Instructional Analysis and Design of e-Learning Skills Training for University of The Gambia

by

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ABSTRACT

This era of digital technology has evidenced an institutional rush for embracement of e-learning delivery techniques in education. Hence institutions that are digitally disadvantaged are as well wanting in their provision of effective and efficient education to students. The Gambia's only university that is supposed to train its human capital for national development is still trapped in the traditional face-to-face delivery system. However, the same university has been selected as a pilot site for Pan African e-Network; a project that is supposed to collaborate more than twenty universities in Africa with universities in India through a viable e-learning system. But, is the University of The Gambia (UTG) ready for e-learning implementation? If UTG is ready, what proposed design could be used in this implementation?

It is against this backdrop that this research looks at the readiness status of the young University in order to propose an instructional design of an e-learning training programme for lecturers. ADDIE model of instructional design has been adopted to analyse readiness and to propose an instructional design or strategy of the proposed content. As such quantitative and qualitative methods have been employed to analyse data from The Gambia through descriptive and nonparametric statistics, and expert interview data on relevance and delivery, monitoring and evaluation of training content, respectively.

Eventually, UTG's readiness was revealed at marginal levels for three of the support systems; infrastructure, training and human capital, and material and financial capacity, and has been found wanting in incentives for promotion of e-learning. The researcher thereafter draws a strategic map for delivery of a thoroughly analysed e-learning content.

This research study therefore does not only reveal UTG's e-learning readiness status, but also outlined a process that could be utilised by other institutions to appraise their e-learning readiness status. Again, it does not only give UTG a competitive advantage over other institutions, but also provides an ADDIE adopted instructional design of e-learning skills training that is applicable in other institutions and corporate entities for staff training.

Keywords: Instructional design, ADDIE model, computer and internet skills, e-learning readiness, learning theories.

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CHAPTER 1. INTRODUCTION

Chapter Overview

This chapter introduces the research study by elaborating on the rationale and trends of e-learning related information and communication technology (ICT), research statement, purposes and questions to ask in addressing the purposes. It further discusses significance of the study, and the impending delimitations and limitations, and closes the chapter with the definitions of some relevant terms one shall be coming across all through the research study.

Background of the Research

All over the world institutions are embracing e-learning. This is dictated by the new world order in education industry. However, those institutions that cannot maximise the use of internet in their education process are simply at a disadvantage. And if education is closely correlated to development, it could equally be asserted that the institutions referred to above would not be able to disseminate quality knowledge and the requisite skills and attitudes that will steer genuine development in their respective communities. Their mishap is largely due to digital divide; a gap that exists between people and places in their access to Information and Communications Technology (ICT), and also the skills they have in utilising ICT to their advantage, which, according to Bothma and Fourie (2006), is partly because they are at different socio-economic levels. It is therefore inevitable that these institutions cannot harness digital technology, which is an unfortunate situation for third world countries such as The Gambia. And this goes on to charge that their media for educational delivery have negative impacts on the preparation of their youths for the demands of knowledge societies.

Moreover, the nature of today's workforce and knowledge distribution call for introduction of e-learning in order to cut down costs, neutralise former barriers of time and space, and benefit from distributed knowledge, skills and attitudes that are required for institutional specialities. Rosenberg's (2001:9) citation of Prusak speaks well in favour of this assertion: "Organizations' one major advantage over others in terms of competitive advantage is their swiftness in knowledge acquisition and its use", Prusak, IBM (1997). For Rosenberg (2001:28), this competitive advantage is supposed to be the use of internet technologies to deliver a broad array of solutions to enhance learning and performance. One can even

advance that such disadvantaged institutions face bleak educational future (Harmon & Jones, 1999), and their only option is to join the 'frenzied drive towards the web-based cliff'. In view of this argument the researcher re-echoes a strong need for a pedagogical paradigm shift in the University of The Gambia (UTG). Hence, in 'Distance and Distributed Learning Environment' edited by Harvice and Harvice (2005), Pisel and Ritz (2005: citing Read, 2003) in a chapter on 'Strategy for Planning, Designing, and Managing Distance and Distributed Learning at the University' it is reported that online courses alone increased by nearly 20% in 2002 with over 1.6 million students. And in a press release, Moore (2005), the Director of Middle East Learning Technologies (MELT), declared that the industry of e-learning is a $23 billion global industry in 2004, and that there were about 130 million on-line learners across the world. Again, in a research reported by Allen and Seaman (2007), it is revealed that in United States (US) alone 3.48 million students are doing at least one online course, and 20% of all higher education students in US take at least one online course, and about two-thirds of all higher education institutions have some form of online offering (Allen & Seaman, 2007).

Unfortunately, low internet penetration and improper library information system (LIS) is already weighing down UTG's academic standing in the industry. The ill-equipped natures of the University Library and Gambia National Library in terms of human and material resources and internet penetration –the country reportedly has a percentage internet penetration of 5.8 (World Internet Report, 2008) – are undermining factors of such initiatives. Generally, internet service provision is characterised by poor and uneven ICT infrastructural development (Owhotu, 2006), and this impinges on quality access and cost of services (Jobe, 2007). Even though there are five Internet Service Providers; GAMTEL, QuantumNet, Netpage, Airtip, and Unique Solutions, which is all the more the reason for cheaper dial-up services as compared to most countries in Africa (Darboe & Jobe, 2007; Jobe, 2007), yet still, very few academic institutions have ICT incorporated in their curricula (Mangesi, 2007). According to Clarke (2007) and Owhotu (2006) The Gambia is among those countries in the sub-region that are faced with the issues of budget, infrastructure, low internet access, manpower, motivation and even resistance to e-learning pedagogical paradigm shift. Subsequently, as argued by Lai and Touray (2008), The Gambia's low national ICT penetration is mirrored in UTG; the country's highest learning institution. And the situation has undermined the claim for a solid academic standing in the knowledge industry at a global level. Even though there is a broadband internet network that links offices and computer

laboratories in the UTG's Administration Building to a central backbone with a recent allotted bandwidth of 512 Kilobits, students could only have reliable access in two computer laboratories, with a student-computer ratio of forty students to a computer (40:1). Worse still, each lucky student has an hour access to internet in a day. Lecture-notes and lessons are often handed down in the traditional face-to-face fashion such as dictating or writing down notes on chalkboards (Lai & Touray, 2008).

However, a seeming remedy to the menace created by academic digital divide for The Gambia, and its cohort of disadvantaged third world countries in Africa, is the launching of a pilot phase of the Pan Africa e-Network project in UTG. This is an e-learning initiative in Africa (Daily Observer Newspaper, 2008) designed to develop the ICT infrastructure of twenty-seven countries on the continent. But, is UTG ready for e-learning implementation? And If UTG is ready, what proposed design could be used in this implementation?

This argument pre-supposes two key points; first, there is an academic digital gap between The Gambia's only university and those institutions in other parts of the world; much especially those in the Developed World, which, as well, classifies UTG as one of the aforementioned disadvantaged institutions. Second, even though there is a pilot phase in place, what still remains unanswered is whether UTG is ready enough to embrace e-learning initiative of the proposed magnitude, and if they are ready, how would it be implemented.

To this end, the research study is designed to identify UTG's readiness and proceeds to propose an instructional design that could be developed later into a training programme for lecturers' empowerment in the field of e-learning. Hence, an empirical study is desired to first analyse UTG's e-learning support systems, lecturers' characteristics in relation to e-learning readiness, and the training content, and then propose an instructional design or content delivery, monitoring and evaluation strategies. In this process the researcher did an institutional e-learning support system analysis, learner, objectives and training content analysis as required by ADDIE instructional design model. The proposed instructional design identified a relevant training content, strategies and methods to be adopted in a training process through a case study. The researcher conducted an observation on a Professor teaching an e-learning course to graduate students for thirteen weeks, and later conducted an interview with four renowned Professors in the area of e-learning. This brought into account different knowledge, skills and attitudes to be trained.

The development, implementation and evaluation of the proposed design (or of the ADDIE model) shall be pursued later.

Statement of the Problem

The concern raised in this research study is a genuine one, as long as education and development are intricately linked. It must be noted that UTG is tasked with the responsibility of producing high level workforce; but the institutional pedagogy is shrouded in the traditional face-to-face fashion. Moreover, there is an absence of adequate computer assisted learning, which is quite critical to the call for a pedagogical paradigm shift. And even though there is a pilot programme on e-Network in Africa which is one very vital initiative of the same paradigm shift, the lecturers would need training in order to develop e-learning skills. However, this design is strategic and has been fine-tuned to flow with the readiness status of the Institution and the entry e-learning/ICT skills of lecturers. From a number of indicators, UTG atmosphere seem to be denying its community the opportunity to maximally harness the distributed knowledge on the World Wide Web (WWW). This could be translated as the current undesired market share, other forms of competitive disadvantages such as lack of access to digitised distributed knowledge, and production of highly skilled workforce.

Purposes of the Research

The underlying factor to this research study is to empower UTG to have a greater market share, not only in her student enrolment, but also through the preparation of these students or learners to compete successfully in both local and international labour markets. This is possible by preparing the workforce (lecturers) to develop distance learning or online programmes for corporate institutions, students and other organised bodies, such as governmental and non-governmental institutions. The programme is also designed to create the opportunity for gaining access to distributed information as well as other educational opportunities to both learners and instructors. This is UTG's business goal as dictated by the proposed training programme. It is to create a competitive advantage for UTG in terms of knowledge delivery, enrolment of students and greater financial stability. This would mean the research study should address certain objectives in a bid to create or design a training programme that can later be maximised in UTG to prepare the lecturers for this noble task. These objectives are herein outlined as the purposes of the research study:

1. Examining the e-learning readiness status of UTG at the Administrative level (university e-learning support systems). This looks into readiness in terms of University ICT infrastructural development, training and human capital support, budget, material and financial capacity, and incentives for motivation of lecturers;
2. Examining the e-learning readiness status of lecturers (learner/lecturer analysis) in UTG by exploring their computer and internet skills, thus revealing some empirical computer and internet related characteristics;
3. Analysing the content of the e-learning training programme that can be adapted later to train lecturers in UTG on e-learning skills; and,
4. Proposing an instructional design or instructional strategy of an e-learning training content delivery, monitoring and evaluation.

However, these purposes are meant to be achieved through the adoption of the ADDIE model of instructional design. This model has some generic nature and gives a more thorough analysis process of the environment, learners and the instruction before trainees go into training. ADDIE nonetheless, entails five phases that are all critical to any ADDIE adopted training, but this specific research study looks at only the two most critical phases; analysis and design phases. The other phases; development, implementation and evaluation shall be address in a separate study at a more convenient time. Figure 1.1 below captures the ADDIE model with an indication of the research study delimitation.

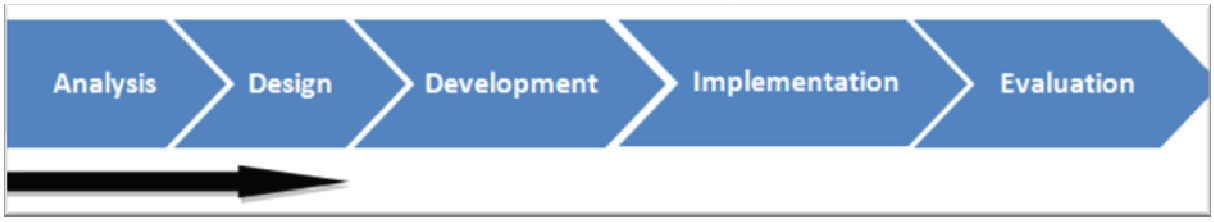

Figure 1. 1. ADDIE Model and the flow of the design process with the black coloured arrow showing the delimitation of the research study

Questions and Hypotheses of the Research

The nature of this research study has necessitates the use of both quantitative and qualitative research questions to address the aforementioned purposes. For research purpose

one and two quantitative research method questions have been formulated with hypotheses. This is to address the readiness of UTG at the Administrative level or the university e-learning support systems and readiness at lecturers' level. Fill-in and 'yes/no' question types were formulated and administered in self-assessed situations in order to address the demographics of lecturers, including lecturers' personal demographic and their access to computer and internet demographic variables, and demographics of UTG Administration,. However, five-point Likert scale questions (1; meaning totally disagree through 5; meaning totally agree) for the lecturers' e-learning readiness in terms of their skills in computer and internet usage, and administrative readiness in terms of university e-learning support systems such as ICT infrastructural development, training and human capital support, budget allocations and material and financial capacity, and incentives for lecturers' motivation. For research purposes three and four questions were formulated using the qualitative research format; semi-structured and open ended questions, as well as review of literature. The research study questions and their related hypotheses are herein sequentially outlined:

1. E-learning readiness status at Administrative level:

1A: Is UTG ready for e-learning initiative in terms of ICT infrastructural development?

1B: Is UTG ready for e-learning initiative in terms of training and human capital support?

1C: Is UTG ready for e-learning initiative in terms of material and financial capacity?

1D: Is UTG ready for e-learning initiative in terms of incentives for lecturer motivation?

2A. Lecturers' e-learning readiness status in terms of computer and internet skills:

$2A_1$. Are UTG lecturers significantly ready for e-learning implementation in terms of prerequisite computer and internet skills?

$2A_2$. Are UTG lecturers significantly ready for e-learning implementation in terms of prerequisite computer skills?

$2A_3$. Are UTG lecturers significantly ready for e-learning implementation in terms of prerequisite internet skills?

2B. Lecturers' characteristics in relation to computer and internet access:

Relationship between lecturers' gender, age, years spent in UTG, academic qualifications, departments, status, and lecturers' computer and internet training, teaching website ownership, online journal access, and personal computer access.

Hypothesis $2B_1$

H_o: Gender of UTG lecturers has no statistically significant relation to UTG lecturers' access to computer and internet.

H_a: Gender of UTG lecturers has a statistically significant relation to UTG lecturers' access to computer and internet.

Hypothesis $2B_2$

H_o: Age difference among UTG lecturers has no statistically significant relation to UTG lecturers' access to computer and internet.

H_a: Age difference among UTG lecturers has a statistically significant relation to UTG lecturers' access to computer and internet.

Hypothesis $2B_3$

H_o: The number of years lecturers spent in UTG as lecturers has no statistically significant relation to their access to computer and internet.

H_a: The number of years lecturers spent in UTG as lecturers has a statistically significant relation to their access to computer and internet.

Hypothesis $2B_4$

H_o: The highest academic qualification acquired by lecturers in UTG has no statistically significant relation to their access to computer and internet.

H_a: The highest academic qualification acquired by lecturers in UTG has a statistically significant relation to their access to computer and internet.

Hypothesis $2B_5$

H_o: The type of faculty or department of lecturers in UTG has no statistically significant relation to their access to computer and internet.

H_a: The type of faculty or department of lecturers in UTG has a statistically significant relation to their access to computer and internet.

Hypothesis $2B_6$

H_o: The lecture status of lecturers in UTG has no statistically significant relation to their access to computer and internet.

H_a: The lecture status of lecturers in UTG has a statistically significant relation to their access to computer and internet.

2C. Lecturers' characteristics in relation to computer and internet skills: Relationship between lecturers' gender, age, years spent in UTG, number of courses lectured in UTG, academic qualifications acquired, department, status, computer/internet training acquired, personal computer access, teaching website ownership, online journal access, and lecturers' computer and internet skills, computer skills, and internet skills.

Hypothesis $2C_1$

H_o: The gender of lecturers in UTG does not have any statistically significant influence on their computer and internet skills, computer skills, and internet skills.

H_a: The gender of lecturers in UTG does have a statistically significant influence on their computer and internet skills, computer skills, and internet skills.

Hypothesis $2C_2$

H_o: The age difference of lecturers in UTG does not have any statistically significant influence on their computer and internet skills, computer skills, and internet skills.

H_a: The age difference of lecturers in UTG does have a statistically significant influence on their computer and internet skills, computer skills, and internet skills.

Hypothesis $2C_3$

H_o: The number of years a lecturer spent in UTG does not have any statistically significant influence on their computer and internet skills, computer skills, and internet skills.

H_a: The number of years lecturers spent in UTG does have a statistically significant influence on their computer and internet skills, computer skills, and internet skills.

Hypothesis $2C_4$

H_o: The highest academic qualification acquired by lecturers in UTG does not have any statistically significant influence on their computer and internet skills, computer skills, and internet skills.

H_a: The highest academic qualification acquired by lecturers in UTG does have any statistically significant influence on their computer and internet skills, computer skills, and internet skills.

Hypothesis $2C_5$

H_o: The type of faculty or department of lecturers in UTG does not have any statistically significant influence on their computer and internet skills, computer skills, and internet skills.

H_a: The type of faculty or department of lecturers in UTG does have a statistically significant influence on their computer and internet skills, computer skills, and internet skills.

Hypothesis $2C_6$

H_o: The lecture status of lecturers in UTG does not have any statistically significant influence on their computer and internet skills, computer skills, and internet skills.

H_a: The lecture status of lecturers in UTG does have a statistically significant influence on their computer and internet skills, computer skills, and internet skills.

Hypothesis $2C_7$

H_o: In terms of their computer and internet skills, computer skills, and internet skills, lecturers with higher computer and internet training are not statistically significantly different from lecturers with lower computer and internet training.

H_a: In terms of their computer and internet skills, computer skills, and internet skills, lecturers with higher computer and internet training are statistically significantly different from lecturers with lower computer and internet training.

Hypothesis $2C_8$

H_o: In terms of their computer and internet skills, computer skills, and internet skills, lecturers who own their own websites collectively or individually are not statistically significantly different from lecturers who do not collectively or individually own teaching websites.

H_a: In terms of their computer and internet skills, computer skills, and internet skills, lecturers who own their own websites collectively or individually are statistically significantly different from lecturers who do not collectively or individually own teaching websites.

Hypothesis $2C_9$

H_o: In terms of their computer and internet skills, computer skills, and internet skills, those lecturers who have access to online journals are not statistically significantly different from those lecturers who do not have access to online journals.

H_a: In terms of their computer and internet skills, computer skills, and internet skills, those lecturers who have access to online journals are statistically significantly different from those lecturers who do not have access to online journals.

Hypothesis $2C_{10}$

H_o: In terms of their computer and internet skills, computer skills, and internet skills, lecturers who have personal computers do not have any statistically significant difference with lecturers who do not have personal computers.

H_a: In terms of their computer and internet skills, computer skills, and internet skills,

lecturers who have personal computers do have any statistically significant difference with lecturers who do not have personal computers.

3. *Instructional analysis of the proposed content of the training programme:*
   Based on expert opinions, results from the analysis and related literature what relevant training content would address the UTG's goal with respect to e-learning training?

4. *Instructional strategies of delivery, monitoring and evaluation of content:*

Based on expert opinions, results from the analysis and related literature what delivery, monitoring and evaluation methods and strategies are likely to adequately address the training objectives?

Significance of the Research

This research study is designed to empower UTG economically. It shall create the opportunities for building a highly developed workforce with skills to design distance learning and training programmes for educational and business-oriented institutions, which shall in the long run translate into a competitive advantage over other institutions of higher learning. Eventually, it would be a means to access a larger market share.

E-Learning delivery pedagogy shall enhance learning by exposing students and lecturers to use and benefits of ICT, which in turn shall adequately prepare the Institution's teaching and learning community for both local and international labour markets, and as well produce a base for research in the country. It is evident that the use of ICT through e-learning will promote effective educational process in UTG, and at the same time create access to more students and qualified academic instructors in different geographical space and time zones.

Delimitations and Limitations

The instructional design of e-learning training programme discusses issues that are related to UTG; an institution situated in one of the disadvantaged third world communities. The full scope of e-learning cannot therefore be explored due to this delimitation. The design is built on the status of UTG and similar institutions.

The research study adopted the ADDIE model of instructional design but covers only the analysis and the design phases of this model. The other phases such as development, implementation and summative evaluation are beyond the scope of the study.

The design of e-learning platform is beyond the scope of this research. That is the responsibility of UTG's ICT support staff. Issues relating to the e-learning technology have been conveniently avoided on such grounds.

The quantitative data is collected by sending the questionnaire through internet to UTG authorities, who administered them to the participants and send them back through an envoy. This suffered serious shortage and the researcher had to spend a long time calling and appealing to lecturers to respond to the questionnaire. Eventually, only thirty-one respondents out of a total target of sixty-nine lecturers have been pulled. Even though a large size data has been obtained the research analysis of that particular data suffered loss of power during the analysis stage especially in situation where the meagre thirty-one had to be distributed among two groups.

Definition of Terms

Instructional Design: It is used in this research with reference to a systematic design of instruction with the intent of soliciting learning. It brings together all the factors that are required in a learning situation with emphasis laid on the learners' readiness, institutional readiness and suitable pedagogical techniques that will elicit effective learning (Kemp, Morrison, & Ross, 1994:8, 318).

ADDIE Model: This is a generic instructional design model that has gained much popularity over other models because of its clarity and thoroughness, beside its generic nature. It is an Acronym meaning Analyse; Design; Develop; Implement; and, Evaluate.

Computer and Internet Skills: Refers to skills related to effective use of computer and internet. In this research lecturers' computer and internet skills are referred to those skills that are mainly prerequisite for their involvement in the e-learning training programme. They are the knowledge and skills necessary for e-learning maximisation in a learning environment. In

short it could be seen as the efficient interactive ability of lecturers with an e-learning platform.

E-learning Readiness: In the researcher's perspective, this refers to state of preparedness of an institution and its community towards e-learning implementation. Chapnick (2000: cited by Aydin & Tasci, 2005) identified factors categorised under psychological, sociological, environmental, human resource, financial, technological, equipment, and content readiness. In this research emphasis is placed on human resource, environmental, financial, and technological needs, and are identified under skills, ICT infrastructural development, and training and human capital, budget allocations, material and financial capacity and incentives created for lecturer motivation.

