THE ROLE OF TECHNOLOGY FOR IMPROVING DISTANCE EDUCATION IN GHANA: A PEDAGOGY APPROACH

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Abstract

Digital and emerging technologies have become so pervasive that every life on earth depends on them. However, the goal of delivering a high quality education for every child and student in Ghana remain unfulfilled. However, there are key challenges that are deterring the radical transformation of Distance education in Ghana, but technology presents an opportunity for this to be a reality. Digital and emerging technologies have become so pervasive that every life on earth is benefiting from them. Distance education has been through the use of technology which offers economies of scale and as one way of reducing cost. This paper aims to investigate types of distance education and explore how technology can be used to transform the implementation of distance education which is essential for institutions in Ghana attempting to meet the learning needs of their students. In recent years, information and knowledge has been a trend in the improvement of learning and this is based on individual knowledge base with increased use of Educational Technology and online educational resources. However, information and communication technology (ICT) presents an opportunity for this to be a reality through the extraordinary opportunities ICT and the internet in this 21st century Education can offer. These technologies continue to evolve and transform the way almost everything is done including distance education that is becoming essential for institutions in Ghana that are attempting to meet the learning needs of their students.

This paper identified and outlines key findings, the current trends and gaps in the implementation of Distance education in Ghana, types of distance education; the role that technology can play in the implementation of Distance Education. Based on this, an innovative framework that maps e-learning tools required for future effective pedagogy approach in the implementation of distance education in Ghana.

Keywords: Pedagogy Technology; Distance Education; Educational Technology; ICT.

1 METHODOLOGY

A preliminary study based on literature and interviews were considered to investigate and address the problems with Distance Education (DE). This method was selected because the goal of the research is not to achieve statistical generalization at this point rather analytical generalization (Yin, 1994). As such, some user representative of the institutions were interviewed.

A case study approach was used. This case study approach was more revealing because the aim is to establish current practical and technical problems affecting online distance education in the Educational sectors in Ghana and the role that e-learning development plays in line with identifying different paradigms for managing information systems and technology (Anderson, 2003; Denzin and Lincoln, 2003).

Finally, this study broadened the view of the e-learning management since this pertains to a wider context of the Educational sector which is of great relevance to public and private sectors of this study. Interviews were used for different purposes to help:

- Collate and gather facts about the procedures of online systems development in the areas studied;
- Ascertain levels of understanding of users of the current systems; and
- Validate aspects of proposed system design to enable the new system to be implemented with confidence.

The study area is an institutional sectors comprising many users led by IT Directors. At present the institutions in Ghana are not able to take advantage of existing e-learning tools to enable the implementation of the state-of-the-art online learning. Attempts for users to access information from
central repository from different locations have not been successful. As a consequence of this it was agreed by various institutions that an interactive e-learning platform for users should be established.

### 1.1 Studying Reports

Reports were studied to obtain a clear idea of the policies and decisions of distance education. Any improvements that had been made by key decision-makers during recent years were also revealed. By studying the reports, interviews were tailored to the distance education. The report touched on the need to improve efficiency by collaboration with other institutions. These findings helped guide the range and depths of follow up questions after the initial interview.

Excepts from Interviews

**Question:**
What are the current problems facing the distance education in Ghana?

**Answer:**
According to the knowledge management leaders, the current learning management system available to the education are not simple. This is because: (i) uploading, retrieving and storing lecture notes are not capable enough; (ii) accessibility and visibility of the study materials are not good enough. (iii) The system is unable to archive information because of its fragmented nature; (iv) the software tools used in developing the system is not dynamic; (v) most developers are unable to develop dynamic learning management to reduce the fragmented systems and (vi) the most cost-effective methods for developing efficient virtual classroom cannot be quantified.

**Question:**
What procedures are used when attempting to develop Online education

**Answer:**
According to one senior IT assistant responsible for knowledge management, success of this aspect of e-learning policy depends on the availability of better tools needed for decision makers to make timely and informed decisions to process e-learning information.

