places and homes, 140 (46.7%) of them also said the web-based learning system help students to get access to study material on time, sometimes before the beginning of the semester.

Students were then asked if they have any other means to communicate with their lecturers aside their normal lecture meeting days. Majority of the respondents ((87.7%)) said they communicate with the lecturers through their cell phones, (2.3%) of them said they communicate with the lecturers through e-mails and the remaining (10.0%) also said they communicate to their lecturers through a forum discussion on the Le MASS where they asked any question bothering them online for the lecturers also to respond and send them the feedback.

Finally, the respondents were asked to tell some of the challenges they face with the integration of the web-based learning with the traditional face-to-face distance learning. A total of (65.0%) of the respondents complained of poor access to internet access at their various homes and working places makes it difficult to use the web-based learning system effectively while (35.0%) of the respondents also
complained that lack of technical knowhow on how to use the system makes the system unfriendly to be used by most students especially the elder ones.

5. Discussion

The present study also revealed that distance learning students still showed a preference for the traditional face-to-face learning sessions rather than relying solely on the web-based learning or the blended learning environment. This was consistent with results reported in several local and foreign studies (Ndubisi, 2004; Poon et al., 2004). This observation indicated that the traditional face-to-face distance learning method was still accepted to be more effective in distance learning. However, several studies such as Dewhurst, Macleod and Norris (2000) and Tweddle et al. (2000) indicated that students were generally satisfied with online learning. Nevertheless, unifying face-to-face learning with some web-based learning models may help distance learners to cope better with their studies (Hong et al., 2003).

The findings of the study also reported that students were able to engage themselves with online discussions. Poon et al. (2004) believed that knowledge sharing in online discussions would help students and was an essential part of distance learning. Benigno and Trentin (2000) suggested that interactions with peers, instructors and the supports available via online discussions correlated with acceptance of web-based learning and the performances of distance learning students. However, in the case of Poon et al. (2004), most of the students gave low emphasis in giving feedbacks to peers and instructors as was similarly reported in this study. This could mirror the traditional views of learning which placed more importance on getting the correct answers and believing that instructors should provide the answers (Poh & Abu Samah, 2006)

Several researchers had identified the design of web-based learning system or web-page (Hong et al., 2003; Rafaeli & Sudweeks, 1997) and e-learning system (Folorunso et al., 2006; Poon et al., 2004) as important aspects of the “technology and system” factor in acceptance of e-learning. The results in this study indicated that students had moderate level of web-based learning acceptance for the factor of “technology and system”. Hong et al. (2003) and Rafaeli and Sudweeks (1997) stated that an e-learning or web-based learning system or a web-page with harmonious configuration of colour and background enhanced students’ interest to study. Attractive combination of colours with appropriate graphics and animations on web sites were useful in delivering information in a user-friendly way (Carlson & Zhao, 2004; Hong et al., 2003; Poon et al., 2004). Likewise, the finding of this study showed that students indicated that the design of web-based learning system could help in their learning since a user friendly system will require little technical knowhow to operate while a complex system may need intensive training before one can use the system.

Nevertheless, the study also found some challenges students face in using the web-based learning as a system to augment the traditional face-to-face distance learning. In addition, poor Internet services, and lack of internet access could also impede distance learning programmes (Folorunso et al., 2006; Hong et al., 2003). These technical problems could affect the students’ willingness to accept and use the web-based learning (Hong et al., 2003).

6. Conclusion and Recommendation

The finding shows that, the extent to which distance learning students at University of Education Winneba uses the web-based learning system is very low. It was derived that factors such as age, gender and places the learners teach or work makes it difficult to make effective use of the web-based learning system which is integrated into the traditional distance learning program. Though students wanted to use the web-based learning system, it was known from the respondents that most learners lack the technical knowhow in using the learning system. Apart from the above challenge, it is also known that most
students don’t have access to computers; internet and communication network whereby students can access the web-based learning system either on a computer or on their mobile phones.

As proposed by various past researches, the institutions should provide courses to guide students to maximise the use of web-based learning for learning purposes. It is hoped that the findings of this study could assist distance learning institutions in Ghana improve the quality of learning experiences and help improve further research in the area of acceptance of blended distance learning, and distance learning would be one of the pillars of higher education in future (Jefferies & Hussain, 1998). Students should also be motivated to use the web-based learning system no matter their age and gender.

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