Blended Learning: According to this research blended learning will refer to a system of learning in which both face-to-face and e-learning techniques are employed (Siemens, 2004; Stuck & Ware, 2007: 13th Sloan-C Conference) to deliver instruction. The nature and intensity of the blend depend on the learning task and the readiness status of the teaching-learning community.

E-learning Platform: This refers here to the specific learning management system as presented on a computer and the internet support system. There are different types of platforms, some of which are freeware and others commercial.

Learning Theories: These are herein referred to as those behavioural, cognitive and constructivist processes that influence learning. According to Illeris and Ormorod (2000, 1995: Amazine.com, 2009) these are processes that bring together cognitive, emotional, and environmental influences and experiences for acquiring, enhancing, or making changes in one's knowledge, skills, values, and world views. In this research study emphasis is placed on behavioural, gestalt, cognitive and constructivist learning theories.

Asynchronous E-learning: The delayed-time form of delivery that is conducted through a Learning Management System (LMS), collaborative spaces, and discussion boards (Siemens, 2004). It is independent of time. Learning materials are normally pre-recorded and made accessible to anyone, any time and as many times as desired. Communications between people are not in real time. In this CD-ROMs and other resources such as disc and other storage devices containing texts, audio and video multimedia learning materials may be used.

Synchronous E-learning: The real time delivery that is characterised by streaming, conferencing, and stored presentations with use of tools like web chats. It is time bound and dependent mainly on multimedia techniques for instructor-learner interaction at the same time, while they are both online at different parts (Chen, Kinshuk, Ko & Lin, 2005; Siemens, 2004).

CHAPTER 2. LITERATURE REVIEW

Chapter Overview

This chapter forms both the theoretical and analytical deliberations of previous researchers on information related to this research study. Since the design is for lecturers in The Gambia's only university, the researcher reviewed the literature on higher education system, and established the role of UTG in the country's human development process. The researcher then looked at the factors that are critical in e-learning implementation by implying the various definitions, categories and delivery methods, and then the readiness variables that were going to be used to assess the situation at UTG at both administrative and academic levels. The researcher proceeded to review the four relevant learning theories and their implications in instructional design before reviewing the instructional design and its models. In the model review, the researcher laid emphasis on ADDIE and tried to justify its use for this research study by adopting the three dimensionality and centrality of culture among other reasons. Thereafter, e-learning training has been reviewed in relation to the ADDIE model of instructional design by elaborating on the analysis and the design phases, leaving out the development, implementation and evaluation phases which, according to the design of the research study, are beyond the research scope. The review of the pilot study concluded the literature review.

The Gambia's Higher Education System and its Challenges

Higher education in The Gambia was never a priority of the colonial powers. For this reason there was no formal higher education system until 1995 when the country's first and only University started as an extension programme with the assistance of Nova-Scotia Gambia Association (NSGA), and in collaboration with St Mary's University of Halifax in Canada. Gambia College, Gambia Technical Training Institute (GTTI), and Management Development Institute (MDI) were the post secondary institutions that were providing higher education in The Gambia. In 1999 UTG has been fully established and started offering degrees in undergraduate disciplines, and until August, 2007, the Institution started a master's programme in history.

In the Round Table Conference, organized in London (February, 2008) it was reported that access, quality improvement, human and intellectual resources and physical infrastructure relating to higher education in The Gambia have been outlined in the Poverty Reduction Strategic Programme (PRSP), Millennium Development Goals (MDG), Education Policy 2004-2015 and the Education Sector Strategic Plan 2006-2015. This was geared towards the realization of the country's '2020 Vision'. In this drive, according to the conference report, a new Department of State for Higher Education, Research, Science and Technology has been created in January, 2007 to oversee technical education, teacher education, and university education in The Gambia, with the specific objectives of creating a dynamic and flexible system of education. In the education policy UTG is to:

- Offer graduate programmes with the cooperation of foreign universities;
- Reduce dependence on expatriate lecturers;
- Enhance the integration of higher and tertiary institutions in the Gambia, and to collaborate with other universities and programmes that are relevant to The Gambia; and,
- Be responsible for the accreditation and validation of qualifications which will reduce the dependency on external institutions.

According to the same report (Round Table Conference, organized in London, February, 2008) seven result areas have been identified in the drive to achieve the aforementioned objectives:

- Adherence to standards of professionalism by both staff and student in tertiary institutions;
- Improved management in all tertiary institutions;
- Highly qualified and motivated academic staff;
- Improved regular maintenance of structures and resources for improved access to quality tertiary education;
- Adequate and timely funding of tertiary institutions;
- Improved relevant quality education in tertiary institutions; and,
- Improved access to tertiary education.

The Gambia and UTG are not in any position to fulfil these mandates if there is not going to be any paradigm shift towards e-learning pedagogy. And since it has always been a strong desire to incorporate ICT in education, the higher education system should serve as a springboard to this pedagogical paradigm shift already argued in the introduction of this

research study. The reports and other policy documents support a system that will enhance effective knowledge delivery. E-learning, properly implemented, shall create a levelled playing ground for all those in today's knowledge economy.

E-learning Critical Success Factors and Readiness Variables

For e-learning to be successful in universities certain factors are said to be critical to its implementation. This part of the review explores these factors through definitions, categories and forms of delivery. After grounding the factors, the researcher proceeds to explore those readiness variables in relation to three of the key success factors in order to provide a scale for measuring the e-learning readiness status of UTG.

E-learning Critical Success Factors

E-learning is defined as the use of internet technologies to deliver a broad array of solutions that enhance knowledge and performance (Rosenberg, 2003:28). From this definition there are three criteria to be considered in the broad conceptualisation of e-learning: Firstly, the platform should allow storage and retrieval of information that is capable of being updated within the system; secondly, there has to be a transmission control protocol or internet protocol (TCP/IP) and also web browsers to allow universal delivery; and thirdly, emphasis has to be put on the principles of learning (Rosenberg, 2003:28-29). Going by this definition and the criteria offered by Rosenberg, the implications are that the traditional classroom and its library systems are being transferred onto the web, which is also a supposition that e-learning cannot take place without the presence of a transmission system, even though emphasis should be placed on learning. That means, from this perspective there are certain factors that are critical to success in e-learning implementation. In a research conducted by Salim (2005) he grouped these factors as instructors, students, information technology and university support. According to him these four factors play significant roles in successful implementation of e-learning in university environments. These are the same factors that are needed in a learning environment with the use of internet technology or computer network.

Anderson and Elloumi (2004; cited in Gunga & Ricketts, 2006) expressed the same sentiment when they refer to e-learning as the use of internet by learners and instructors to interact with one another, to access learning materials, and to obtain support in the learning

process. While internet is inferred here as well, they mentioned those good qualities that portray the occurrence of learning; interaction between learners and instructors, and use of learning materials for the process of the educational interaction. Inductively, those factors that are critical to internet access in a learning situation and for proper learning to take place shall make up the success factors or criteria for e-learning readiness.

In a more assertive term, Gunga and Ricketts (2006); Littleton and Light (1999: cited by Angeli, 2008) consider it as a process that puts computers (or computerised gadgets) to a collaborative use so as to achieve higher order learning outcomes. Even though internet has not been specifically mentioned in their definitions, the collaborative use of computers infer a network system which is synonymous to an internet system, and that would mean those critical factors relating to adequate internet access and user ability alongside proper learning are equally inferred herein.

Also, in the process of understanding those factors that should be considered when a proper e-learning system is implemented in UTG, the researcher reviews different forms or categories of e-learning. However, in this particular review the researcher keeps in mind the significance of success factors in implementing these forms or categories of e-learning. These categories must also be applicable in UTG in a collaborative manner to help in the development of lecturers and students, which are considered to be two critical factors. To this end, activities such as informal way of learning, community based learning or interactive learning, work-based learning and blending of both electronic and traditional forms of learning came into play. These can be translated into forms of e-learning such as:

Informal e-learning*:* This is characterised by use of search engines, knowledge storage tools and knowledge management tools by learners in their drive for information (Siemens, 2004). It is done outside the normal classroom set-up.

Community e-learning: Learning by e-learning blogs, sometimes referred to community blogs. It is another form or category of e-learning that creates both quantitative and qualitative knowledge base (Paechter, Schweizer and Weidenmann, 2003), and helps in the development of the less privileged learners by interacting with more intelligent ones, which leads to ultimate development of skills (Vygotsky, 1978, 1986: cited by Paechter et al., 2003).

Work-based e-learning: This form of e-learning lays emphasis on context and the lecturers control in initiating the learning needed (Siemens, 2004), and by which learning content is carefully place where it is most needed by Electronic Performance Support System (EPSS).

Blended learning: This brings into play e-learning and face to face situations in a single learning situation. This however means some parts of learning are mediated through the use of computers, and other parts employ traditional face-to-face classroom situations. Learners exposed to this situation can gain more than those in the fully fledged e-learning or fully fledged face-to-face situations (Paechter et al., 2003; Siemens, 2004).

All this outlined systems will require the use of internet (a network system) or information technology. In the case of this research study this could be translated as lecturers' and students' access to and ability to use information technology. The interaction (learning) is however taking place in a university environment which necessitates the active involvement and support of the institution. This is herein considered as administrative support in terms of training, budgets and motivation. They are all critical to the success of e-learning implementation in UTG. Moreover, the organisational goal of the Institution could be translated into a need for collaborative use of and access to an information technology system, use of and access to distributed knowledge, and the quest to conquer space and time in education. More light is thrown on this by looking closely at the major delivery techniques or models of e-learning.

Synchronous and asynchronous e-learning

Generally, e-learning lessons are delivered either synchronously or asynchronously. Synchronous e-learning is the real time delivery that is characterised by streaming, conferencing, and stored presentations with use of tools like web chats. It is time bound and dependent mainly on multimedia techniques for instructor-learner interaction at the same time while they are both online at different parts (Siemens, 2004; Chen, Kinshuk, Ko & Lin, 2005). On the other hand, asynchronous e-learning is delayed-time form of delivery and is conducted through an LMS, collaborative spaces, and discussion boards (Siemens, 2004). It is independent of time. Learning materials are normally pre-recorded and made accessible to anyone, any time and as many times as desired. Communications between people are not in real time. In this, CD-ROMs and other resources such as disc and other storage devices containing texts, audio and video multimedia learning materials are used. While the internet

or intranet is required in the synchronous form of delivery, the asynchronous form of e-learning delivery can be conducted in standalone computers and other gadgets that do not necessarily have to have an internet connection. However, if other learners in different geographical and time zones are to take part in the learning process a TCP/IP would be a prerequisite.

Asynchronous e-learning frees learners and instructors from the routine schedules typical of synchronous e-learning (Chatterjea, 2004), and makes tracking easier (Chen, Harris, & Shang, 2006) and keeps sessions going. Because different researcher speak for both delivery methods – Beyth-Marom, Caspi, and Saporta (2005) emphasising on the flexible nature of the asynchronous e-learning, while Dillich (2000), laying emphasis on length of time needed in the preparation of synchronous as shorter than that of asynchronous, and the fact that it mimics the traditional delivery system (Oakes, 2002) – emphasis should be laid on their efficacy in relation to the course content that is to be delivered. If there is going to be a blend of both forms of delivery then again the success factors will have to be internet and computer access, requisite skills in use of computer and internet by users, and the support created for these users to facilitate learning.

The aforementioned arguments and elaborations of the researcher are justifications of the needs for computer and internet access, requisite skills to use computer and internet, and university support. These justifications necessitate a review of the general readiness criteria or variables in UTG's e-learning implementation.

E-learning Readiness Criteria/Variables

In education, readiness is used with reference to learners that have optimal proximity to undergo a learning experience (Vygotsky, 1978). By this reference the intellectual preparedness of learners in terms of prior knowledge, skills and attitudes, and their learning-related dispositions are in focus. However, it is employed with a greater dimension in e-learning where many researchers use it to refer to an institution's preparedness to embrace e-learning as a way of imparting knowledge, skills and attitudes. Institutional preparedness subsumes the preparedness of the human capital, the availability of requisite resources and the commitment of the administrators (Aydın, & Tasci, 2005; Educational Technology Division: summarised by Yang, 2004; Bauer, Ivang, Jorgensen, Skakke & Sorensen, 2006; Haney, 2002; Leigh, Triner, &Watkins, 2004; Owhotu; 2006; So, & Swatman, 2006).

The nature of e-learning implies a good standing in certain related issues that could be used to determine one's preparedness in the aforementioned dimensions. Owhotu (2006) elaborates on the need for this preparedness using variables recommended for preparing teachers for the incorporation of ICT in academic curriculum in United Kingdom. His formatting has been so elaborative, and is in conformity with findings of other researchers, thus rendering them applicable in this research study as UTG's e-learning readiness variables. Besides, Owhotu's (2006) study touched specifically on The Gambia also. Moreover, the education systems of The Gambia and that of United Kingdom share a colonial legacy.

After a carefully examination of the reviewed literature, and opinions from a number of e-learning experts (all professors in two major universities in Taiwan) the following success factors have been outlined as e-learning readiness variables for UTG:

University administration on e-learning related variables

Support systems:

- Internet access (such as bandwidth, server and open time of the internet)
- Lecturer-computer ratio and computer specifications
- Type and consistency of power supply
- Budget allocations, training and human capital; and incentives

Skills that will ensure readiness for lecturers in use of computer and internet

Word processing skills such as:

- Highlighting text
- Inserting text

Formatting characters and paragraphs skills such as;

- Searching text
- Formatting page margin

Database skills such as:

- Retrieving data
- Display data graphically from database

Spreadsheet skills such as:

- Comprehending data
- Entering and manipulating data
- Entering formula and setting it on spreadsheet

Internet /Multimedia skills such as:

- Browsing
- Writing and sending e-mails with attachment
- Chats and other internet conversations

Accessing teaching resources:

- Using Internet as a virtual library

Other related skills such as:

- Using video camcorder
- Making audio recordings
- Using overhead projectors
- Creating PowerPoint slides and setting up equipment to give a presentation

It thereafter became the resolve of the research study to use these factors as e-learning readiness variables to determine the readiness of the University at the administrative and lecturers' levels before any training programme is embarked upon. The performance of the University at the administrative level and the prerequisite skills manifested by the lecturers will determine the course content of the training programme. This is also in response to the ADDIE format as featured in the analysis phase of the model.

Learning Theories

Learning always takes place in the right environment, and with the provision of the right materials. E-learning, like traditional learning uses technology to create the right media for learning to take place. The same theories that apply to the traditional learning are also applicable in e-learning scenarios. E-learning situation is however a little more complicated in the sense that the classroom is more of a virtual environment which limits control over the

learners, and, if not properly monitored, will reduce interaction between learners, and between learners and instructors. To design learning or training programmes there is need for a clearer understanding of how learning takes place, so as to relate to the situational and environmental factors under which learning is facilitated. Herein the researcher explores four theories of learning in a historical sequence, and their relationship to e-learning implementation in a university set up. Learning theories help in solving problems and guiding instructional processes.

Behaviourist Learning Theory

This is the traditional instructor-centred model that lays emphasis on knowledge and skills that are useful to society. It enforces social and cultural norms that already exist, and undermines the application of knowledge that is derived (Pachler, 2002: cited in Cuthell & Preston, 2007). The model is useful in addressing short courses that could be knowledge related, and would therefore be relevant in familiarising learners with a piece of software or hardware. Small sequential learning steps, and drill and practice are organized, which could be helpful in learning computer skills. Learners in the behaviourist way will be rewarded with avatars and even emoticons when they do well or badly in a specific task. This means they shall be receiving immediate responses from the computer for their actions, and in adult situations too when work is being carried out individually or even collectively with vocabularies and conceptualisation. Still and moving images could be used through behavioural approaches.

Behaviourism is based on the premise that we behave the way we do because that behaviour we just manifested has a certain consequence in the past (Skinner, 1968). And the theory focuses on how learners behave with reference to the influence of the external environment. This would mean behaviour of learners can be shaped by adjusting things in ways that can encourage them to behave in ways desired by the instructor. Thus they have negative and positive reinforcement (Green, 2004). According to Thorndike (1910: cited by Kentridge in a lecture reported by Eckart, 2007), of the several responses in a trial and error situation, those actions that are closely related to the will of the learner (animal) should be connected to the desired situation of the learning, and be reinforced so that they will happen often. And that those actions that are discomforting to the learner (animal) should be discouraged and be connected to those undesired circumstances of the learning situation so

that they will not happen often.

However, the behaviourist theory lacks mental representation, and to that end it would be worthwhile for this research study to look also at the gestalt, cognitive and constructivist theories, and their relations to the training programme herein formulated. Nonetheless, e-learning, to a large extent, can be approached behaviourally.

Gestalt Learning Theory

This theory is the most suitable for computer mediated learning or e-learning, since it explores perception and its relationship to learning (Leflore in Abbey, 2000: 102). Leflore in 'Instructional and Cognitive Impacts of Web-Based Education' discusses cognitive mapping or webbing, concept attainment activities, and use of motivational graphics as those gestalt approaches that have some cognitive bearings. These are said to be quite applicable in web-based learning or e-learning.

However, to throw some light onto the theory, the researcher recalls the explanation of Wertheimer (1924: Wagner [n.d.] About.com) as being a theory which is a determinant of the wholes whose individual elements cannot determine them, but instead the elements owe their explanation to the wholes. Wagner (n.d. About.com); Wijnholds (2008: Concept7) elaborate on this by illustrating the laws of similarity, pragnanz, proximity, continuity and closure. Leflore in Abbey (2000: 102-104) dilated on the laws as principles such as:

- Figure ground contrast, which relates to the need to differentiate the background from the foreground in an instructional screen;
- Building up the instructional materials from simple graphics to complex ones, which also include the need to avoid using images that will unnecessarily distract learners;
- Organising the interface in such a way that similar things will form a set of individual wholes, and that diagrams will be placed close to the texts that refer to the said diagrams;
- Group things that have similar appearances, and facilitate remembrance with the help of animations, contrasting colours; and,
- Designers should avoid incomplete graphics in the instructional design.

For e-learning to be properly implemented in UTG, lecturers should have to carefully use these principles in the design of their instructional materials for the students.

Cognitive Learning Theory

Cognitive mapping, concept attainment activities, activation of prior knowledge, use of motivational graphics, animations and sounds are all cognitive activities that are referenced by Leflore in Abbey (2000: 105), and are useful in web-based instruction or e-learning. He cited:

- Use of examples and non-examples for synchronous and asynchronous activities;
- Use of enough questions or scaffolds to arouse the previous knowledge that learners should relate to the current instruction; and,
- Use of graphics, sounds and animations that will motivate them, and that are related to the current instruction.

Conway (1997) draws our attention to the cognitivists' concern for what is unobservable, which the behaviourists allegedly ignored. In this theory the context in which learning takes place is very important, as well as the zone of proximal development which shows the difference between what learners can do alone and what they can do with assistance. This creates the need to explore so as to know what learners would be able to know, because all learners go through different stages of development. Piaget believed in cognition as a biological process occurring in specific growth stages, and postulated learning in relation to concepts such as schemas, assimilation, accommodation, and equilibration. Social context and culture, as brought in by Vygotsky, are fundamental factors in cognitive development.

In a nutshell, the cognitivists believe in focusing on background knowledge of learners to bridge what is known and what is to be known.

Constructivist Learning Theory

This encourages learning by doing, and voluntary participation. It is built on the principle that there is a spirit of critical reflection, and self direction and empowerment if learning is collaboratively facilitated (Brookfield, 1986: 9-11: cited in Cuthell & Preston, 2007). In this approach learners are encouraged to explore, while emphasis is laid on what they (learners) would want to change. Therefore, a constructivist environment is natural, and encourages learners to give each other support as they work together. According to Diseko (2005) they are graduated from novice learners to self-regulated experienced learners as a

result of this process. This means learners built their own knowledge from their learning experiences. Unlike the behaviourist model, the instructor in the constructivist model is more of a guide to learners.

There are several characteristics of this theory that are suitable for e-learning. Leflore in Abbey (2000: 111) classifies some of these as learners' construction of meaning, social interaction to help learners to learn, and learners solving problem. He (Leflore in Abbey (2000: 111-115) places emphasis on:

- Planning activities so that learners will construct their own meaning;
- Creating peer interaction, and monitoring this interaction with provision of guidance so that learners will construct their own knowledge; and,
- Helping learners to engage in real problem solving activities by constructing their own answers to solutions.

Constructivism is built on the premise that learners must build their own knowledge and skills (Bruner, 1990 in Huitt, 2003). But how much knowledge and skills can be built from learners who have very little experience of what is being discussed?

All these theories are applicable in this e-learning instructional design. The researcher is therefore of the opinion that no one theory can adequately address the research solution all at once, so there is a genuine need for a blend of all the four theories to approach the design. The theories have generally been reviewed from an instructional design angle, and ADDIE as a model has enough allowance for this amalgamation. Moreover, the theories are inter-related.

However table 2.1 is adopted from Boetcher (1998) for a clear understanding of how these theories can be interplayed in a design process.