**Question:**
How do you operate in the sector and are there any technology training in place for using the current system to help capture, transfer and archive documents

**Answer**
There are many web-based systems available. Some were developed in house while external software consultants developed others. Overcoming the technical challenges in monitoring service change elements using software components is a hurdle.

### Key Requirements Based on Interviews

Based on the interpretation of the interviews, the requirements in terms of system features were identified.

Web-based server software which features course management system.

Learning Management Systems (LMS), or Virtual Learning Environments (VLE developed by a community of academic institutions distributed under the Educational Community License.

### 2 RESULTS

In recent years, information and Communication Technology (ICT) has been a trend in the improvement of e-learning that is based on individual knowledge base and use of Educational Technology and online educational resources. However, information and communication technology (ICT) presents an opportunity for this to be a reality through the extraordinary opportunities ICT and the internet in this 21st century Education can offer.
Distance Education has been through the use of technology which offers economies of scale and as one way of reducing cost. However, there are key challenges that are deterring the radical transformation of distance education in Ghana. Some of these key challenges are: the lack of well-planned teaching and learning strategy that incorporates technology; unequal access to computers and the internet and most importantly the fact that unstable power supply is a challenge; lack of expansion of access together with slow access to the internet; financial support in the implementation of distance education; and lack of training and development of students as well as lack of innovative approach to technology innovation process (Agyemang 2014).

Distance Education (DE) is providing education at a distance, be it virtual, video, face to face, email, web and etc. where teachers and students do not meet in a classroom but IT is the enabler. There are different types of DE namely: Distance Education via Video Conferencing; Synchronous and Asynchronous Distance Education; Open Schedule Online Courses; Hybrid Distance Education; Computer Based Distance Education; and Fixed Time Online Course [Hwang 2014].

**Distance Education via Video Conferencing:** Enhances one-to-one interaction with faculty and paves a way for the teachers to plan their lessons. Students can attend their missed classes via Video Conferencing and helps them to stay update.

**Synchronous and Asynchronous Distance Education:** demands live communication by online or teleconferencing

**Open Schedule Online Courses:** internet based textbooks, email and bulletin boards. Students who want to work independently

**Hybrid Distance Education:** Students are permitted to complete assignments on their own time and submit those assignments via online forum

**Computer Based Distance Education:** classroom or computer lab at a specified time every week

**Fixed Time Online Course:** courses are online but the students need to log-in to their learning site at a designated time

According to Rothwell and Lindholm (1999) DE capabilities refer to institutional mechanisms that continuously create e-learning and encourage the storing and protecting of learning materials of the institution.

Currently DE problems in institutions implementing online education do not possess e-learning abilities that are able to support institutional practices and routines as well as knowledge management infrastructure capabilities which are part of DE. Three institutions studied revealed that most of the problems they are encountering are almost similar [Noesgaard & Orngreen]. These are:

- There are no proper communication between teacher and learner as well as inadequate infrastructure and e-learning structure. There are cultural issues as well as gender disparity which is more pronounced in the rural areas.
- There are no adequate staff development programmes for sustainable career structure and instructional materials, books and learning materials.
- Declining standards in quality with learner achievement test results comparing unfavorably with other countries in the region.
- Lack of funding from the government.
- Inadequate lack of effective monitoring of the management.
- Inadequate directional, relevant and functional curriculum.
- Inadequate teaching and learning facilities leading to poorly prepared students and lack of self confidence in student graduates.
- Lack of correct and reliable operational data and statistics for education Planning.
- Inadequate administrative procedures.
- Lack of systematic approach in ICT use in distance education settings in order to tap into the potential of ICTs to address the challenges in the distance education system.
Based on the review, the current e-learning systems have problems with duplication of modules, disparate systems (silos), lack of cooperation and interactive learning. Inadequate infrastructure and e-learning structure.

**The question is: What role will IT play in combating DE problems in Ghana?**

It has been claimed that we live in an information age where knowledge and information have become key factors in the growth of contemporary society triggering socio-political and economical as well as cultural and spatial changes (Pandy & Dutta 2013). Information technology (IT) is the application of computers to store, study, retrieve, transmit, and manipulate data, or information, often in the context of a business or other enterprise. Information and communications technology (ICT) is an extended term for information technology (IT) which stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information (UNESCO, 2016).

Based on the review of literature, it has been found out that in order to use technology in supporting these problems regarding distance education in Ghana, the table below depicts the key factors that will drive policy development when implementing DE.

There are no adequate staff development programmes for sustainable career structure. Therefore instructional materials, books and learning materials should be made available to Educators and trainers. Policy for DE should be developed. Information Technology can play a major role of unified to unify the integration of computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information. However there are tools listed below can support these integration such as blackbox moodle, sakai, Mooc, sakai, bespoke etc. This tools listed below should be addressed in detail and the right tools choosing for implementation of DE.

### 2.1 Blackbox

It is Web-based server software which features course management, customizable open architecture, and scalable design that allows integration with student information systems and authentication protocols.

### 2.2 Moodle

Open source platform that provides educators with the technology to provide online learning in personalized environments that foster interaction, inquiry and collaboration. In private or public Moodle sites, educators, trainers and employers can create and deliver online courses so their respective audiences can meet and exceed their learning goals.

### 2.3 MOOC

A massive open online course (MOOC) is an online course that has open access and interactive participation by means of the Web. MOOCs provide participants with course materials that are normally used in a conventional education setting - such as examples, lectures, videos, study materials and problem sets.

### 2.4 Sakai

Platform designed to support teaching, research and collaboration. Systems of this type are also known as Course Management Systems (CMS), Learning Management Systems (LMS), or Virtual Learning Environments (VLE). Sakai is developed by a community of academic institutions, commercial organizations and individuals. It is distributed under the Educational Community License (a type of open source license).
The figure below shows the key factors that will drive DE policy development.

### Table 1. Key factors of DE Policy Development

<table>
<thead>
<tr>
<th>Policy Development Area</th>
<th>Key Factors</th>
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<tbody>
<tr>
<td>Academic</td>
<td>Academic calendar, course integrity, transferability, transcripts, evaluation process, admission standards, curriculum approval process, accreditation</td>
</tr>
<tr>
<td>Fiscal</td>
<td>Tuition rate, technology fee, FTE’s, consortia contracts, state fiscal regulations</td>
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<tr>
<td>Geography</td>
<td>Service Area Regional limitations, local versus out-of-state tuition, consortia agreements</td>
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<tr>
<td>Governance</td>
<td>Single versus multiple board oversight, staffing, existing structure versus shadow colleges or enclaves</td>
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<tr>
<td>Labor-Management</td>
<td>Compensation and workload, development incentives, intellectual property, faculty training, congruence with existing union contracts</td>
</tr>
<tr>
<td>Legal</td>
<td>Fair use, copyright, faculty, student and institutional liability</td>
</tr>
<tr>
<td>Student Support Services</td>
<td>Advisement, counseling, library access, materials delivery, student training, test proctoring</td>
</tr>
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### 3 CONCLUSION

There are key challenges that are deterring the radical transformation of Distance education in Ghana. Some of these key challenges are: Training and professional development (lack of a well-planned teaching and learning strategy that incorporates technology); Internet connectivity (lack of expansion of access together with a high speed internet that can generate major economic growth and rapid job creation; lack of financial support from Government in the implementation of distance education. Distance Education has come to stay. However, it has overwhelming potential to improve education systems in Ghana and if implemented well with strategies that focus on overcoming these key challenges, radical transformation of the education system is possible. This will also mean caution should be taken when service providers seeks to offer DE services. Background check is important as most of them may be offering such services that may fit different discipline.
REFERENCES