Table 2.1.
Summary of learning theories and some of the implications for instructional design

	Learning Theories				
	Behaviorism	**Cognitivism**		**Constructivism**	
Proponents	**B.F. Skinner**	**Jerome Bruner**	**Lev Vygotsky**	**John Dewey**	**Knowles**
Applications	training, e.g. flight simulators	any deep processing: exploring, organizing, synthesizing content		Collaborative learning	
Instructional design focus	Instructor designs the learning environmment.	Instructor manages problem solving and structured search activities, especially with group learning strategies.		Instructor mentors peer interaction and continuity of building on known concepts.	
View of learner	basically passive, just responding to stimuli	Learners process, store, and retrieve information for use. (Bruner's Discovery Learning)		Learners create their own unique education because learning is based on prior knowledge.	
Assets	integrating complex muscular and cognitive activities	Vygotsky's Zone of Proximal Development focuses on interactive problem solving.		Learning is interactive, dialogic.	
Implications	**Climate for Learning**: Does the environment have the right stimuli to promote learning?	**Readiness**: Students will learn concepts that are maturing.		**Prior knowledge**: Design learning to assist students to build on what they know.	
		Opportunity: Zone of Proximal Development = area between what a learner can do individually vs. when assisted by peer interaction, research and teaching.		**Inquiry learning**: Adult learners have a mutual vested interest in their learning and want to involve real experience; teachers are not the sole possessors of knowledge and perspective but co-learners and guides. (Knowles' andragogy)	
		Learners customize their learning: Provide a range of learning activities and concepts for core course objectives.			

Source: http://vccslitonline.cc.va.us/usingweb/bckgrnd.htm

Instructional Design

"Anybody with the ability to use the computer can go to the web and put things together and call it e-learning", said one of the interviewee experts of this research process. The process of learning is a complex process and has to be designed properly for optimal performance. This section of the research reviews aspects of instructional design and some key models in their relative nature. Out of many models the researcher decides to take ADDIE model due to its thoroughness and generic nature.

Need for an Instructional Design

Instructional design as a process assesses needs of learners, the design and the development of training materials and the effectiveness of training intervention. Hummel, Koper, Manderveld, Sloep, Tattersall, and Vries (2003) saw it as a description of a method enabling learners to attain certain learning objectives in a certain order in the context of a certain learning environment. For them the implication is on method, objectives, sequence, all

of which they think should inference the needs considered here as the learning environment. A more recent definition considers it as a systematic process of translating principles of learning and instruction into plans or specification for instructional materials or activities (Altun, 2008), which lays emphasis on learners learning in specific context, thus exposing its pragmatic nature. İt moves around learning objectives with a high level of contexuality and specificity. İn the process, basic elements such as instructional problem, learners' characteristics, subject matter content, instructional objectives, strategic selection of resources, planning of delivery methods, and evaluations of the process (Kemp, Morrison & Ross, 1994:318) cannot be over-emphasised.

Therefore, if there is going to be a training design that has to address the training goal of UTG and translate it into achieving the institutional business goal, this shall adopt instructional design techniques, which, as argued by Altun (2008), creates better educational opportunities. The situation is unlike one wherein the instructor goes to a training field and starts delivering. It has a systematic approach that can as well be monitored and be improved upon.

A good instructional design builds the instruction qualitatively and also improves the evaluation process (Altun 2008). This is in agreement with Smith and Ragan (1999) in their assertion that goals, instructional strategy and evaluation are pertinent to a good instructional design. The research study tries to keep cognisance of these key factors by proposing a design that will address these three issues.

However, Instructional design has been criticised as a very slow and clumsy process, with many things to do at the same time, while some might not even be necessary (Gordon & Zemke, 2000). That, sometimes, by the time you finish the process the need has already disappeared, and that the term has become a wishful thinking, and instructional designers fail to put into cognisance that human beings learn faster than imagined. To this end, Gordon and Zemke (2000) quoted Rummler condemning the system as process-driven and not result-driven. It is said to provide discipline at the wrong place, that designers concentrate much on the design rather than issues, and sometimes their assumptions are quite remote (Gordon & Zemke, 2000).

These critics might have been right as at the time their criticisms were forwarded, however, time has seemingly eroded the high sands underneath them. So much work has been

done in the area of instructional design. Moreover, in computer mediated learning which is emphasised in this research, it is obvious that the technology has added more flavour to the once uninteresting process. Agreeably, the process is time consuming, and when result is urgently needed instructional design might not be convenient. That notwithstanding, without an instructional design procedure, we will be 'aiming and firing in darkness – we may aim right or wrong – thus the adage: 'measure twice but cut once'. Therefore, properly executed instructional design would address the right training needs. And it is against this backdrop that a review of different models is carried out to justify the use of one specific model – ADDIE – for this research direction.

ADDIE and other Instructional Design Models

There are different models of instructional design. This research study focuses on only a few and the main model, ADDIE which is the most popular due to its thoroughness and generic nature.

The ADDIE Model

ADDIE is an acronym meaning: Analyse, Design, Develop, Implement, and Evaluate. It is a generic process used mostly by instructional designers and trainers (Altun, 2008).

It represents a dynamic and easy-to-use guidance for building effective training programmes (Allen, 2006). ADDIE is not the only model that has a feedback process at each of the phases, but its own seem more thorough due to the adequate number of areas to look at. It is built on the assumption that a design of instruction should be based on instructional needs, which according to Allen (2006) is cost saving. The instructional development process of a typical ADDIE process moves around analysing and determining what instruction is needed in a training programme, designing that instruction to meet needs, developing instructional materials to meet system requirement, and thereafter implementing the instructional system (Allen, 2006). Along the line, there are feedbacks derived through evaluation process which can be both normative during the process of modelling, and summative at the end of the training programme. This means, while the model is in the building process those issues that are proven inapplicable are readjusted, and at the same time when the training is conducted there is also room to make adjustment for the next training process.

ADDIE approaches instruction by putting more emphasis on addressing issues rather than assumptions or theoretical underpinnings (Christensen & Osguthorpe, 2004). In their research they found out that many practitioners use theories of instructional design to take decision, however, these people depend mostly on brainstorming and interaction with their peers than on theories during the design process.

Again, in an argument advanced by Joseph, Mitchell and Thomas (2002), this research study finds meaning in developing skills in lecturers from both cultural and socio-economic dimensions. This goes on to support their argument of keeping culture as a central theme in the ADDIE process. It is understandable that ADDIE model is iterative and has the quality of continuous development with the changing environment, but the point is that the model has often been developed to neutralise culture, even though the analysis of learners has some strong cultural implications. It is in this regard that these researchers gave a third dimension, and place in intention, interaction and introspection to support the three dimensionality of the entire process. During the design process, designers should have to have culture at the back of their minds (intention), they need to know who they are designing for, and every stage of the model should bring them closer to the audience's culture, and this calls for interaction. Finally, as they interact with other people and cultures, they ought to be introspective by critically considering their actions towards these people and their cultures. This is conceptualised in their model as could be seen in figure 2.1.

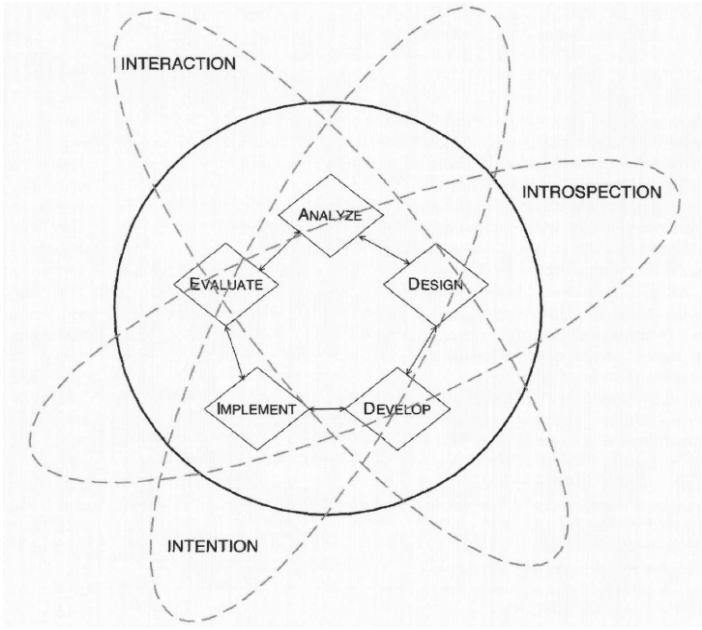

Figure 2. 1. ADDIE model
Source. The Third Dimension of ADDIE by Joseph, R., Mitchell, & Thomas, M. (2002)

Other instructional design models have been briefly discussed. This is due to the fact that the researcher leaned more on the ADDIE after a review of literature on the models. It is thorough, and gives allowance for a high interactivity, not only between the design team and also those that the design will affect. It is also generic in that most instructional design models are developed from it. The conclusion drawn by the researcher is that ADDIE model speaks well for instructional design.

ASSURE Model

ASSURE is an acronym meaning: *Analyse* learners; *State* objectives; *Select* methods, media and materials; *Require* learner participation; and *Evaluate* and revise. It must be noted that the model also considers culture in the first phase where learners are analysed, and also where their participation is required (Joseph, Mitchell and Thomas, 2002).

ASSURE model is built on Gagne's elements, especially his assertion of arousing learners before introducing them to new materials. By emphasising on knowing learners, the model intends to give designers a clear understanding of what they need, and how these should be presented to them. Another notable thing about ASSURE is the emphasis on objectives, which is also an essential component of ADDIE model. All the other dimensions are thoroughly covered as in the ADDIE model; selecting method, media, and materials, and utilising these materials. It gives a speedy way of putting a design without losing sight of what will make any instructional design process an effective one. The evaluation and revision phase of ASURE clearly mimics the ADDIE process. This means the more thorough process of ADDIE model has been modified to be used by educators and trainers in classrooms and training grounds.

Smith and Regan Model

This model is aligned with cognitive approach, and is centred on eight key instructional issues strategically distributed among three phases. These phases are analysis, strategy and evaluation. In the analysis phase learning context, learners and learning tasks are analysed to write test items. In the strategic phase organisational, delivery and management strategies are determined that will lead to writing and production of instruction. The evaluation phase conducts formative evaluation leading to revision of instruction. Based on the evaluation the whole process is looked at again. Smith and Regan Model is a learner-

centred, goal-oriented model (Smith and Ragan, 1999 cited in Altun, 2008).

Keller's ARCS Model for Motivation

This model is based on four categories of motivation that provide basis for design and are deeply rooted with learning and performance. These categories are *Attention, Relevance, Confidence* and *Satisfaction;* and gives guidelines as to how to motivate learners in these dimensions (Altun, 2008).

4C/ID (Four Component/Instructional Design) Model

This model supports the idea of spiral nature of the curriculum. It is developed by Merrienboer and others in the early 1990s for training programmes with complex skills. There are interrelated essential blueprint components for complex learning: Learning tasks; Supportive information; Just-in-time (JIT) information; and, Part-task practice (Clark, Croock, & Merrienboer, 2002), and are sequentially ordered according to task difficulty. Sets of tasks are provided that will match the skills requirement of learners while the learner tries to solve those tasks without assistance. Scaffolding is used and assistance is withdrawn as the process progresses. Learners in this case are said to be constructing new schemata by interacting from concrete whole task performance as they connect new information to one that is already there. This is because in learning people move from known schemata to unknown schemata.

Most ID models are in one way or the other related to ADDIE model. It seems an embodiment of the instructional design models. Some of the models however, leave out some key issues deliberated on in ADDIE.

E-learning Training Analysis and Design

If the researcher's final resolve is to adapt the research process to ADDIE model by exploring only the analysis and design phases of the generic model, how then could these phases be aligned with the e-learning training programme? This objective takes the review into the domains of instructional analysis and design in the e-learning dimension.

E-learning Training Analysis Phase of ADDIE Model

Writers such as DeSimone and Werner (2006:130) identified needs as gaps and discrepancies. For instance, the gap between what e-learning skills lecturers in UTG currently have and e-learning skills they shall have after completing the training programme. In their case (DeSimone & Werner, 2006:131-144) they define needs as measuring goals, climate, and constraints. This is accordingly addressed in *strategic/organisational analysis,* which covers ICT infrastructure, and university support. It defines what university e-learning readiness variables are in terms of those issues aforementioned; for example, computer software and hardware, internet availability, budget, human capital support, and incentives for ICT utilisation. These needs can be technically linked to *diagnostic needs*, because emphasis in the current research study is put on certain factors that enhance effective performance. These generally are factors that prevent performance problems. However, in 'Multimedia Based Instructional Design' (Lee & Owen, 2000:20-25 & 26-28) they are referred to as *technology* and *situational analysis.*

Assessing the needs of lecturers in terms of e-learning skills is referred to as *person analysis,* and one that centres on e-learning training description by identifying tasks and requisite skills for the various tasks are referred to as *task analysis* (DeSimone & Werner, 2006:131-144; Lee & Owen, 2000:29-36). Both person analysis and task analysis reveal *analytic needs.* Analytic needs show better ways to perform specific tasks, and can be revealed through literature review, situational document review and expert interviews.

Knowing all the needs as indicated above does not qualify one to design a good instructional design that will address all the training needs. As mentioned earlier, ADDIE is important in the sense that it leaves no stones unturned. 'Learner characteristics' is an important component that determines a lot of things in the design phase of the instructional design (Fardouly, 1998 & Smith, 2001: all cited by Diseko, 2005; Lee & Owen, 2000:17). However, it is noteworthy that the target of this research study is adult learners, who Lee and Owen (2000:29) somehow see as synonymous to children in their learning styles when they are learning new things. A notable difference notwithstanding, is that adults already have their schemas developed. Therefore, they can quickly identify learning objects and assimilate them much more quickly than children. Moreover, as postulated by Knowles (1990), cited by Lee and Owen (2000:29-30), adults learn faster when the instruction is relevant and involving, allowing control over their own learning, and also when it is a non-traditional learning situation. However, most adults can learn when the right kinds of instructions are used, and

when there are expectations for success. The instructional environment thus determines a lot in adult learning.

Experiential learning, as the lot of adult learners, is a process of constructing knowledge through the transformation of ideas by the senses and through activities, reflection and application (Diseko, 2005; & Kolb, 1984: cited by businessballs.com). In 'Learning Styles and Adaptive Flexibility: Testing Experiential Learning Theory', Boyatzis, Kolb, and Mainemelis, (1999) outlined four stages of learning. These are Concrete Experience (CE); Abstract Conceptualisation (AC); Reflective Observation (RO); and Active Experimentation (AE). But learners are said to begin from different stages of these processes. However, Boyatzis et al. (1999) combines these processes into alternates thus having Concrete Experience against Abstract Conceptualisation (CE/AC), and Reflective Observation against Active Experimentation (RO/AE). Notwithstanding, the essential point therefore is to design a programme that will incorporate all the styles and pay more attention to principles related to adult learners. Noting that experiential learning is important to adult learning, the researcher wishes to explore this area more thoroughly during the developmental phase of the ADDIE process. Meanwhile, emphasis is placed on the characteristics of learners from the dimensions of their sets of demographics (personal and access to computer and internet) and how these relate to their computer and internet skills. This would give a more practicable and interpretive description of lecturers in UTG.

E-learning Content

The content includes modules on synchronous and asynchronous interactions through video-conferencing, mini-courseware production and presentations (including uploading materials onto the server), discussion boards, chats, emailing, and other relevant features that could be found on an e-learning platform. This is in line with Kanuka's (2006) concern. In fact he stressed clearly on needs analysis, learning objectives, task analysis, and entry skills, which all emanate from the analysis phase of the ADDIE process. He went further to highlight pedagogical strategies, media selection and even evaluation. Therefore, the content of this training programme must centre on the general objective of the research study; that is, to design a process that shall align such needs as derived from the analysis, with emphasis on developing lecturers' skills to use synchronous and asynchronous models with learners in defiance of time and space.

E-learning Training Design Phase of ADDIE Model

The information gathered from the analysis such as goals, trainees, organisation and instructional content are inferred in this phase to plan the instructional strategy and select the course format of the training (Altun, 2008; Chen & Chung: selected paper; Brantford, 2007; Hannum, 1998: cited in Diseko, 2005). The phase dilates on strategy by grouping and sequencing content, identifying methods and tactics and laying down the assessment methods to achieve objectives (Intulogy, 2008). Generally, the design phase of the ADDIE model is featured on learning strategy, instructional content, learning activities and the instructional layout and modules of the training programme (Intulogy, 2008).

It is important that the content of the training programme is already analysed to allow this phase to group together topics that are related, and have them sequenced. This bridges the gap between instructors' mastery of the subject matter content and the pedagogical content knowledge. Pedagogical content knowledge for Shulman, (cited in Kanuka, 2006) is what guides teachers in a classroom setting (or e-classroom setting), and requires understanding of presentation, knowledge of concepts and problems related to learners, and the ability to select the right strategy in specific situations to address particular tasks (Shulman & Colbert, 1988: cited in Kanuka, 2006). The sequencing of delivery requires the use of strategies in relation to all the information gathered under the analysis phase.

A Pilot Study Review of Current Research

The researcher conducted a pilot study using the e-learning readiness items on both students and lecturers of UTG, and on the University Administration. These questions were validated by experts whose opinions were sought on e-learning readiness criteria, and also some graduate students with ICT background. The study has been extended to students for two reasons. The first was for the pilot purpose; that is, to test the reliability of the questions and the conformability of the research process. The second was to assess the readiness of students for e-learning implementation in UTG. A major idea behind the current research is to prepare lecturers to deliver to students through e-learning pedagogy. Therefore, students are critical success factors for e-learning implementation (already discussed earlier in this chapter).

A total sample size of seventy-five students out of a population of 1,250 students, nine lecturers out of a population of sixty-nine full-time lecturers responded to the pilot survey through self-assessed questionnaires; mainly Likert-type, with a few fill-in items. Those readiness issues tested were computer and internet access, computer and internet skills, attitudes towards computer and internet in the lecturer and student dimensions; and, server status, bandwidth size, training, incentives and budget allocation in the administration dimension, otherwise referred to as support systems. Demographics were tested for all three dimensions.

The result showed that UTG has one main library with only four computers that have internet access, and two computer laboratories with fifteen computers in each of the laboratories, which indicated a student-computer ratio of forty to one (40:1). The internet server was said to be up and running for at least six hours every day, with a bandwidth size of 512 Kilobytes. However, students and lecturers were still not able to work comfortably with the server situation. Staff training was not adequate, especially on information technology (IT). The human capital support was not good enough to sustain an e-learning system. Moreover, students and teachers were least motivated to appreciate IT.

The pilot also revealed that there were more male student participants than female student participants. It was also observed that the mean age of these students fall between 20 and 25 years. Issues such as lack of access showed up, but they performed appreciatively in use of computer and internet, except in the areas of key software that are needed for video conferencing, chatting and relating information from audiovisual tools. They also manifested good attitudes towards IT.

Only nine lecturers participated, of which one has a bachelor's degree, and of the other eight, only two have post-graduate degrees. However, eight of them have good IT background. The same infrastructural issue showed up, but in the area of skills, the lecturers performed very well. They also showed good attitudes towards IT.

CHAPTER 3. METHODOLOGY

Chapter Overview

This chapter looks at the research framework and the methodology. It shows how both qualitative and quantitative methods could be used to approach the research problem, leading the researcher to the population and sampling of the research participants. Instrumentation of the research precedes the researcher's elaborations on research procedure. The data collection and the techniques used in analysing the data are described, and finally research validity and reliability conclude the chapter on methodology.

Research Framework

A research framework has been developed (see figure 3.1), in accordance with the research study.

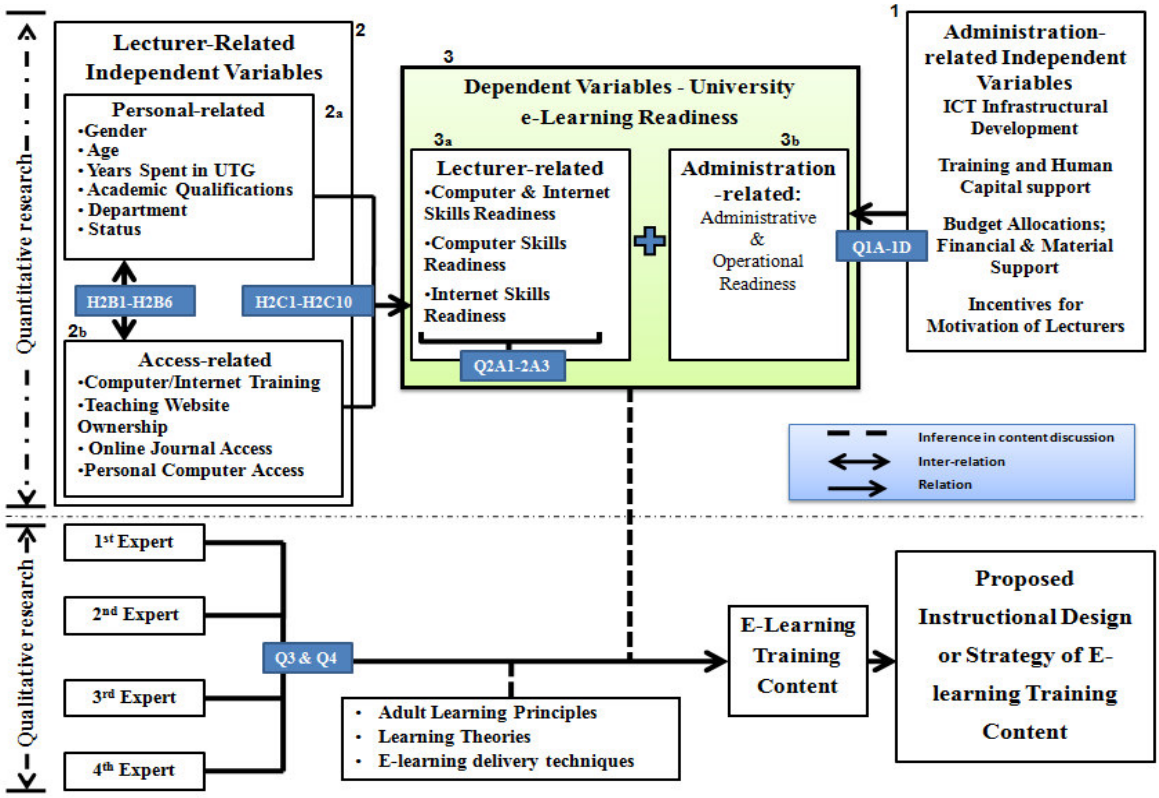

Figure 3.1. Framework of the research study

The framework illustrates how the two sets of independent variables (1 and 2) are related to the two sets of dependent variables (3a and 3b), respectively, and also how 2a and

2b are inter-related. The results from the dependent variables (3a and 3b) and both adult learning principles and theories of learning came into play during expert interview. The expert interview was for the analysis of instruction which, along with the results of the lecturer analysis, infrastructural analysis, and supports analysis, is inferred to put together a strategy of instruction known herein as the proposed instructional design or strategy of the e-learning training content.

Research Methods

The researcher uses quantitative and qualitative methods to gather and analyse data. Through these methods a proposed instructional design or strategy is formulated. The reason behind this dual approach is to give the research greater study validity and reliability.

Quantitative Method

The quantitative approach of this research study is used to explore the analysis of needs. These data has been collected from The Gambia using University lecturers and Administration to assess their e-learning readiness status. Questionnaires have been used to assess UTG e-learning readiness in terms of lecturers' personal demographics, lecturers' computer and internet access demographics, administrative issues or support systems such as ICT infrastructural development, training and human capital support, budget, material and financial capacity, and incentives for motivation of lecturers.

The data for lecturers' readiness are later analysed using both descriptive and non-parametric functions of the SPSS software. The nonparametric tests (crosstabs and Mann-Whitney) and descriptive statistics (means, percentages and standard deviations) have been employed for analysis of lecturer characteristics in terms of access to computer and internet, and in terms of computer and internet skills. A simple descriptive study have been used to explore readiness in the areas of ICT infrastructural development, training and human capital support, budget, material and financial capacity, and incentives for motivation of lecturers.

Qualitative Method

The qualitative approach is used to explore university e-learning through observation of an e-learning teaching process, and an in-depth expert interviews to propose a suitable e-

learning instructional design of a training content. It was centred on strategies to present the training content that has been adopted. These data have been collected in Taiwan. Though there are some striking cultural and economic differences, the researcher had to use only the information that can be of use contextually to Gambian situation. The researcher enrolled in an e-learning class conducted by a renowned Professor who has a personal platform and uses it to teach e-learning to graduate and post graduate students. The observation centred on the Professors methods of delivery, strategies, content, and activities that could be used to impart e-learning skills. The researcher also benefited from the extra-readings suggested by the Professor for better understanding of learning theories, instructional design and mini-courseware production. The first draft of the training content has been largely informed by this observation process. Towards the end of this observation, interview questions were sent to experts before the actual interview. Their statements were written down and sent back to them for approval. They did the corrections and gave their consent on the reliability of their statements. The interview took about thirty minutes for the first expert and about an hour and a half for the other three experts. The third expert could not be recorded on tape because the interview took place in a noisy environment. Both texts and recorded information were used in the analysis. Short profiles of the interviewees could be found alongside their coded comments in Appendices M and N (these have been very precise due to respect of their democratic rights and for the purpose of keeping their identity from publicity). The researcher later invited four graduate students to a two-hour session to discuss the data from the four experts. This was also both recorded and noted. The purpose was to give the analysis a greater validity by avoiding a high tendency of subjectivity. During this process the team debated and discussed the similarities and differences of the experts as presented before them in the validated scripts. After this process, the data were coded and interpreted accordingly. The result of this process was used alongside the quantitative process to propose a design for e-learning training of lecturers in UTG.

Population and Sampling

In the population and sampling of this research, the researcher uses UTG full-time lecturers as the main population.

However, thirty-one (31) lecturers out of sixty-nine (69) – a forty-five percent (45%) total proportion of full-time lecturers in UTG – responded to this survey. All sixty-nine (69)

lecturers had been targeted. The training is meant to create an e-learning enabled workforce for UTG. The part-time lecturers are not consistent in the sense that they are contracted to lecture only selected courses for a semester or two, and their stay in the Institution is not guaranteed. Training them, when they cannot be sustained, conflicts the long term strategic goal of UTG (a developed workforce). Their participation in the research will not therefore give a genuine representation of lecturers' e-learning readiness status.

The entire UTG administration is represented by the Office of the Registrar. The data from this point represent the overall University in terms of ICT infrastructural development, training and human capital support, budget allocations; material and financial capacity, and incentives for motivation of lecturers. This has been referred to as support system by the researcher in some instances.

Six experts were written to and four responded out of the six. These are all Professors in Taiwan in various universities, and have each been involved with e-learning related issues for over ten years. They each have their private websites and use developed technologies in their delivery processes.

One e-learning class has been identified. An inter-university registration has been conducted for the researcher to enroll in the class. This particular class has been running for many years and currently the Professor has developed a mature delivery technique based on instructional design. The researcher uses this information for inferential purpose only.

Instrumentation

The instruments for the quantitative component have been the 'fill-in' and 'yes/no' styles for the demographics of Administration and lecturers, including lecturers' access to internet and computer demographics. These are analysed descriptively. The data that has been sampled (lecturers) use descriptive analysis and also hypothetical analysis with the use of non-parametric tests. Likert scales (1 – 5) are used to reveal the actual situations. The same Likert scales have been used for Administration's data (support systems) such as institutional ICT infrastructural development, training, incentives and budget, but analysed descriptively.

For the qualitative component semi-structured and open ended questions represent the main instrument for the analysis of instruction.

Questionnaires

Questionnaires are another technique for data collection in this study. The research participants completed questionnaires on e-learning readiness analysis before the commencement of the design phase of the ADDIE process. The result of the analysis determines the nature of the instructional strategy and the course format.

Expert Interview

The researcher identified four experts in the area of e-learning. Semi-structured and open-ended questions were designed. The experts were engaged in in-depth interviews to address the instructional design issues of university e-learning training programme. The types of questions centred on how to present the proposed e-learning training content to lecturers in UTG. For instance; what discovery activities do you think would be suitable in training lecturers in UTG to design their e-learning lessons? What other technologies do you apply in your e-learning class, and could these be applicable in an adult learning situation? How would you sequence scaffolded materials and discovery activities in a training programme of this nature (that of UTG)?

Observation

As a student in the observation class the researcher went through the activities, which included discussions, reflections, assignments, etc. During these activities the researcher asked questions that were related to his research study and used the Professor's and students' reactions to partly inform the research process.

Research Procedure

This is the same as the road map of the research process. It was designed utilising ADDIE model of instructional design. Three major steps have been identified:

The analysis phase of the instructional design was piloted with the three groups of Administration, lecturers and students in UTG. Even though the research has a central focus on lecturers, they are supposed to implement whatever they would learn from the training programme on the students. Their readiness has been seen as a crucial factor to the entire

training process. The pilot study was good enough to identify that status (see review of pilot study in chapter two of this research). Their status was only inferred in this research study to give a justification that lecturers, at least, shall have an audience to whom they shall electronically deliver their lessons. The adjustments made as a result of the pilot were featured in the analysis phase of the model, and the second step of the current research study.

Lecturers and Administration later completed questionnaires on university e-learning readiness analysis. Task or instructional analysis was conducted on the modules to be taught in the training programme, after which instructional objectives were drawn for various components or modules of the training content. Major characteristics of the learners are that they are adults, and are highly literate learners. Learning theories and e-learning delivery observation were also inferred.

Once a thorough analysis on the three dimensions was conducted, a deeper level of qualitative research process was deployed. This is the in-depth interview process with selected experts which centred on analysis of the instructional content, and which also informed the formulation of the training modules. The interviews with the expert group, e-learning class observation and relevant literature align the learning theories, adult learning principles, e-learning delivery principles and the current situations in UTG that could not be changed. The researcher concentrates on how to train e-learning skills to lecturers that are faced with the revealed gaps.

To relatively explain the procedure more the researcher deductively refers to processes described by. Precisely, (and as described by (Gordon & Zemke, 2000), the ADDIE model of instructional design (analysis and design phases) is adapted and applied in the e-learning training programme with the analysis phase serving as an input for the design phase. Analysis was conducted in a way that involved a literature review and opinions of e-learning experts on e-learning readiness criteria. The prerequisite skills for the actual training programme were assessed in a pilot survey that helped in understanding the readiness level of students and lecturers. Based on the content of the training programme objectives are drawn from the analysis and observation from the e-learning class. The analysis of lecturers (and students), and e-learning delivery observation showed the extent of the discrepancies or the e-learning readiness gaps, which in turn determined how each of the instructional contents was to be approached, and what teaching methodologies were to be deployed. The institutional

ICT infrastructural gaps and the commitment of the administration in terms of training, incentives and budget allocations are also assessed. These were aligned within an instructional strategy. See figure 3.2 for further illustration.

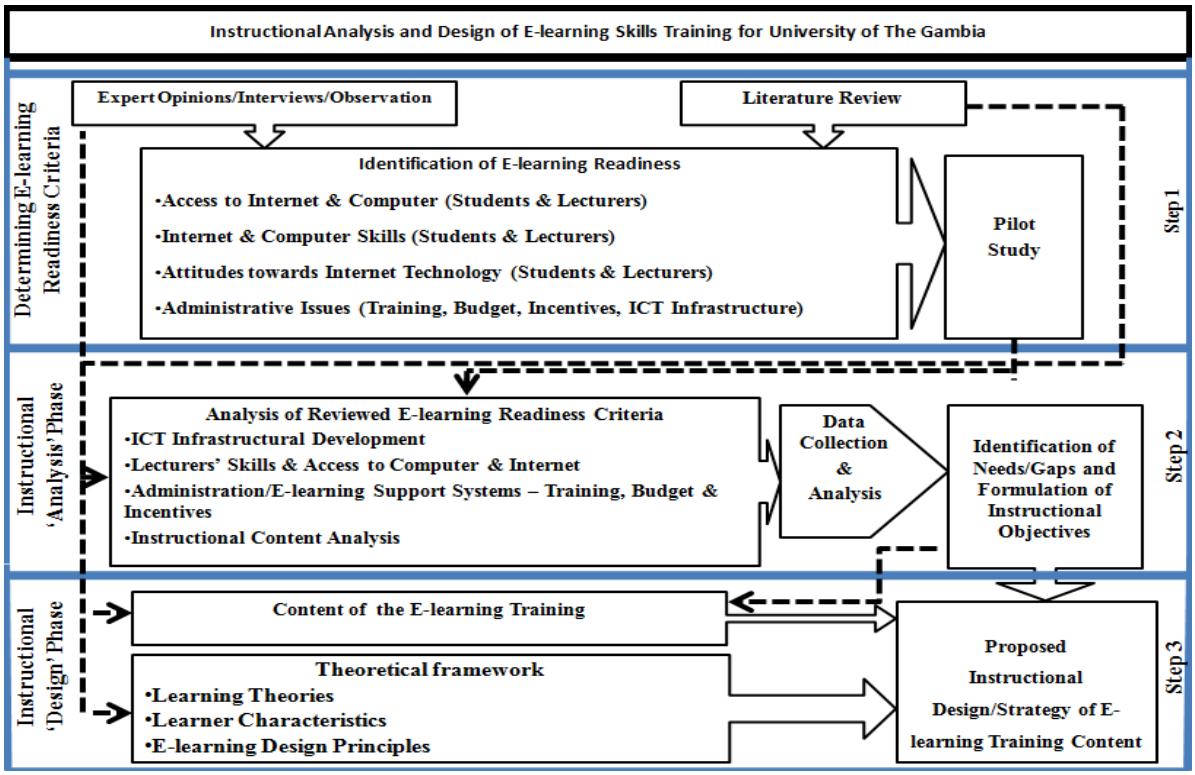

Figure 3.2. Framework showing the research procedure of the three steps/phases of the current research process

The designed course shall later be developed, fine-tuned, pilot-tested, and revised as would be necessary. This shall be the development phase of the ADDIE model. After the development phase the course shall be delivered to lecturers in a suitable medium.

Data Analysis

As stated in chapter one, the ultimate purpose is to establish UTG's e-learning readiness and to design an instructional strategy for delivery, monitoring and evaluation of an e-learning training content for lecturers, which would be based on the discrepancies or needs discovered in the readiness analysis process.

The Procedure for Data Analysis

This research has both qualitative and quantitative data. The idea behind that was to look at the different aspects revealed by the two sets of data to make an informed proposition of an e-learning training design that could be developed and implemented later in UTG.

Quantitative data analysis

The part of the quantitative data, comprising information on ICT infrastructural development, training and human capital, budget allocation, material and financial capacity, and incentives for motivation of lecturers have all been analysed using descriptive statistics of means. These sets of data came from a single point, the Office of the Registrar. The Office took the questionnaire to the various sectors (Accounts Office, ICT Department, Training Department and the Office of the Vice Chancellor) to collect the needed information.

On the lecturers' e-learning readiness that comprises their personal demographics, their access to computer and internet demographics and their computer and internet skills has been tested using related SPSS software such as Crosstabs and Mann-Whitney tests. These tests are non-parametric, and are used due to lack of normality of the data sets, and the low participation of lecturers. As indicated in the framework, the relationship between the personal demographics and the computer and internet access demographics of lecturers has been tested using Crosstabs to justify the significance of their relatedness. The relationship between the two sets of lecturers' demographics and their computer and internet skills has been tested using Mann-Whitney. Mean and Median tests are also conducted to explore their relatedness more.

Lecturers' general performance on use of computer and internet have been divided into two parts; questions 1 – 7, 10, 16, 18 – 21 test lecturers computer skills, questions 8, 9, 11 – 15 and 17 tested internet skills. The researcher used the descriptive method to test these two dimensions. Also individual questions were analysed descriptively to look closely into lecturers' abilities. Means, standard deviations and percentage scores were used in this regard.

The responses to questions 1 to 21 on computer and internet skills were coded with the Likert scale of 1-5. Questions on access to computer and internet and personal

demographics for lecturers have been coded 1 and 2 after ascribing ranges to them. See tables 3.2 and 3.3 for the coding instruction used.

Table 3. 1.
Coding instruction used in SPSS quantitative data analysis (demographic data)

Demographic Data (Independent Variables)	Coding Instruction
Gender	1 = Female; 2 = Male
Age	1 = Less than 40 years; 2 = Not less than 40 years
Number of years in UTG	1 = Not more than 1 year; 2 = more than 1 year
Highest Academic Qualifications	1 = Bachelors degree; 2 = Masters degree and above
Department	1 = Social sciences; 2 = Natural and health sciences
Lecture Status	1= Graduate assistants and assistants lecturers; 2 = Lecturers 2 and 1, senior lecturers and professors
Computer/Internet Training	1 = Higher computer and internet skills training; 2 = Lower computer and internet skills training or none
Teaching Website Ownership	1 = Do not have any teaching website; 2 = Have a teaching website
Online Journal Access	1 = Have no access to online journals; 2 = Have access to online journals
Personal Computer Access	1 = Have no personal computers; 2 = Have personal computer

Table 3. 2.
Coding instruction used in SPSS quantitative data analysis of dependent variables (Computer and internet Skills Readiness, Administrative and Operational Readiness)

Computer and Internet Skills Readiness, Administrative and Operational Readiness (Dependent Variables)	Coding Instruction
Computer and Internet Skills	1 = totally disagree; 2 = strongly disagree; 3 = somewhat agree; 4 = strongly agree; 5 = totally agree
ICT Infrastructural Development	1 = totally disagree; 2 = strongly disagree; 3 = somewhat agree; 4 = strongly agree; 5 = totally agree
Training and Human Capital Support	1 = totally disagree; 2 = strongly disagree; 3 = somewhat agree; 4 = strongly agree; 5 = totally agree
Budget Allocations; Material & Financial Capacity	1 = totally disagree; 2 = strongly disagree; 3 = somewhat agree; 4 = strongly agree; 5 = totally agree
Incentives for Motivation of Lecturers	1 = totally disagree; 2 = strongly disagree; 3 = somewhat agree; 4 = strongly agree; 5 = totally agree

Qualitative data analysis

The procedure for qualitative data analysis is a process that brings order, structure and meaning to the mass of collected data. Qualitative data analysis is a search for generality among categories of data. Therefore, in this research open coding has been deployed to examine data, and to generate themes by categorising the issues that prominently or less prominently showed up. After this coding process, the responses were grouped and categorised.

Open ended questions and semi-open ended questions were asked on what, in their opinions, would be the best methods and strategies to deliver the training content to lecturers in UTG, and whether the proposed modules are relevant for the training. Inferences were made to gaps, adult learning and learning theories to identify best practices in the opinions of the experts. These opinions were checked against the literature, and were given emphasis based on generality, and/or applicability.

The data from the experts went through the processes of selecting, focusing, simplifying, abstracting, interpreting and explaining in order to bring together all data items into a meaningful whole, thereby translating the conceptual model into a story line. The generated categories cluster around the e-learning readiness variables, preferred practices, learning theories, needs, etc., and were used to determine whether, the programme conceptualisation and design address the real needs of the intended target group. The observation of the e-learning class has been used by the researcher to inform the analysis process. They built up the researcher's understanding of e-learning delivery system, and are inference during the entire research process.

Reliability and Validity

The researcher measures the validity and reliability of both quantitative and the qualitative data by discussing the items with experts and colleagues in the area of ICT. The research framework, qualitative questions and quantitative survey questionnaires of both pilot and actual studies have been sent to experts and their comments on the items have been adopted to improve the content validity of the research. Besides, the reliability of the quantitative data has also been verified by testing their Cronbach's Alpha. See table 3.3.

Table 3. 3.
Cronbach's Alpha scores of the tests for both pilot and actual quantitative items

Test Variables	Tests	
	Pilot	Actual
Items on students' access to computer and internet	0.748	-
Items on students' computer and internet skills	0.897	-
Items on lecturers' computer and internet skills	0.722	0.965
Items on students' attitude towards internet technology	0.754	-
Items on lecturers' attitudes toward internet technology	0.574	-
Items for lecturers' computer skills only	-	0.948
Items for lecturers' internet skills only	-	0.919
Group test for students	0.882	-
Group test for lecturers	0.792	-
Group test for lecturers' computer and internet skills	-	0.965

In the actual research study however, data collection techniques such as expert interviews, surveys and literature review on e-learning readiness, instructional design, and theories of learning are deployed. These sets of data are later analysed using both qualitative and quantitative techniques.

The result of the pilot has thrown some light onto key administrative issues in UTG, and the readiness level of lecturers and students in terms of skills necessary for implementation of e-learning. Some specific issues had to be featured so that the researcher could have a clearer understanding of the readiness status of the institutions. This necessitated a re-validation of the pilot questionnaires by experts and peers before the actual survey was conducted. The Cronbach's Alphas of the pilot and actual items on their reliability tests (illustrated in table 3.3) are evident of this.

Notwithstanding, it is significant that the overall methodology of this research ensures the quality of the findings. And to ensure this, the study addresses the criteria of trustworthiness along the line of credibility, confirmability, transferability, and dependability (Bogdan & Taylor, 1975:180-186), which, in the researcher's mind, are constructed parallel to the conventional criteria of internal and external validity and reliability of the research study.

The credibility of the research findings

Credibility in research is defined as the extent to which the data and data analysis are believable or trustworthy (Bogdan & Taylor, 1975:180-182). In this research study the researcher involves e-learning professionals in the expert interview, and an e-learning class.

Also conventional principles are used that are related to the actual data collected for the university e-learning instructional analysis.

The Confirmability of the findings

Confirmability is the degree to which the research findings can be confirmed by another researcher (Bogdan & Taylor, 1975:184). The current researcher makes this possible by keeping relevant data in a well-organised, retrievable form so that other researchers and enquirers can easily access them in case of challenges or re-analysis of the same data. The interviews, and analysis, are kept in text format for the same purpose; the observation has not been recorded. However, the process adopted in the class is in record form in the Professor's website.

The transferability of the findings

Research findings are transferable when they fit into contexts outside the study situation (Bogdan & Taylor, 1975:183-184). This research study intends to achieve transferability by proposing a design of an e-learning training programme that can be adopted by other institutions different from UTG. So by assessing the conventionality of the methods used regarding e-learning instructional design, which in this case is aligned with the findings of the analysis, the transferability is vouched.

The dependability of the findings

Dependability refers to whether the findings of the research would be consistent if the study were repeated with similar subjects in a similar context (Bogdan & Taylor, 1975:184). The design is however taking an ADDIE model (at least for analysis and design phases). The consistency of this design depends on the dynamic nature of participants. When situations in the field change the approach is expected to change. However, the data and methods used are traceable to a large extent. In this research study, the expert group is selected from highly educated and experienced professors who have taught and interacted with e-learning technology and training and/or teaching for many years. The e-learning class has been conducted over and over by the same Professor using instructional design for many years before the current observation. There is a high probability of producing the same or similar results if the same research study is conducted over and over again.

Ethical Considerations

The researcher has already taken into account the ethical principles of the rule of law, which lean on respect for democracy, for truth, and for the participants. Personal privacies have been invaded in the process so it is of great importance that participants (lecturers, UTG Administration, and e-learning experts, and the Professor and the e-learning class) are respected, while ensuring that the research is conducted in an equitable manner. The consent of the participants has been sought before giving out the questionnaires or conducting the interview. These evidences of the other two processes (interviews and surveys) are documented in Appendices A, E, F and G of this research study. Authorities at UTG did not use coercive means to influence the response rate. In fact, the low response is evident of this assertion. Therefore, their security has not been compromised and shall not be compromised regarding what they say or do during the process of the study. Names and other traceable features are not mentioned in the analysis for the same ethical considerations. The respondents were told of the purpose of the research, and the confidentiality of their statements and identities has always been respected and safeguarded.

CHAPTER 4. RESULTS AND DISCUSSIONS

Chapter Overview

Chapter four of this research study starts with a brief culture of UTG. The main part of the chapter contains the results and the discussions of both the quantitative and the qualitative data. There are empirical results that consist of the data analysed through formulation of hypothesis and the data analysed through descriptive statistics. The forms adopted are simple descriptive analysis by observation of mean results, and statistical analysis using mean and median testing, comparison of mean ranks through Mann-Whitney tests, cross tabulations and chi-square tests. The qualitative data has been analysed using data reduction, interpretation and explanation. The chapter presents the analysis and discussion by addressing the purposes of the research study.

University Culture in The Gambia

From the researcher's personal experience (as a student leader and a representative in the University Governing Council, also as a student and as an Education Officer in the Education Ministry after completion), UTG like other universities shows keen interest in knowledge development, teaching and research, even though there is limited number of seasoned professors. There are intermittent seminars organised during which members of the academic staff present on pertinent issues. At times other scholars are invited by either UTG Administration or student bodies to deliver lectures and/or share knowledge and skills. These activities create values such as critical thinking and exhaustive inquiry. Openness to UTG policies and activities can be measured by students' participation in both Senate and Governing Council – two most important decision making bodies in the Institution – and also the appraisal and query systems that expose lecturers to students' criticisms. Notwithstanding, UTG has a high level of collegiality which is characterised by concerted fund raising efforts by a mixture of students, academic and administration staffs for certain functions such as the convocations and students' week celebrations. There is also a high sense of academic freedom even in sensitive political issues.

However, UTG, a young University in Sub-Saharan Africa, has a low internet penetration. There is no main University Campus for both students domitories and lectures.

Students attend classes in various sites within the Greater Banjul Area. The Administration of UTG is centralised, however, pockets of Faculty/Departmental Administration Offices are located in various places. Like many universities in Sub-Saharan Africa, the Institution relies on a culture of support from both the State Government and philanthropic organisations. Even though fees are comparably cheaper than many part of the world – both developed and developing – it is still not easy for average Gambians to pay. Thus the bulk of the running costs is shouldered by the State Government's scholarship awards and annual subvention, and also philanthropic assistance in terms of scholarships and other project fundings.

Most of the lecturers in UTG are from The Gambia and the sub-region. A few came from Cuba and forms the support base of the Medical School of the Institution. Issues of academic seniority are still valued, though due the classless nature of Gambian society, this may not be evident to a non-Gambian. Promotions of staffs emanate from the Governing council, and are normally based on academic qualifications, publications and other achievements related to one's job.

Instructional Analysis of UTG E-learning Support Systems

In this particular section UTG's e-learning readiness has been analysed and discussed using descriptive statistics by interpreting the scores on the various issues raised as critical success factors. These were divided into four sub-sections for clarity.

ICT infrastructural development of UTG

The survey result from the Office of the Registrar on ICT infrastructural development has a collective mean of 2.71 which is below the average point of 3. However, if average is compromised at the point between 2.5 to 3.5 on a Likert scale, UTG would be considered somewhat ready in this respect. Nonetheless, In UTG the issue of infrastructure is a major concern. From the survey result supplied by the Office of the Registrar and the confirmation of the same report through a telephone interview with UTG's Network Administrator, there are only two computer laboratories with only fifteen computers in each laboratory. The smaller computer laboratory for the use of lecturers is no longer functional; therefore, both lecturers and the students use the computers in the two laboratories. Sometimes these lecturers use computers in the faculty offices of their individual departments. From the survey

none of the computers in the main UTG Library has internet facility. Internet facility is available only in the Administrative Building mainly occupied by Administrators. The Faculty Building houses most of the Department Offices except the Medical School, Law Department and Economics and Management Sciences. The Economics and Management Sciences Department is housed at the Library premise, and like the Library members of staff, these are also deprived of internet facility. The Law Department is housed in a borrowed Complex that shares premises with the Administrative Building. However, like the administrators the Department has access to internet. The Medical School forms part of the Teaching Hospital and the members of staff, mostly specialists, also working in the Hospital. They have their offices in the Hospital Complex with access to internet, a privilege provided by the Hospital Administration. The Dormitory Campus of the students in the Medical School has internet provision for the lecturers and administrators in some of the offices. The staffs of the Law Department are part-timers and are therefore not covered by the current research.

From the survey results the internet /intranet server is not always up and running and affects lecturers' online work activities. The bandwidth size of UTG's internet/intranet is reported to be totally unable to allow streaming of multimedia materials from the internet. This is reported at 512 Kilobytes, but further probing revealed that it sometimes dropped below 300 Kilobytes. Again on the case of the internet security (hackers) the Office of the Registrar does not think the system is free of security breaches, but somewhat agrees that the institution has a consistent and secure access route, and the remote access is fast enough to allow e-learning at international level. The office totally disagrees with the notion that web-based learning could be conducted concurrently with two classes of 35 students each, primarily due to lack of computers, but again somewhat agrees that the RAM and hard drive capacities of the computers can support online learning at international level. The internet browsers, Microsoft package and adobe acrobat readers are up-to-date, likewise the quality of CD/DVD ROMs of the few computers available. There are also up-dated web-cameras, speakers and recording devices for video/audio conferencing and other related e-learning activities. The Office does not see power supply as a major problem since they have a stand-by generator, but totally disagrees that lecturers can access internet in UTG premises any time they wish. Questions can be accessed in Appendix I. However, figure 4.1 clearly illustrates the ICT infrastructural situation in UTG.

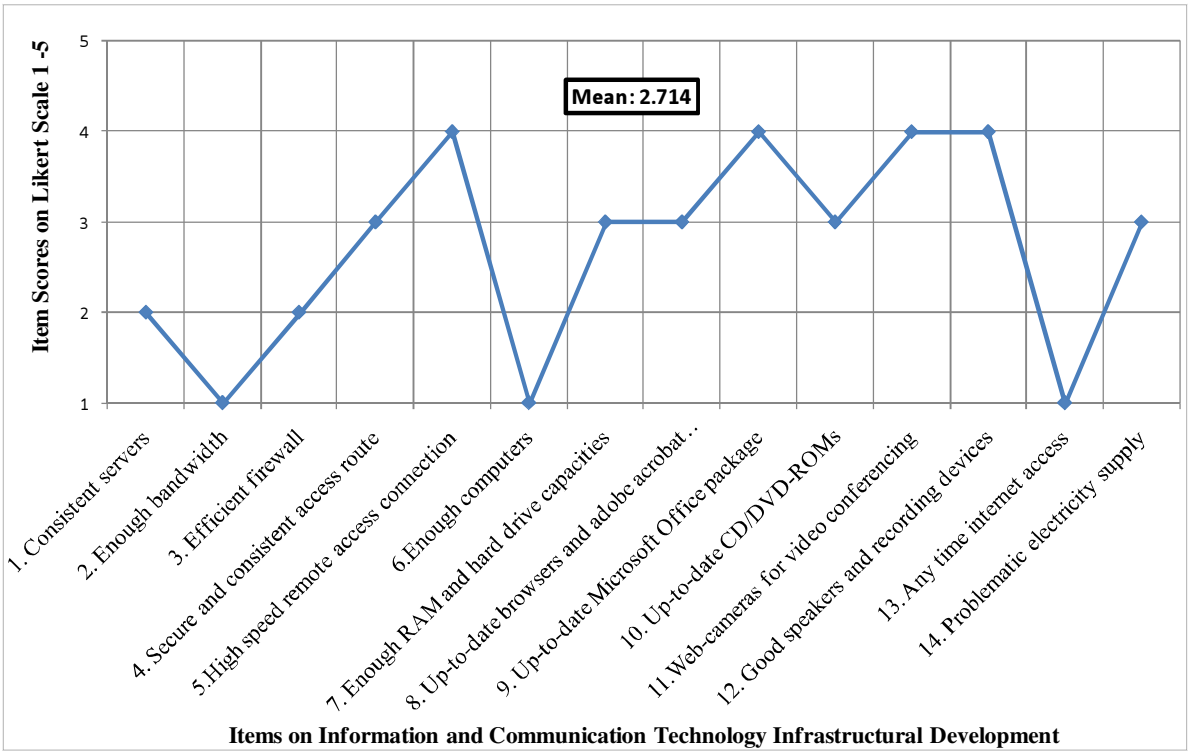

Figure 4. 1. ICT infrastructural situations in UTG as reported by the Office of the Registrar

Discussion

The agreement of the Office of the Registrar about the bandwidth supporting international e-learning points to the fact that they have enough bandwidth. However, this could be understood on the basis that the Office is probably referring to the use of text-based e-learning that does not require much bandwidth, or when very few students are given access to internet. At a given point, bandwidth could be apportioned out to users with the UTG network access area so that e-learning classes could be conducted without obstacles. Again, it was observed that from the survey none of the computers in the library have internet facility now, while a short while ago (pilot survey) it was reported that four of the computer have internet access. This is indicative of the fact that UTG has not been making significant progress in closing their academic digital gap (Lai & Touray, 2008), especially in the Library sector. The findings from the pilot and literature (Lai & Touray, 2008; Mangesi, 2007; Owhotu, 2006; World Internet Report, 2008) are all in agreement with the findings of this research on the ICT infrastructural situation of UTG.

The conclusion therefore is that UTG is only marginally ready for e-learning in terms of ICT infrastructural development. Even though the issue of software does not pose a major

internet access problem, availability of computers is a concern. However, this does not negate the fact that UTG could adopt e-learning. It is anticipated that the initiative of the Indian Government and the pilot phase already underway in UTG will create opportunities for adequate ICT infrastructural development. In the mean time it is recommended that UTG could only possibly adopt e-learning at a minimal level; use of PowerPoint, asynchronous presentations of lessons that can be accessed by students at different times and places. Smaller classes could as well be used for multimedia based synchronous forms, but with caution.

Training and human capital support

In terms of training and human capital support in UTG, the survey result from the Office of the Registrar has a collective mean of 2.56 which is considered marginal readiness within the compromised range of 2.5 – 3.5 on a Likert scale. The analysis shows that there is strong agreement to train UTG lecturers on e-learning competencies. Another positive thing reported by the Office of the Registrar is the readiness of students in UTG in terms of ICT skills for response to effective e-learning delivery method. Again the survey shows that lecturers in UTG are willing to attend training programmes voluntarily as in the past. The Office also strongly agrees that there are graphic artists that can help implement and maintain e-learning system in UTG. However, the office totally disagrees that UTG lecturers have adequate computer and internet competencies to integrate ICT in their teaching. Yet, according to the survey, there has not been technology-related training in UTG for the past two years. Even though there are graphic artists that can maintain e-learning, the Office is of the strong opinion that there are no content experts, instructional designers, and computer programmers that can help in the implementation and maintenance of e-learning in UTG. Questions can be accessed in Appendix I. Figure 4.2 below gives a clear illustration of the training and human capacity situation in UTG.

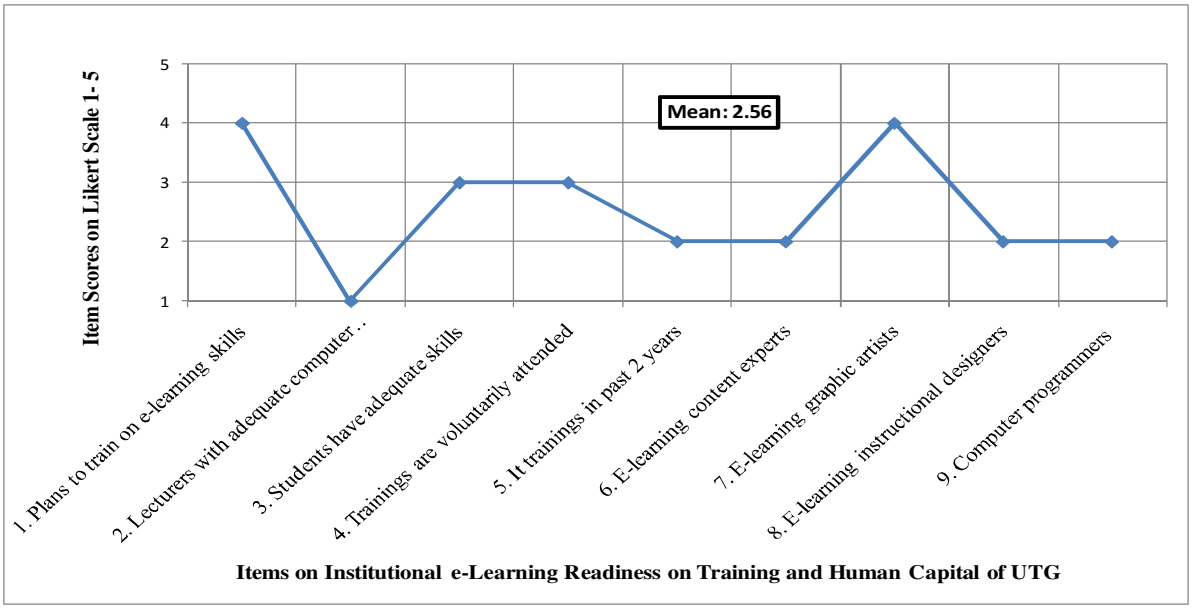

Figure 4. 2. Training and human capital support situations in UTG

Discussion

The pilot study result is in agreement with the current situation, and also agrees with literature on human capital support by Lai and Touray (2008), Mangesi (2007) and Owhotu (2006). Generally, it could be understood that in terms of human capital UTG is not ready for e-learning implementation. This could also be caused by certain misconception of the Administration. In the case of the lecturers, the skills test proved beyond doubt that a good number of them have had training in computer programming and also more than 50% of the respondents are significantly ready for e-learning implementation. Both reports from Administration (actual study) and students (pilot study) shows readiness on the side of students. And since they are of the strong conviction that they are going to train lecturers on e-learning they should be willing to train the ICT team and prospective lecturers for the technology support base of the e-learning system of UTG. They have not been conducting technology related training. It is the researcher's assumption that they are now coming up with such thoughts because of the eminent introduction of e-learning through the Pan-African e-Network project. Therefore, the marginal lack of readiness is no justification for not going ahead with the training initiative. Notwithstanding, the result reveals those critical support areas that the University should concentrate on in their e-learning capacity building.

Budget allocations, material and financial capacity

With a collective mean of 2.75; again within a marginal average readiness gap, the budget, material and financial capacity readiness survey shows a total agreement on allocation of yearly budget for training of lecturers and members of the support staff in UTG. That part of the annual subvention that is given to UTG by Government of The Gambia, and the support from Non-governmental Organisations or Non-profit Organisations (NGOs/NPOs) in forms of money and material resources can be used to accomodate e-learning initiative in UTG. And that the Institution, though has not been training members of staff in the area of technology for the past two year, has plans now to train more lecturers and members of support staff more specifically in the area of internet technology. The budget currently allocated for ICT related issues is not re-current and not also forth coming. So UTG according to the Office does not have the financial capacity to sustain e-learning without the help from Government of The Gambia, NGOs/NPOs and subvention from The Gambia Government. Meaning, if all these are not forth coming at their current rate, the Institution would not be able to support an e-learning system. Questions on budget allocations, material and financial capacity can be accessed in Appendix I. Figure 4.3 illustrates the current budget allocations, and financial and material resources support situations in UTG.

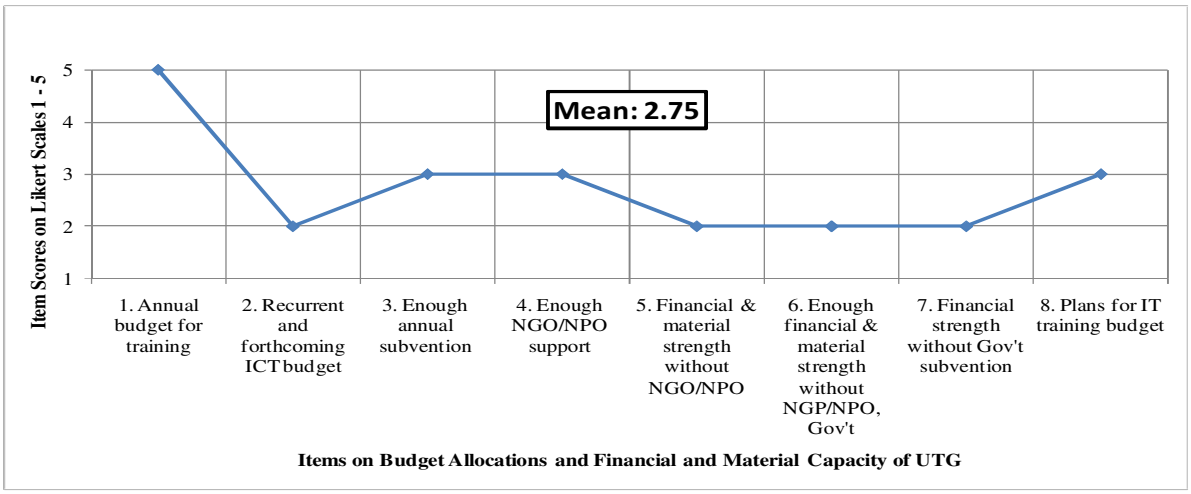

Figure 4. 3. Graph showing the current budget allocations, material and financial resources capacity/support situations in UTG

Discussion

Evidently, UTG's dependence on government and philanthropic supports is evident in the analysis. If this is not forth coming e-learning could not be sustained financially. The

understanding therefore is that, with the sopport of the government through subvention and other forms UTG can embrace the paradigm shift. The Pan-African e-Network is a philanthropic support, and could as well help maintain e-learning initiative. Nonetheless, the researcher draws attention to earlier researchers who belaboured on concerns such as lack of financial support for institutions in developing countries, including The Gambia, as major obstables to e-learning implementation (Clarke, 2007; Mangesi, 2007 & Owhotu, 2006).

Despite the lack of significant readiness in budget, material and financial capacity, the initiative can kick off with the current support from the Government and philanthropic organisations.

Incentives for motivation of lecturers

With a collective mean of 2.00 on incentives for motivation of lecturers, UTG has failed to motivate lecturers in the promotion of ICT in their education system. The result from the Office of the Registrar shows that there is a somewhat agreement that Administration plans to conduct on-the-job e-learning training for lecturers, though there are no such agreements to train lecturers in internet technology. Again, lecturers that are involved with e-learning are not given any financial or material incentives, and their workload are not reduced as a result of such ICT related engagements. There are no plans to give material and financial incentives for lecturers that are willing to teach online. The result shows that not even in the near future is UTG administration planning to promote lecturers based on their performance in ICT related activities. Questions to this dimension can be accessed in Appendix I. Figure 4.4 however, gives the nature of incentives for motivation of lecturers in UTG.

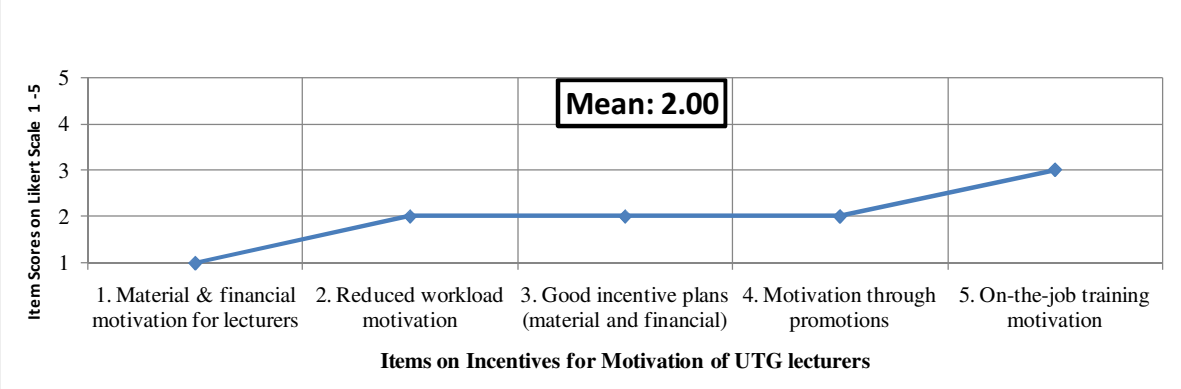

Figure 4. 4. Graph showing the nature of Administration support for e-learning in terms of incentive for motivation of lecturers

Discussion

Generally speaking, UTG Administration does not currently have plans that will guide the motivation of lecturers for ICT pedagogical adoption. The demographic result on provision of computers and even internet for lecturers is a clear evidence of this scenario. This could also be connected to their notion that lecturers are not skilful enough to adopt e-learning in their teaching – yet to be authenticated by emperical tests. The situation also conflict with the policy of The Gambia Government in their drive to attain certain objectives in the higher education system (Round Table Conference, organized in London, February, 2008). The assertions of both Clarke (2007) and Owhotu (2006) on lack of motivation has been re-echeod herein, and this in the researchers' mind could be attributed to their resistance to pedagogical paradigm shift, also asserted by the same researchers.

Therefore it could be summarised that;

- There aren't enough computers in UTG, however the few have up-to-date software that are supportive of e-learning implementation;
- There aren't enough trained personnel both in the area of technology and in instructional design or training that can sustain a standard e-learning programme in UTG;
- Generally, the management and operations of UTG depend on meagre financial and material resources, and as such cannot be considered self-subsisting in the area of e-learning; and,
- However, if help continues at its current pace the Institution can marginally sustain an e-learning system.

Instructional Analysis of Lecturers (Trainees)

This part of the research study has been approached from two different dimensions. First, the researcher answers questions on readiness by a descriptive analysis of lecturers' performance in the self-assessed questionnaire related to prerequisite computer and internet skills collectively, then on only computer skills and finally on internet skills.

Lecturers' computer and internet skills

On the 5-point Likert scale lecturers' computer and internet skills were tested using SPSS descriptive analysis and the results show that lecturers are at a high readiness level (M = 3.90, SD = -1.29). Going by the questionnaire and the coding used in agreement with the respondents, a point of 3 on the Likert scale means they are somehow skilful with respect to the particular skill inquired. A point on 4 means they are strongly ready and a point of 5 means they are totally ready. This has been interpreted based on the researcher's own initiative that a score below 2.5 on the scale is not ready; a score from 2.5 – 3.49 is considered somehow ready, a score from 3.5 – 4.49 is strongly or adequately ready and a score at/above 4.5 is totally ready. Going by these standards it is observed in the descriptive and frequency analysis that 12.9% of respondents are not ready for e-learning (fall below 2.5 on a 5-point scale); 12.9% are considered somewhat ready for e-learning; 45.2% are strongly or adequately ready for e-learning and the remaining 29 % are totally ready for e-learning in UTG. Going by this scores a total of 87.1% of lecturers that responded to the questionnaire are ready for e-learning implementation in UTG. Of these 74.2% of respondents are comfortably ready. Therefore, it is accepted that lecturers are significantly ready for e-learning implementation in terms of their skills in computer and internet.

Lecturers' computer skills

On the same 5-point Likert scale lecturers' computer skills were tested using SPSS descriptive analysis. The results show that lecturers are at a high readiness level in terms of computer skill (M = 3.84, SD = 1.07). Going by the same standards as indicated above, it is observed in the analysis that 12.9% of respondents are not ready for e-learning; 12.9% are considered somewhat ready for e-learning; 48.4% are strongly or adequately ready for e-learning and the remaining 25.8% are totally ready for e-learning in UTG. The scores reveal a total of 87.1% of respondents are ready for e-learning implementation in UTG as far as computer skills are concerned. Of these a large size of respondents, 74.2% are comfortably ready for e-learning. Again, a significant readiness for e-learning implementation can be assumed in terms of lecturers' computer skills.

Lecturers' internet skills

Again on a 5-point Likert scale lecturers' internet skills were tested using SPSS descriptive analysis. The results show that lecturers are at a high readiness level in terms of internet skill (M = 4.00, SD = 1.03). Going at par with the standards expressed earlier on, it is observed in the analysis that 9.7% of respondents fall below the readiness level for e-learning; 16.1% are on the average or somewhat readiness level for e-learning; 29% strongly believe they are ready for e-learning and the remaining 45.2% are reportedly totally ready for e-learning in UTG. This scores sum up a total of 90.3% of respondents that is ready for e-learning implementation in UTG as far as internet skills are concerned. Of these 74.2% of respondents are comfortably ready for e-learning. Here too lecturers in UTG are ready for e-learning implementation in terms of their internet skills.

To sum up the results a cumulative description of the data on the three dimensions could be seen as table 4.1.

Table 4. 1.
Descriptive analysis of lecturers' readiness in terms of computer and internet skills, computer skills, and internet skills

Skills	Means (M)	Standard Deviations (SD)	% Not ready (< 2.5)	% Somewhat ready (2.5 - 2.49)	% Strongly ready (3.5 - 4.49)	% Totally ready (≥ 4.5)
Computer and Internet Skills	3.9	-1.29	12.9	12.9	45.2	29
Computer Skills	3.84	1.07	12.9	12.9	48.4	25.8
Internet Skills	4	1.03	9.7	16.1	29	45.2

To give an in-depth description of the readiness level an analysis by items in terms of computer and internet skills and by looking at the means, standard deviations and percentages scored in each item as deemed necessary. This is the same as looking at their individual skills, as proposed in the section on e-learning readiness variables in chapter two of this research. This process infers some further statistical analysis to feature weaknesses and strengths of lecturers in computer and internet usage. Each question, either a computer skill category or internet skill category, explores the ability of the lecturers in that specific dimension.

Computer skills

From the results it could be clearly seen that lecturers expressed their inability to use video camcorder for the development of multimedia instructional materials (61.29% showed lack of readiness, M 2.48, SD 1.57). Only a small percentage of 29.03 are reportedly comfortable in this regards. Again HTML is also reported as a major problem (45.16% showing inability, M 2.90, SD 1.45). However, a good percentage is comfortable in this regard. Other areas of concern are entering and setting formula on spreadsheet (25.81% showing inability, M 3.61, SD 1.43), having the ability to use the scanner for instruction (25.81% showing inability, M 3.94 SD 1.48) and ability to display data graphically from a database (19.36% showing inability, M 3.81 SD 1.38). The rest of the questions show that the lecturers are quite comfortable with their computer skills. See table 4.2.

Table 4. 2.
Computer skills of lecturers in UTG by % cumulative Likert scales in three levels of skills, and by means and standard deviation, item by item (n = 31)

	Computer Skills Items	% Not ready (Likert scale 1 & 2)	% Somehow ready (Likert 3)	% Quite ready (Likert 4 & 5)	Mean (M)	Standard deviation (SD)
Q1	I have the basic skills to highlight, cut and paste texts.	12.9	0	87.1	4.45	1.207
Q2	I have the basic skills to format characters, paragraphs and page margin.	12.91	0	87.1	4.42	1.285
Q3	I have the basic skills to retrieve data.	12.91	6.45	80.64	4.26	1.316
Q4	I have the basic skills to display data graphically from database.	19.36	16.13	64.51	3.81	1.376
Q5	I have spreadsheet skills such as reading and understanding data.	12.9	16.13	70.96	4.03	1.251
Q6	I have spreadsheet skills such as entering and manipulating data.	19.36	9.68	70.97	3.87	1.360
Q7	I can enter and set formula on a spreadsheet.	25.81	19.35	54.84	3.61	1.430
Q10	I have the ability to use the scanner for my instruction.	25.81	3.23	70.96	3.94	1.482
Q16	I can take notes while watching instructional videos.	19.35	12.9	67.73	3.81	1.276
Q18	I can use video camcorder to develop online multimedia instructions.	**61.29**	**9.68**	**29.03**	2.48	1.568
Q19	I can make PowerPoint slides for PowerPoint presentation.	16.13	3.23	80.64	4.32	1.301
Q20	I can set up the overhead projector to give a PowerPoint presentation.	16.13	12.9	70.96	4.03	1.378
Q21	I have basic skills to transcribe (write) and read HTML.	**45.16**	**12.9**	**41.94**	2.90	1.446

Internet skills

The internet skills of lecturers show a higher level of readiness than their computer skills. Lecturers have reportedly expressed strong and total agreement in most of the functions that are prerequisite for e-learning implementation. However, they performed badly with question thirteen that explored their ability to communicate effectively with more than one person at a given time using video conferencing. This shows that most lecturers (41.93% showed inability, M2.97, SD 1.60) cannot do video conferencing. Other inability areas that calls for concern are use of online chat (25.8% showing inability, M 3.84, SD 1.53), and uploading files onto the internet for students to work on (29.03% showing inability, M 3.48,

SD 1.46). See table 4.3.

Table 4. 3.
Internet skills of lecturers in UTG by % cumulative Likert scales in three levels of skills, and by means and standard deviation, item by item (n = 31)

	Internet Skills Items	% Not ready (Likert scale 1 & 2)	% Somehow ready (Likert 3)	% Quite ready (Likert 4 & 5)	Mean (M)	Standard deviation (SD)
Q8	I can use search engines, enter passwords, and send e-mails with attachment.	9.68	3.23	87.09	4.48	1.061
Q9	I can send chat and e-mail messages with attachment.	12.9	0	87.1	4.39	1.202
Q11	I can send e-mail messages to more than one person at a given time.	9.68	6.45	83.87	4.48	1.092
Q12	I can communicate effectively with more than one person at a given time using online chats.	25.8	6.45	67.74	3.84	1.530
Q13	I can communicate effectively with more than one person at a given time using video conferencing.	**41.93**	**16.13**	**41.94**	2.97	1.602
Q14	I can access resources that are uploaded by my students on the internet.	16.13	19.35	64.52	3.94	1.237
Q15	I can upload files onto the internet for my students to work on.	29.03	16.13	54.83	3.48	1.458
Q17	I can search and access reading materials on the internet without help.	6.46	9.68	83.87	4.42	1.025

Discussion

This shows that lecturers are ready in their ability to do most of the activities that are prerequisite for e-learning implementation. However, a very small percentage of lecturers do not seem to be ready from the cumulative results. Again, the results indicate that, apart from a few areas mentioned above, lecturers are ready for e-learning implementation. However, the researcher also realised that it would be ideal to include details needed for use of video camcorder, though the HTML bit is not very significant to the study. The assumption is that most of the e-learning platforms used today have certain inbuilt functions that will not require lecturers' HTML skills. Video conferencing should also be included in the training programme, and should be thoroughly handled since a large number of respondents showed weakness in the area. Generally, it would not be necessary to start the training programme with low level computer and internet training. Very few lecturers are weak in these aspects so a pre-training programme is therefore recommended by the researcher for lecturers in that category. Nonetheless, a thorough analysis of how these skills are distributed will help the instructional design to formulate a proper training programme by paying attention to the various characteristics of lecturers in terms of demographics.

Computer and internet access characteristics of lecturers

In this section the researcher conducted two forms of quantitative analysis; one on chi-square and crosstabs tests and the other on Mann-Whitney test. The first tested the relationship between the lecturers' personal demographic variables against their access to computer and internet demographic variables. The second tested lecturers' overall demographic variables and their computer and internet skills, computer skills and internet skills.

Access related characteristics

This section has six general hypotheses with each having four sub-hypotheses. All together 24 hypotheses were tested to determine lecturers' access to computer and internet related variables. Six personal variables were identified, namely; gender, age, number of years spent in UTG as lecturer, lecturers' social academic status, herein referred to as lecture status, department, and highest academic qualifications acquired by lecturers. Four access related variables have been identified for test, namely, computer and internet training, teaching website ownership, online journal access, and personal computer access.

In the first test which is hypothesis B1 the researcher explored sequentially the relationship between gender and access to computer and internet-related variables such as computer and internet training, teaching website ownership, online journal access and personal computer ownership. However, all four of the variables have proven statistically insignificant in their relationship to gender. According to the rule of the thumb, if the minimum expected value of any of the categories falls below 5 reading is done from chi-square ($\chi 2$) calculated from Yates's correction for continuity. In all the tests Pearson chi-square is given, and Yates's are reported also for those that have minimal values below 5. In B1 Yates's corrections justify the significance levels. The results so revealed are as follows:

B1a: There is no statistically significant relationship between gender of lecturers and the type of computer training they have; χ^2 (1) = 0.685, $p > .05$; (Yates's χ^2 (1) = .000, $p > .05$). Therefore the null hypothesis is supported that there is no such statistically significant relationship on this part of access to computer and internet variables.

B1b: Between gender and teaching website ownership no statistically significant relationship has been realised; $\chi 2$ (1) = 0.791, $p > .05$; (Yates's χ^2 (1) = .015, $p > .05$). Once again the null hypothesis on this level of access to computer and internet is supported that there is no

statistically significant relationship between the two variables.

B1c: On the relationship between gender and online journal access there is no statistically significant relationship; χ^2 (1) = 0.150, $p > .05$; (Yates's χ^2 (1) = .000, $p > .05$). This accepts the null hypothesis that there is no statistically significant relationship between gender and lecturers access to online journals.

B1d: There is no statistically significant relationship between gender and whether lecturers have computers or not; χ^2 (1) = 3.638, $p > .05$; (Yates's χ^2 (1) = 2.11, $p > .05$). Again, the null hypothesis of B1 is specifically accepted on this level of access to computer and internet variables.

See Appendix L for the table summary of the lecturers' gender against their access to computer and internet.

Hypothesis B2 has been tested using the same crosstabs. Age of lecturers in this case has been tested to see if it has any statistically significant relationship with access to computer and internet variables. However, only the variable on computer and internet training has been proven statistically significantly related. All the other variables have been proven insignificant against the age distribution of lecturers in UTG. Also all the minimum expected values are above 5 so the Pearson's $\chi 2$ has been maintained. The results are as follows:

B2a: There is a statically significant relationship between age distribution of lecturers and their computer and internet training; χ^2 (1) = 6.229, $p < .05$. The phi value is reported at .45 out of a maximum value of 1 which is also significant statistically at a .05 level. This meaning those lecturers that are less than 40 years have higher computer and internet training than those lecturers above the age of 40 years. The null hypothesis on this part of access to computer and internet is rejected and the alternative hypothesis accepted, that there is a statistically significant relationship between lecturers' demographic variables on age distribution and access to computer and internet variables as far as lecturers' computer and internet training is concerned. See table 4.4 below.

Table 4. 4.
The Relationship between age of lecturers and their computer & internet training variables

Hypothesis B2a			Computer and Internet Training						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson χ2 Value	Yate's continuity χ2	Phi
Age	Less than 40	Count	13	2	15	5.32 (0% < 5)	**6.229(1)***	4.495 (1)*	.448*
	years	% within age	86.7	13.3	100				
		% within computer and internet training	65	18.2	48.4				
	Not less than 40	Count	7	9	16				
	years	% within age	43.6	56.3	100				
		% within computer and internet training	35.5	81.8	51.6				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

B2b: In terms of relationship between age distribution and lecturers access to personal or group ownership of teaching websites no statistical significant difference has been proven; χ^2 (1) = 0.301, $p > .05$. Again, the null hypothesis is accepted on the basis that there is no statistically significant relation between lecturers' age distribution and whether or not they have access to personal or group teaching websites.

B2c: There is no statistical significant difference between age distribution of lecturers and their access to online journals; χ^2 (1) = 0.987, $p > .05$. The null hypothesis is accepted that they are independent of each other and cannot be related.

B2d: Finally, no statistical significant relationship has been proven between age distribution of lecturers and their access to personal computers; χ^2 (1) = 0.031, $p > .05$. For the third time on hypothesis 2b, the null hypothesis has been accepted that there is no statistically significant relationship between the age distribution of lecturers and their access to computer and internet variables as far as their access to personal computer is concerned.

See Appendix L for the table summary of the lecturers' age distribution against their access to computer and internet.

Regarding the number of years that lecturers spend in UTG as lecturers and their access to computer and internet, only one variable, computer and internet training, out of the four tested, has proven statistically significant. The other variables have shown no sign of statistical significance. In this test however, only sub-hypotheses B3d has a minimum value

more than 5 so the Yates's correction for continuity has been used to report the results in the other cases. The results are as follows:

B3a: The number of years a lecturer spent in UTG as a lecturer has a high statistical significant relationship with the computer and internet training that the said lecturer has; χ^2 (1) = 7.554, $p < .01$; (Yates's χ^2 (1) = 5.608, $p < .05$). This has a phi value of .49 out of a maximum value of 1 which is significant at .01 level, putting up a very strong case that those lecturers that spend not more than a year as lecturers in UTG are more likely to have higher computer and internet training than those lecturers that spent more than a year as lecturers in UTG. This therefore rejects the null hypothesis that there is not statistically significant relation between the number of years lecturers spent in UTG and lecturers' access to computer and internet, and therefore accepts the alternative hypothesis that these are not independent of each other. See table 4.5.

Table 4. 5.
The Relationship between lecturers' duration of stay in UTG and their computer & internet training variables

Hypothesis B3a			Computer and Internet Training						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson χ2 Value	Yate's continuity χ2	Phi
Number of Years in UTG	Not more than 1 year	Count	12	1	13	4.61(25% < 5)	7.554 (1)**	**5.608 (1)***	.494**
		% within number of years in utg	92.3	7.7	13				
		% within computer and internet training	60	9.1	41.9				
	More than 1 year	Count	8	10	18				
		% within number of years in utg	44.4	55.6	100				
		% within computer and internet training	40	90.9	58.1				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

B3b: The duration of lecturers' stay in UTG is not statistically significantly related to their personal or group ownership of teaching websites; χ^2 (1) = 2.399, $p > .05$; (Yates's χ^2 (1) = .871, $p > .05$). This accepts the null hypothesis that there is no relationship between the two variables.

B3c: Again, lecturers' access to online journals is not statistically significantly related to the number of years they spent in UTG; χ^2 (1) = 0.087, $p > .05$; (Yates's χ^2 (1) = .000, $p > .05$). The null hypothesis is accepted on the basis that the number of years lecturers spend in UTG is independent of their access to computer and internet.

B3d: In terms of lecturers' personal computer access, lecturers' access to computer and internet does not statistically significantly relate to their duration of stay in UTG χ^2 (1) = 0.267, $p > .05$; hence the null hypothesis in that regard is accepted.

See Appendix L for the table summary of the lecturers' duration of stay in UTG against their access to computer and internet.

Crosstabs have been explored to measure the relationship of lecture status and lecturers' access to computer and internet training variables. It has been found that lecturers' lecture status; which is their academic social ranking in terms of seniority in the University, stays clearly independent of their access to computer and internet in terms of all the four related variables explored. Only sub-hypotheses B4d has a minimum values more than 5 so the Yates's correction for continuity has been used to report the results for the other sub-hypotheses. The results are as follows:

B4a: The stratification of lecturers in terms of seniority; herein referred to as lecture status, has no statistical significant relationship with lecturers' computer and internet training; χ^2 (1) = 2.230, $p > .05$; (Yates's χ^2 (1) = 1.212, $p > .05$). The null hypothesis is therefore accepted.

B4b: Lecturers' teaching website ownership at personal or group level has no statistical significant relationship with the stratification or lecture status of lecturers; χ^2 (1) = 1.827, $p > .05$; (Yates's χ^2 (1) = .514, $p > .05$). The null hypothesis, as far as website ownership and lecture status are concerned, is accepted and they are independent of each other.

B4c: In the same vein the stratification or lecture status of lecturers does not statistically significantly relate to lecturers' access to online journals; χ^2 (1) = 2.230, $p > .05$; (Yates's χ^2 (1) = 1.212, $p > .05$). The null hypothesis is accepted on the basis that lecture status does not relate to online journal access.

B4d: The relationship between lecture status of lecturers and access to computer and internet variable on personal computer access is statistically non-significant; χ^2 (1) = 0.059, $p > .05$. The null hypothesis is therefore accepted as far as this level of personal computer access is concerned.

See Appendix L for the table summary of the lecturers' lecture status against their access to computer and internet.

There are many departments in UTG but generally speaking these departments can be classified as social science departments (those normally dealing with arts, languages, economics and management, education and other related social sciences). Other departments like science and technology, agriculture, and the medical, health and public health sciences have been grouped under natural and health sciences. When lecturers in these two categories of departments are tested for relationship with lecturers' access to computer and internet only one variable of the four in the set of access to computer and internet variables proved significantly related statistically. However, sub-hypotheses B5a, B5b and B5c have minimum values less than 5 so the Yates's correction for continuity has been used to report the three results. All others proved a non-significant relationship statistically. The results are as follows:

B5a: The relationship between the departmental distribution of lecturers in UTG does not prove statistically significantly related to lecturers' computer and internet training; χ^2 (1) = 0.606, $p > .05$; (Yates's χ^2 (1) = .161, $p > .05$). Therefore the null hypothesis as far as this level of access to computer and internet of lecturers in UTG is concerned. This goes on to assert that they are independent of each other.

B5b: Again the department in which a lecturer belong is not statistically significantly related to personal or group ownership of teaching websites for the said lecturers; χ^2 (1) = 0.620, $p > .05$; (Yates's χ^2 (1) = .031, $p > .05$). The null hypothesis is therefore accepted on the basis that personal or group ownership of teaching websites by lecturers is not statistically significantly related to departmental distribution of lecturers.

B5c: Whether lecturers have access to online journals or not is not related statistically to the department to which a lecturer belongs; χ^2 (1) = 0.533, $p > .05$; (Yates's χ^2 (1) = .124, $p > .05$). This accepts the null hypothesis, but only on grounds that online journal access of lecturers and their departmental distribution are independent of each other.

B5d: Finally for the department demographic variable, there is no statistically significant relationship between lecturers' department and lecturers personal computer access; χ^2 (1) = 0.313, $p > .05$. Whether or not a lecturer has access to a personal computer does not relate statistically significantly to the department to which a particular lecturer belongs. This is in support of the null hypothesis as far as this level is concerned.

See Appendix L for the table summary of the departments against their access to computer and internet.

In the crosstabs testing for the highest academic qualifications attained by lecturers against access to computer and internet, one of the variables has proven significantly related statistically. The other three variables are not significant statistically in terms of their relationship to the personal demographic variable in question. However, the minimum expected values for all the tests under this hypothesis are below the point of 5, so therefore, Yates's correction for continuity has been used to report the results. The results are as follows:

B6a: The highest academic qualification attained by lecturers in UTG is significantly related statistically to their computer and internet training; χ^2 (1) = 5.930, $p < .05$; (Yates's χ^2 (1) = 4.025, $p < .05$). The phi value is reported at .44 out of a maximum value of 1. Those lecturers with bachelor's degree have higher computer and internet training than those lecturers with master's degree and above. See table 4.6 below.

Table 4. 6.
The Relationship between lecturers' highest academic qualifications and their computer & internet training variables

Hypothesis B6a			Computer and Internet Training						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson χ2 Value	Yate's continuity χ2	Phi
Highest Academic Qualification	Bachelors degree	Count	8	0	8	2.84 (25% < 5)	5.930 (1)*	**4.025 (1)***	.437*
		% within highest academic qualification	100	0	100				
		% within computer and internet training	40	0	25.8				
	Masters degree and above	Count	12	11	23				
		% within highest academic qualification	52.2	47.8	100				
		% within computer and internet training	60	100	74.2				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

B6b: The highest academic qualification attained by lecturers in UTG does not again have any statistically significant relationship with whether lecturers in UTG own personal or group teaching websites or not; χ^2 (1) = 1.155, $p > .05$; (Yates's χ^2 (1) = .145, $p > .05$). The null hypothesis is therefore accepted as far as teaching website ownership of lecturers is concerned.

B6c: Lecturers' online journal access in UTG does not have any statistically significant relationship with the highest academic qualification attained by lecturers in UTG; χ^2 (1) = 0.518, p > .05; (Yates's χ^2 (1) = .084, p > .05). Again, the null hypothesis is accepted on the basis that there is no relationship that is of any statistical significant nature between highest academic qualification attained by lecturers and their access to online journals.

B6d: Finally, highest academic qualification attained by lecturers in UTG is not statistically significantly related to lecturers' access to personal computers χ^2 (1) = 0.011, p > .05; (Yates's χ^2 (1) = .000, p > .05). Whether lecturers have personal computers or not does not relate to their academic qualifications statistically significantly. The null hypothesis is accepted.

See Appendix L for the table summary of the lecturers' academic qualifications against their access to computer and internet.

Discussions

Form these results the researcher realises that computer and internet training of lecturers proved statistically significant against age, number of years lecturers spent in the University as lecturers, and highest academic qualifications attained by lecturers. All others in the access related demographic variables proved non-significant statistically at .05 levels. First of all, those lecturers that are younger are more likely to be more skilful. Also those lecturers that do not stay in UTG for more than a year are likely to be more trained in computer and internet than those that have been in the University for more than a year. Also those lecturers that have only bachelor's degree are more likely to have higher computer and internet training than those lecturers that have master's degree and above.

The bachelor's degree holders are likely to be graduate assistants whose positions will soon change. Nonetheless, the characteristics shown here is that these university lecturers, who though not highly academic, are quite valuable in the area of computer and internet. There are the possibilities of developing this core of lecturers into the ICT human capital base for UTG. Again it should be noted that those lecturers who are younger are mainly undergraduates or they stayed not longer in UTG. This group of people are highly skilful in use of computer and internet. There are other lecturers that are new in UTG; not necessarily bachelor's degree holders, so these three classes of lecturers do not seem to correlate, or not necessarily the same persons. Looking at this scenario from the perspective of the current

research, it shows that UTG has a large base to train lecturers who are yet to acquire their master's degree, are younger, and are newly coming into the University. They could make up the human resource base of the e-learning system. However, the motivation mechanism has to be revisited. Also, the young could be of help to the elderly who are significantly lowly trained in computer and internet. During the training it would be ideal to harness their skills to help in hands-on activities and issues that are related to software and functions of an e-learning platform.

On the other hand UTG lecturers are not significantly different in terms of their age on issues such as teaching websites ownership, access to online journals or access to personal computers. Based on these findings it would be necessary to blend the two age groups to facilitate collaborative learning during the training programme. Access to online journals, personal websites, and personal computers should not be assigned on the basis of lecturers' duration in UTG; these do not form any significant characteristics among them. Could it also be assumed that UTG is not a conducive environment for upgrade of lecturers in ICT? An answer to this question could be found under the training and human capital support section of the Administration or support systems analysis. It was observed that they have not been training lecturers in ICT related skills, and even nurture the notion that lecturers are not capable for e-learning. An assumption could be drawn that those lecturers who refused to respond to this survey are also the least skilled in computer and internet. But still the high level of computer and internet related trainees in UTG means there is a good base for e-learning implementation.

Lack of statistical significant relationship from the perspective of lecturers' seniority indicates a level ground in UTG, and there is no need to assign task on the basis of seniority; meaning, professors and senior lecturers should not be given tasks related to higher computer and internet skills. This could be embarrassing. It is a cultural practice in UTG that graduate assistants are assigned to work under senior lecturers and professors, and are guided thus. In the current case this practice is usurped. However, it is still understandable that the graduate assistants shall continue to function as assistants to the senior lecturers and professors by going about taking care of the technological aspects of their e-learning programmes. In that regard, debates on issues related to computer and internet skills should be either carefully monitored or totally avoided.

Gender on its part, has not been discriminated against any of the variables. This shows that in UTG female lecturers are not discriminated and can equally do computer and internet related programmes as their counterpart male lecturers. This result goes against the old notion that women are less technical in computer as compared to their counterpart males. However, it must be noted that these are elite female lecturers for whom computer and internet skills are valuable prerequisites for their career development.

Some interesting characteristics have eventually been deduced from the chi-square results:

- In UTG younger lecturers below the age of 40 years are likely to have higher computer and internet training than the elderly; those not below the age of 40 years;
- Those lecturers that joined UTG less than a year ago are likely to be more skilful in computer and internet since they have higher training than those who have been in UTG for more than a year;
- Those lecturers in UTG with lower academic qualifications are more likely to have higher computer and internet training than those lecturers with higher academic qualifications;
- UTG lecturers are likely to manifest no gender differences in terms of their level of computer and internet training, teaching websites ownership, or online journals, and personal computer access. Women are equal to men in these regards;
- Senior and junior lecturers in UTG are not likely to discriminate in their level of computer and internet training, teaching website ownership, online journals access, and personal computer access; and,
- There is likely to be equality in lecturers' access to computer and internet in relation to whether they are in the social science departments or in the natural and health sciences departments in UTG. All the departments seemingly show similar levels in computer and internet training, teaching websites ownership, online journals access, and personal computer access.

Computer and internet skills characteristics of lecturers

This section conducted quantitative analysis specifically on Mann-Whitney test, primarily due to lack of normality and lower sample size. The researcher tested the influence

of the lecturers' demographic variables on their computer and internet skills, computer skills and internet skills.

Ten hypotheses were formulated overall, each against the three categories of computer and internet skills. The hypotheses are listed as C1 through C10.

C1: The influence of gender was tested against lecturers' computer and internet skills, lecturers' computer skills and also lecturers' internet skills. For computer and internet skills male lecturers (*Median* 4.24) have a higher mean ranking 16.92 than female lecturers (*Median* 4.02) with a mean ranking of 12.17. This difference is however not statistically significant, $U = 52.00$, $p > .05$. For computer skills male lecturers (*Median* 4.15) score a higher mean ranking of 16.76 than their counterpart female lecturers (*Median* 4.12) with a mean ranking of 12.86, the result is again not statistically significant, $U = 56.00$, $p > .05$. On internet skills of the same category, male lecturers (*Median* 17.10) perform higher with a mean ranking of 17.10 than female lecturers (*Median* 3.88) with a mean ranking of 11.42. However, again the result is not significant statistically, $U = 47.00$, $p > .05$. See table 4.7.

Table 4. 7.
The influence of lecturers' gender on their computer and internet, computer, and internet skills

	Gender	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	female	6	12.17	4.02	73.00	52.000	-1.151	-.206
	male	25	16.92	4.24	423.00			
	Total	31						
Computer skills	female	6	12.83	4.12	77.00	56.000	-.951	-.171
	male	25	16.76	4.15	419.00			
	Total	31						
Internet skills	female	6	11.42	3.88	68.50	47.500	-1.383	-.248
	male	25	17.10	4.50	427.50			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C2: On lecturers' age distribution a non-parametric Mann-Whitney test has been employed. In their computer and internet skills, lecturers that are less than 40 years of age (*Median* 4.29) have a higher mean ranking 18.80 than lecturers that are not less than 40 years of age (*Median* 3.69) with a mean ranking of 13.38. This difference is however not statistically significant, $U = 78.00$, $p > .05$. For computer skills lecturers that are less than 40 years of age (*Median* 4.23) score a higher mean ranking of 18.93 than their counterpart lecturers that are not less than 40 years of age (*Median* 3.73) with a mean ranking of 13.25, the result again

does not show any statistically significant influence, $U = 76.00$, $p > .05$. On the internet skills, lecturers that are less than 40 years of age (*Median* 4.36) perform higher with a mean ranking of 17.97 than lecturers that are not less than 40 years of age (*Median* 3.94) with a mean ranking of 14.16. However, again the result is not significant statistically, $U = 90.50$, $p > .05$. See table 4.8 below.

Table 4. 8.
The influence of age groups of lecturers on their computer and internet skills, computer skills and internet skills

	Age	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	less than 40 years	15	18.80	4.29	282.00	78.000	-1.662	-.298
	not less than 40 years	16	13.38	3.69	214.00			
	Total	31						
Computer skills	less than 40 years	15	18.93	4.23	284.00	76.000	-1.741	-.313
	not less than 40 years	16	13.25	3.73	212.00			
	Total	31						
Internet skills	less than 40 years	15	17.97	4.36	269.50	90.500	-1.173	-0.211
	not less than 40 years	16	14.16	3.94	226.50			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C3: In the exploration of lecturers' duration of stay in UTG a non-parametric Mann-Whitney was used to test the statistical significance of the difference between the scores of the two categories. And for computer and internet skills, lecturers who have been in UTG as lecturers for more than a year (*Median* 4.24) have a higher mean ranking 15.50 than lecturers who have been in UTG as lecturers for not more than a year (*Median* 4.10) with a mean ranking of 16.69. This difference does not have any statistically significant influence, $U = 108.00$, $p > .05$. For computer skills, lecturers who have been in UTG as lecturers for more than a year (*Median* 4.15) score a higher mean ranking of 15.39 than their counterpart lecturers who have been in UTG as lecturers for not more than a year (*Median* 4.08) with a mean ranking of 16.85, the result is not statistically significantly influential again, $U = 106.00$, $p > .05$. On the internet skills, lecturers who have been in UTG as lecturers for more than a year (*Median* 4.44) perform higher with a mean ranking of 15.78 than lecturers who have been in UTG as lecturers for not more than a year (*Median* 4.25) with a mean ranking of 16.31. The result in this case too is not influential statistically significantly, $U = 113.00$, $p > .05$. See table 4.9.

Table 4. 9.
The influence of the duration of stay as lecturers in UTG on their computer and internet skills, computer skills and internet skills

	Number of years in utg	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	not more than 1 year	13	16.69	4.1	217.00	108.000	-.361	-.064
	more than 1 year	18	15.50	4.24	279.00			
	Total	31						
Computer skills	not more than 1 year	13	16.85	4.08	219.00	106.000	-.441	-.079
	more than 1 year	18	15.39	4.15	277.00			
	Total	31						
Internet skills	not more than 1 year	13	16.31	4.25	212.00	113.000	-.161	-.289
	more than 1 year	18	15.78	4.44	284.00			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C4: Again, a non-parametric Mann-Whitney test is used to test the influence of the categories in the academic social stratification or lecture status of lecturers on their computer and internet skills, computer skills and also internet skills. However, for computer and internet skills, lecturers that are graduate assistants and assistant lecturers (*Median* 4.29) have a higher mean ranking 18.73 than lecturers that fall under the category of lecturers one and two, senior lecturers and professors (*Median* 3.83) with a mean ranking of 14.50. However, this difference does not indicate any influence that is statistically significant, $U = 80.00$, $p > .05$. For computer skills, lecturers that are graduate assistants and assistant lecturers (*Median* 4.23) score a higher mean ranking of 18.68 than their counterpart lecturers that fall under the category of lecturers one and two, senior lecturers and professors (*Median* 3.88) with a mean ranking of 14.53, the result is not significantly influential statistically again, U = 80.50, $p > .05$. On the internet skills, lecturers that are graduate assistants and assistant lecturers (*Median* 4.38) perform higher with a mean ranking of 17.77 than lecturers that fall under the category of lecturers one and two, senior lecturers and professors (*Median* 4.13) with a mean ranking of 15.03; the result not being significantly influential statistically, $U = 90.50$, $p > .05$. See table 4.10 below.

Table 4. 10.
The influence of lecturers' lecture status on their computer and internet skills, computer skills and internet skills

	Lecture status	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	graduate assistants and assistant lecturers	11	18.73	4.29	206.00	80.000	-1.240	-.223
	lecturers 2 and 1, senior lecturers and professors	20	14.50	3.83	290.00			
	Total	31						
Computer skills	graduate assistants and assistant lecturers	11	18.68	4.23	205.50	80.500	-1.219	-.219
	lecturers 2 and 1, senior lecturers and professors	20	14.53	3.88	290.50			
	Total	31						
Internet skills	graduate assistants and assistant lecturers	11	17.77	4.38	195.50	90.500	-.810	-.145
	lecturers 2 and 1, senior lecturers and professors	20	15.03	4.13	300.50			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C5: Departmental categories of lecturers have been compared to see if there is any statistically significant relationship of their computer and internet skills, computer skills and also internet skills. From the Mann-Whitney of the non-parametric test used in this process for computer and internet skills, lecturers that fall within the social sciences category (*Median* 4.29) have a higher mean ranking 17.56 than lecturers that fall within the natural and health sciences category (*Median* 4.07) with a mean ranking of 14.11. This difference however, does not indicate any influence that is statistically significant, $U = 92.00$, $p > .05$. For computer skills, lecturers that fall within the social sciences category (*Median* 4.15) score a higher mean ranking of 17.79 than their counterpart lecturers that fall within the natural and health sciences category (*Median* 4.00) with a mean ranking of 13.82, the result again is not indicating any influence that is statistically significant, $U = 88.50$, $p > .05$. On the internet skills only lecturers that fall within the social sciences category (*Median* 4.38) perform higher with a mean ranking of 16.85 than lecturers that fall within the natural and health sciences category (*Median* 4.31) with a mean ranking of 14.96. The result does not indicate any influence that is statistically significant, $U = 104.50$, $p > .05$. See table 4.11 below.

Table 4. 11.
The influence of lecturers' departments on their computer and internet skills, computer skills and internet skills

	Department	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	social sciences	17	17.56	4.29	298.50	92.500	-1.053	-.189
	natural and health sciences	14	14.11	4.07	197.50			
	Total	31						
Computer skills	social sciences	17	17.79	4.15	302.50	88.500	-1.212	-.218
	natural and health sciences	14	13.82	4	193.50			
	Total	31						
Internet skills	social sciences	17	16.85	4.38	286.50	104.500	-.579	-.104
	natural and health sciences	14	14.96	4.31	209.50			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C6: Highest academic qualification attained by lecturers in UTG as a demographic variable has been categorised into those with bachelor's degree and those with master's degree and above in order to compare their computer and internet skills, computer skills and also internet skills. For computer and internet skills, lecturers with bachelor's degree (*Median* 4.24) have a higher mean ranking 17.44 than lecturers with master's degree and above (*Median* 4.05) with a mean ranking of 15.50. This difference does not have any influence that is statistically significant, $U = 80.50$, $p > .05$. For computer skills, lecturers with bachelor's degree (*Median* 4.19) score a higher mean ranking of 17.38 than their counterpart lecturers with master's degree and above (*Median* 4.08) with a mean ranking of 15.52, the result of this difference does not have any influence that is statistically significant, $U = 81.00$, $p > .05$. On the internet skills, lecturers with bachelor's degree (*Median* 4.31) perform at the same level with a mean ranking of 16.00 as lecturers with master's degree and above (*Median* 4.50) with a mean ranking of 16.00. However, again the difference does not have any influence that is statistically significant, $U = 92.00$, $p > .05$. See table 4.12 below.

Table 4. 12.
The influence of lecturers' academic qualifications on their computer and internet skills, computer skills and internet skills

	Highest academic qualification	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	bachelors degree	8	17.44	4.24	139.50	80.500	-.520	-.093
	masters degree and above	23	15.50	4.05	356.50			
	Total	31						
Computer skills	bachelors degree	8	17.38	4.19	139.00	81.000	-.497	-.089
	masters degree and above	23	15.52	4.08	357.00			
	Total	31						
Internet skills	bachelors degree	8	16.00	4.31	128.00	92.000	.000	.000
	masters degree and above	23	16.00	4.5	368.00			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C7: Lecturers' access to computer and internet – categories of lecturers' computer and internet training variable – has been tested against each other in terms of their computer and internet skills, computer skills and also internet skills, and for computer and internet skills, lecturers with higher computer and internet skills training (*Median* 4.24) have a higher mean ranking 17.80 than lecturers with lower computer and internet skills training (*Median* 3.71) with a mean ranking of 12.73. This difference is however not statistically significant, $U = 74.00$, $p > .05$. For computer skills, lecturers with higher computer and internet skills training

(*Median* 4.19) score a higher mean ranking of 17.70 than their counterpart lecturers with lower computer and internet skills training (*Median* 3.77) with a mean ranking of 12.91. The result is not statistically significant again, $U = 76.00$, $p > .05$. On the internet skills, lecturers with higher computer and internet skills training (*Median* 4.38) perform higher with a mean ranking of 17.65 than lecturers with lower computer and internet skills training (*Median* 3.50) with a mean ranking of 13.00. However, the result is not significant statistically, $U = 77.00$, $p > .05$. See table 4.13.

Table 4. 13.
The influence of lecturers' academic qualifications and their computer and internet skills, computer skills and internet skills

	Computer and internet training	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	higher computer and internet skills training	20	17.80	4.24	356.00	74.000	-1.488	-.267
	lower computer and internet skills training or none	11	12.73	3.71	140.00			
	Total	31						
Computer skills	higher computer and internet skills training	20	17.70	4.19	354.00	76.000	-1.405	-0.252
	lower computer and internet skills training or none	11	12.91	3.77	142.00			
	Total	31						
Internet skills	higher computer and internet skills training	20	17.65	4.38	353.00	77.000	-1.370	-.246
	lower computer and internet skills training or none	11	13.00	3.5	143.00			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C8: Even though only three lecturers reported having access to personal or group teaching websites, the scores of these three have been tested against those lecturers who do not have access to personal or group teaching websites in terms of their skills in computer and internet skills, their computer skills and also their internet skills. For computer and internet skills, lecturers that have personal or group teaching websites (*Median* 4.57) have a higher mean ranking 19.00 than lecturers without personal or group teaching websites (*Median* 4.17) with a mean ranking of 15.68. This difference is not statistically significant, $U = 33.00$, $p > .05$. For computer skills, lecturers that have personal or group teaching websites (*Median* 4.46) score a higher mean ranking of 18.17 than their counterpart lecturers without personal or group teaching websites (*Median* 4.11) with a mean ranking of 15.77, the result is not statistically significant, $U = 35.5$, $p > .05$. On the internet skills of the same category, lecturers that have personal or group teaching websites (*Median* 4.75) perform higher with a mean ranking of 23.67 than lecturers without personal or group teaching websites (*Median* 4.31) with a mean ranking of 15.18. The result is non-significant statistically, $U = 19.00$, $p > .05$. See table 4.14.

Table 4. 14.

The influence lecturers' access to teaching websites has on their computer and internet skills, computer skills and internet skills

	Teaching website ownership	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	do not have any teaching website	28	15.68	4.17	439.00	33.000	-.602	-.108
	have a teaching website	3	19.00	4.57	57.00			
	Total	31						
Computer skills	do not have any teaching website	28	15.77	4.11	441.50	35.500	-.435	-.078
	have a teaching website	3	18.17	4.46	54.50			
	Total	31						
Internet skills	do not have any teaching website	28	15.18	4.31	425.00	19.000	-1.546	-.278
	have a teaching website	3	23.67	4.75	71.00			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C9: In the test it has been proven that categories such as online journal access and lack of online journal access exist. This has been explored using a non-parametric Mann-Whitney test to see if the differences between their scores in terms of computer and internet skills, their computer skills and also their internet skills are statistically significant. For computer and internet skills, lecturers who have access to online journals (*Median* 4.57) have a higher mean ranking 20.64 than those lecturers who do not have access to online journals (*Median* 4.00) with a mean ranking of 13.45. This difference is however significant statistically, $U = 59.00$, $p < .05$, with an effect size of $r = -.39$ out of a maximum size of 1. For computer skills, lecturers who have access to online journals (*Median* 4.46) score a higher mean ranking of 20.64 than their counterpart lecturers who do not have access to online journals (*Median* 4.03) with a mean ranking of 13.45, the result again is statistically significant, $U = 59.00$, $p < .05$, with an effect size of $r = -.38$. On the internet skills, of the same category lecturers who have access to online journals (*Median* 4.75) perform higher with a mean ranking of 20.45 than lecturers who do not have access to online journals (*Median* 4.25) with a mean ranking of 13.55. Again, the result is significant statistically, $U = 61.00$, $p < .05$, with an effect size of $r = -.37$. See table 4.14.

Table 4. 15.
The influence lecturers' access to online journals has on their computer and internet skills, computer skills and internet skills

	Online journal access	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	have no access to online journals	20	13.45	4	269.00	59.0*	-2.107	-.390
	have access to online journals	11	20.64	4.57	227.00			
	Total	31						
Computer skills	have no access to online journals	20	13.45	4.03	269.00	59.0*	-2.108	-.378
	have access to online journals	11	20.64	4.46	227.00			
	Total	31						
Internet skills	have no access to online journals	20	13.55	4.25	271.00	61.0*	-2.035	-.365
	have access to online journals	11	20.45	4.75	225.00			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

C10: For computer and internet skills, lecturers with personal computers (*Median* 4.36) have a higher mean ranking 18.31 than lecturers without personal computers (*Median* 4.10) with a mean ranking of 13.53. This difference is however not statistically significant, $U = 83.00$, $p > .05$. For computer skills, lecturers with personal computers (*Median* 4.31) score a higher mean ranking of 18.41 than their counterpart lecturers without personal computers (*Median* 4.08) with a mean ranking of 13.43, the result is not statistically significant again, $U = 81.50$, $p > .05$. On the internet skills of the same category, lecturers with personal computers (*Median* 4.50) perform higher with a mean ranking of 18.56 than lecturers without personal computers (*Median* 4.25) with a mean ranking of 13.27. However, the result is non-significant statistically, $U = 79.00$, $p > .05$. See table 4.15.

Table 4. 16.
The influence lecturers' access to personal computers has on their computer and internet skills, computer skills and internet skills

	Personal computer access	N	Mean Rank	Median	Sum of Ranks	Mann-Whitney U	Z	Effect Size
Computer and internet skills	have no personal computer	15	13.53	4.1	203.00	83.000	-1.460	-.262
	have personal computer	16	18.31	4.36	293.00			
	Total	31						
Computer skills	have no personal computer	15	13.43	4.08	201.50	81.500	-1.520	-.272
	have personal computer	16	18.41	4.31	294.50			
	Total	31						
Internet skills	have no personal computer	15	13.27	4.25	199.00	79.000	-1.630	-.293
	have personal computer	16	18.56	4.5	297.00			
	Total	31						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Discussions

In the analysis of lecturers' online journal access, the results proved statistically significant, thus revealing that those lecturers who have access to online journals have more computer and internet skills than those lecturers who do not have access to online journals. Online journal access is crucial in university education; more specifically to internet related education. It is an added advantage for this group of lecturers that have access, and could be

utilised during the training programme for the provision of reading materials. The fact that they are highly skilled as far as these prerequisite skills are concerned is also an indication that access to online journals gives lecturers added advantage in understanding computer and internet.

However, it is also noteworthy that UTG lecturers have very similar levels of computer and internet skills; therefore, they have similar readiness skill characteristics as far as e-learning implementation is concerned. That revelation makes the work easier for the researcher since the assigned tasks will be quite similar.

On gender, the lack of significance however reveals that male and female lecturers may have similar skills required for e-learning implementation. Also, the case of age reveals a characteristic as far as e-learning implementation is concerned. There is a tendency that if higher level questions are asked the younger lecturers may be classified more skilful since they have a higher mean ranking in the first place, and in the crosstabs testing they are reported to have higher computer and internet training, which was significant statistically. On duration of stay in UTG as lecturers, their performance does not show any influence in their computer and internet skills, computer skills or internet skills. This relates to the fact that lecturers in UTG may have similar prerequisite skills for e-learning implementation as far as their duration of stay as lecturers in UTG is concerned. In the crosstabs however, the newly employed lecturers showed a higher level of ICT training than those who stayed beyond a year. This particular test is confined to only the ability to take up the technological challenges of e-learning training without having to go back to those basic computer and internet skills. There is the possibility that the trend is inclined towards higher competency on the side of the new lecturers based on the mean ranks even though the difference is not significant, and the nature of their prior computer and internet training tested through the use of crosstabs.

Once again, in the case of status, as in the crosstabs, seniority does not show any discrimination. The three results on departmental affiliations reveal that UTG lecturers are ready for the e-learning implementation. The characteristic is that whether lecturers are in the social sciences or in the natural and health sciences they may have similar readiness status, and that is, they are generally likely to have high computer and internet skills required for e-learning implementation. However, what is empirically shown may be a chance happening.

In the same vein, result on the academic qualifications of lecturers may be a chance happening. Notwithstanding, scoring high on the test is indicative of the fact that they are all competent irrespective of their academic qualifications.

On computer and internet training both highly trained lecturers and lowly trained lecturers in computer and internet are all ready for e-learning implementation. Even though those lecturers with higher training score higher, as long as the level of test required is concerned, their performance is attributed to chance happening. Again, lecturers who have teaching websites and lecturers who do not have teaching websites do not show any difference. The same goes for lecturers who have access to personal computers and those lecturers that do not have access to personal computers.

Eventually, the researcher deduced the following characteristics of lecturers in terms of computer and internet skills:

- Both male and female lecturers are competent in computer and internet and are more likely to manifest no discriminations on the basis of gender;
- Both the young and old in UTG are skilful as far as the prerequisite readiness skills for e-learning implementation are concerned;
- At the level of prerequisite readiness skills for e-learning implementation, both lecturers who have been in UTG shortly and those who have been there longer are likely to have similar levels of competency;
- Irrespective of UTG lecturers' academic status, they are likely to be ready for the e-learning implementation programme. Even though there are manifestations of some slight differences, these are not significant enough statistically for concern;
- The nature of lecturers departments' affiliation does not show any significant influence on their computer and internet skills as far as the level tested is concerned;
- UTG lecturers' seniority does not influence a higher computer and internet skills over junior lecturers – in fact the opposite has been the case in the crosstabs test;
- Lecturers in UTG, though have different training levels in computer and internet, are likely to have similar abilities in use of computer and internet;
- The few lecturers in UTG who have access to teaching websites, however, their difference in computer and internet skills – as far as the level tested is concerned is only a

chance happening;

- Lecturers that have access to online journals are more likely to be at an advantage than those lecturers that do not have such access in ability to use computer and internet. This is manifested statistically significantly at a low level of prerequisite test; and,
- Personal computers access in UTG is not likely to be a determinant for e-learning readiness qualification.

The aforementioned characteristics of lecturers have been revealed from the empirical tests conducted using SPSS software, and are therefore based on strong likelihood of statistical assumptions.

Instructional Analysis of E-learning Training Content

In this part of the research study the researcher drew a road map for the training programme. Training content is a critical issue, and getting the right one for a training programme would require information gathering from many sources. Keeping in mind the principal objective of the training – to develop lecturers to have e-learning skills; both synchronous and asynchronous delivery methods – the researcher reviewed course contents of two e-learning lecturers in two different universities. However, the researcher leaned more on the one in which he conducted his observation. The ensuing changes resulted from the analysis of the e-learning situation in UTG. In the content analysis process three main areas were addressed:

- Computer and internet skills needed to interact with the e-learning platform both asynchronously and synchronously;
- Appreciation of the importance of the web in education, thus the rationale behind the pedagogical paradigm shift argued in chapter one (this part is critical to this research study); and,
- Knowledge of the strategy to deliver e-learning lessons to solicit effective learning.

Trainees need to interact with an e-learning platform; therefore features of a typical platform were listed for demonstration purposes. Again under the hands-on skills (motor and psychomotor skills), trainees need to learn how to develop a courseware that can be used in

their online teaching process. Microsoft Publisher mini-project has been identified. Eventually, it is important to know whether the training objectives have been achieved. A process that will mimic on-the-job training is adopted for that purpose. The training shall be blended, using both face-to-face and e-learning or distance learning. However, the greater part of the training shall take the face-to-face mode. Platform interaction in the first module and evaluation are intended to be largely computer based, and would require some distance learning process.

Trainees need to appreciate the use of the web in education, and know how its various functions could be utilised for educational purposes. Also they need to understand and appreciate how learning takes place, which inspired the researcher to look at e-learning from the perspectives of four main learning theories as discussed in chapter two of this research. Learning in e-learning system has been cited as critical and this necessitates a proper planning process, thus the need for a modular content on instructional design. To this end, the researcher selected two models of instructional design and laid emphasis on one of the models.

The researcher tentatively arranged these into modules and assigned modular objectives to the entire content. A qualitative interview was conducted with four Professors; all seasoned e-learning experts, to discuss the relevance, delivery and evaluation techniques of individual contents.

Relevance of the content

In this section the four experts have been coded as 1st expert through the 4th expert and data from these interviews were analysed one after the other looking at what they each said about all the six modules of the training programme. The comments and a brief introduction of the experts could be found in Appendix M. Their comments were later grouped by similarities and differences based on the relevance of the training content. See table 4.17.

Table 4. 17.
Summary of themes and comments of experts on the content relevance

Content Module	Theme	Comments
Module 1	**Relevant (1,2,3,4)**	- Platform should be part of the content; use moodle because it is relatively free
		- Should know about interface design and how these are used; needed for producer production
		- Apply what they learn into their teaching, should know the platform
		- Encourage them to go online the platform
		- Module one needs monitoring
		- Look at different kinds of e-learning that people are putting online
		- Hands-on activities needs onsite monitoring
		- Hands-on activities particularly excite learners
		- Use demonstration learning (show-and-tell) to expose them to different forms of e-learning in module 1, seeing is better than hearing (a picture is worth thousand words)
		- Considered the use of Moodle and purchase services from vendors at cheaper rates to incorporate in the Moodle system
		- Other platforms may be very expensive
		- Agrees with the use of the discussion boards, video conferencing, uploading files, downloading files, email chat-rooms, and other relevant functions provided in Moodle
		- Teach functions of the platform step-by-step, trainees need to fully utilize it in the
		- Different categories of e-learning should be handled by using the e-learning platform with its different functions to introduce the categories
		- Problem solving should be part of the content; there have to be people to solve our problems
		- Give trainees opportunity to do work where they can get help – there are many functions on the platform
Module 2	**Relevant (1,2,4)**	- Important to know about ICT technologies and why more people are using it now – give them statistics of usage
		- Ask learners to go through an online session to experience real online courses
		- Other real online resources can be assigned for students to study on their own
		- Use discovery techniques in definitions and categories of e-learning
		- Another place good for discovery is the abundant reusable objects on the web that can be put in their own e-learning courses
		- E-learning has better peer interaction that traditional face-to-face
		- Trainees should have an idea about how the internet works
		- Trainees should know some major services of internet, e.g. FTP, HTTP, etc
		- Introduce FTP and shows trainees how to upload materials
	Not relevant (1,3)	- Many things do not need to be included in training
		- Cost effectiveness and efficiency of training should be thought of
		- Training programme is different from graduate degree programme
		- Be very brief for some parts in training programme
		- It is relevant but less lecture or classroom time should be given to this content
		- Use of more complete hand-outs could be given on the history of the web and e-learning
		- Getting them started is most important

Table 4.17.
Summary of themes and comments of experts on the content relevance (Continued)

Content Module	Theme	Comments
Module 3	**Relevant (2,3,4)**	- Incorporate all the theories of learning specified for the training programme
		- Training instruction should not be limited to a specific theory
		- Q & A is most helpful in teaching learning theories
		- Present students with some conflicting, provoking theories in a very good way to focus on some important teaching points, and make them debate
		- Ask for examples in their own experiences of how those theories can be related,
		- Describing this idea through a scenario-based discovery method
		- Different categories of e-learning should be handled by using the e-learning platform with its different functions to introduce the categories
		- Trainees will learn how to flexibly incorporate different types of e-learning into class activities in other to make e-learning more appealing
		- Acknowledge personality differences
	Not relevant (1,3,4)	- Trainers may not want to include how learning takes place, but to show them how to operate, so be direct and concise with them. They may have other things to do
		- Use additional time for learning skills
		- Briefly introduce it and allow interested ones to search for more information
		- Provide URLs for interested ones on learning theories; they are meant to explain the underpinnings of what is during learning process
		- Brief definition of e-learning should be given
		- Put emphasis on the e-learning content
Module 4	**Relevant (1,2,3,4)**	- ADDIE takes the different steps into consideration
		- Most of the practitioners of e-learning do not go through instructional design
		- There is a specific sequence that the learners have to go through
		- Some of the fundamental principles of ID are useful in any course design
		- Decide learning preferences before coming into specific instruction
		- Deciding prerequisite skills is good learner analysis
		- Use hands-on activities for understanding the whole process of instructional design
		- ADDIE is sophisticated but effective, and is very important for content analysis
		- ADDIE analysis process is a very cognitive approach
		- ADDIE good for e-learning course, though it takes too much time to teach
		- This as a most-teach content, because lecturers must have the techniques to teach
		- The trainer should convince them that this is necessary, and should link educational theories to the platform
		- ADDIE is complicated, though is the most advanced model in my opinion
		- Write a story, or design a topic, then ask trainees to develop their materials and design a content based on ADDIE
	About alternative model (2,3)	- ASSURE model is a quick one for most teachers
		- It may be difficult to do all that is demanded if they are to adopt the ADDIE model

Table 4.17.

Summary of themes and comments of experts on the content relevance (Continued)

Content Module	Theme	Comments
Module 5	**Requires much emphasis (1,2,3,4)**	- Learn skills and know how to operate
		- Just need to be shown how to operate
		- Major purpose is to get familiar with the software and to apply what they learn into their teaching #NAME?
		- Producer is relatively easier, and most people are familiar with PowerPoint
		- Recorded materials can be used in producer also
		- Hands-on session - Producer design for instance, presentation should not be at the end
		- Give enough time to evaluate properly, and allow trainees to redo their work
		- Estimated to cost about half a million Taiwanese dollars
		- Design mini-course, but first introduce different topics related to the mini-course
		- Get them to do some activity similar to the mini-project
	About alternative projects (1,2,3)	- Express other types of software e.g. Powercam, Camtacia
		- Consider compatibility of the programmes that should be taught
		- If learners cannot get connected onto the internet, make learning materials into CDs for use in standalone computers
		- Teachers can use video, pictures, images, and graphics to show to learners
		- IRS motivates learners to respond to questions while other learners do not know
		- IRS classroom has a video recording functionality for presentations, records PowerPoint, and the instructor, and synchronizes all these together
		- It is standard equipment that remote controlled students to respond to teacher's questions, with another function of interactive whiteboard that detects motion and shows concurrently on the screen of the overhead projector
		- Videotaping is good because most people do not want to appear bad on tape
Module 6	**Emphasis on hands-on (1,2,3)**	- Break down assignments into different parts
		- In each session you ask them to do a certain part
		- Hands-on session - Producer design for instance, presentation should not be at the end, give enough time to evaluate properly
		- Give learners opportunity to present and modify their work – major monitoring activity
		- Use normative forms of evaluation in the hands-on activities,
	Theories and concepts (2)	- Build in many materials but use Q&A to make sure they understand some of the concepts, probing help instructors to know whether learners are confusing things up
		- Q & A is most helpful in teaching learning theories
	Using examples and reflections (2)	- Ask for examples in their own experiences of how those theories can be related
	Use of normative and summative (3)	- Use normative forms of evaluation in the hands-on activities,
		-Use summative forms of evaluation in the theory-based contents
	IRS and PES for evaluation (3)	- Use of PES is mainly for peer evaluation, and can be utilised to discover some aspects
		- Use IRS also for evaluation
	Reinforcers (3,4)	- Some do not participate so instructor should motivate them or reinforce their participation through performance evaluation
		- Grade each assignment
		- Give students assignments
		- Evaluate achievements form their projects
	Group and individual evaluations (4)	- Encourage group assignment
		- Encourage individual accountability
		- Encourage social skills

Discussion of the results

Module one of the training content which is on interaction with the platform, has been considered relevant by all the four experts. Some of the experts however proposed the use of cheaper platforms like Moodle, and some also, considering the relevance, suggested the introduction of this module through hands-on exercises. There is also a suggestion on linking module two to module one, which means, having module two presented using the functions of the platform.

Module two of the training is on rationale behind the use of e-learning. This part of the training looks at the functions of the web and its use in e-learning. While experts one, two and four vouched for its relevance, again expert one in a different and decisive tone disqualifies it as irrelevant. Expert three seconded expert one's decision. Their arguments centre on the different natures of semester and training programmes in terms of availability of time and cost. These experts leaned a little bit on its relevance due to the need to convince the trainees that they need to use the web. Expert one even suggested showing statistics of web users in education. However, the researcher considers the results of the analysis of the support systems, which draws attention to the administration's lack of commitment in the past as indicated by the absence of technology related trainings, and the absence of incentives to promote e-learning. It would be relevant to let the lecturers know the benefits they stand to gain from the web in their educational career

Module three is on learning theories. While expert two completely gave support for this module, experts three and four had divided opinion on the issue. On the other hand, expert one had a complete disagreement with this module and shared this view with expert three and four. Even though theories are least derived consciously, their understanding is quite important in education. Nowadays, many educationists are of the opinion that learners and content are both diverse and therefore it would be necessary to draw from many theories to teach the same thing more effectively. In most cases learning is assumed and this is probably the biggest flaw in our education systems. It is common in universities to have people teaching without the knowledge of pedagogy, more especially on how people learn. This would be one such opportunity to introduce this class of lecturers to educational psychology through the minds of great proponents on behaviourism, gestalt, cognitivism, and constructivism. Table 2.1 provides explicit justification for the researcher's line of thought.

Notwithstanding, time allocated to this module has been reduced and at the same time supplemented with extra readings from the net.

Module four, five and six received undivided acceptance from all the experts. This means the use of instructional design is essential in this type of e-learning training programme. However, for module five the first, second and third experts talked about an alternative courseware that could be used. Experts one and three cautioned on the issue of cost effectiveness. The second expert hinted on webpage production as an alternative to Producer production. In the experts' explanation she cited the importance of having control over a blank webpage and having it designed based on the needs of the trainees and one's personal taste. Along the line it was observed that even Producer materials could be placed on such blank web pages. The expert was speaking from the perspective of a corporate trainer. Given the lack of enough experts in technology in UTG webpage production at individual level will be time consuming and unproductive. The researcher thinks it would be easier to have a centralised website of a learning management system and lecturers preparing their courses at their pace and style. The whole system will have administrators who will be responsible for help that lecturers will need and also for update of the system. It shall also help in the knowledge management of the system of the University.

On module six they all accepted the relevance so the researcher looked out for certain issues that were featured during the interview and are related to relevance of the said modular content. First, second and third experts emphasise that evaluation should base on hands-on activities; which in these case are typically modules one and five. Some of these experts suggested also that module four, which they all supported should be addressed through a hands-on exercise. Again, while the third and fourth experts mentioned some behaviourist form of reinforcement, expert three talked about the use of peer evaluation system (PES) and instance response system (IRS) in the evaluation process. The fourth expert talked about encouraging both grouping and individual evaluation mechanisms. On the other hand, the second expert suggested use of questions and answers (Q & A) on theories and concepts of the content; at some point this expert referred to this method as probing. The same expert mentioned the use of examples and reflections for theories and concepts.

Having gone through the content analysis of this research, the researcher realised that the experts agreed totally over some modules, mainly modules one, five and six. They almost

totally disagreed in module two and not very significantly in module three. Only one of the experts thought module four should not be a major concern, however the other experts also agreed that the module is time consuming. In the module for evaluation, two key systems featured, peer evaluation system and instant response system, which could not be adopted for financial reasons. It has been indicated in the administrative analysis that UTG is marginally striving on budget, material and financial capacity readiness, therefore these systems would not be applicable on this basis.

Also the inability of the lecturers in certain computer and internet skills, such as multimedia instructions, video conferencing and online chats has called for much emphasis on these skills right at the beginning of the training. Their competencies in internet and computer have also made the researcher to balance the situation by getting rid of some basic skills such as cutting and pasting, emailing, etc.

Even though the experts talked unfavourably over the irrelevance of theories of learning and the use of the web, the researcher insists keeping these modules in the content. The reason being, UTG Administration has not been conducting training in related areas and the Office of the Registrar has confessed that the staff are not competent enough to do e-learning.

Time has also been a major concern during the expert interview. However, the researcher tentatively indicates allotted time for all the sessions in their order of significance. This is expected to be adjusted relatively during the development stage. As at now the final number of days for the training is not determined, which in the researcher's mind shall be determined by many factors; funding, number of trainees, UTG's schedules, lecturers' schedules, etc. From a reference point the researcher decides to do the entire training in sixty-two hours; four week, and spending four hours each day and four days in a week. The times given in table 4.18 refer to class time only. Some sessions will require assignments and extra readings that shall be conducted outside normal sessions. The researcher also foresee that based on the sensitive nature of certain sessions hours will be borrowed from succeeding days to make up the time. See table 4.18 for a final proposed modulated content of the training programme:

Table 4. 18.
Proposed e-learning training content

Module	Topic	Session	Total Alotted Time (in Hours)	General Modular Objective
Module 1	Understanding e-learning platform	**1.** Introducing the platform to be used in the training process	1	Under supervision, trainees should be able to execute the tasks of registering (enrolling) online a given e-learning platform; and under the same supervision the instructor(s), through some hands-on exercises on specified functions, trainees should be able to properly interact with the said platform.
		2. Registration as trainees	2	
		3. Demonstrations on use of relevant functions	5	
Module 2	Rationale behind the use of e-learning	**1.** Need for a paradigm shift in education	1	After a successful exposition of some important functions of the web and its related nature to knowledge acquisition, trainees should be able to show appreciation of the need for a paradigm shift by sharing their experiences and reflections on importance of e-learning.
		2. Importance of the web to learners	1	
		3. Definitions and categories of e-learning	2	
Module 3	Understanding how learning takes place	**1.** Relating Behaviourist learning theory to e-learning	1	Trainees should be able to show a minimal level of understanding of four learning theories in relation to e-learning, after they have been given some reading materials, and sharing their reflections with other trainees.
		2. Relating Gestalt theory to e-learning	1	
		3. Relating Cognitive theory to e-learning	1	
		4. Relating Constructivist theory to e-learning	1	
Module 4	Knowing instructional design	**1.** Understanding ADDIE model	1	Trainees should know the meaning of instructional design, briefly describe two instructional design models, and how ADDIE could be applied in an e-learning scenario, after they have gone through sharing, extra-reading from the web and some hands-on exercise
		2. Understanding ASSURE model	1	
		3. Understanding the phases of ADDIE model	7	

Table 4.18.
Proposed e-learning training content (Continued)

Module	Topic	Session	Total Alotted Time (in Hours)	General Modular Objective
Module 5	Mini courseware project	**1.** Downloading Microsoft Producer and related files needed in the production and installing them on the personal and laboratory computers	1	After numerous examples from the instructor(s) and demonstrations, each group of trainees should be able to design in a courseware project of at least five minutes duration using Microsoft Producer for PowerPoint software.
		2. Developing PowerPoint slides, and recording short video/movie clips	3	
		3. Importing slides/video/audio and placing them on the time-lines	1	
		4. Capturing the videos and slides with own image and/or with explanation	3	
		5. Previewing presentation, making necessary corrections and/or synchronising project	3	
		6. Publishing mini-project	1	
		Uploading project on FTP server	1	
		7. Group presentation of mini-projects	5	
Module 6	Evaluation of training programme	**1.** Guiding registration of students	2	Each module 5 project group having selected a number of students (between 4 and 7 students), and having been exposed to instructor's monitoring, trainees should be able to demonstrate the following functions at about 70% competency level: 1. Guiding students to registrar online the platform in use; guiding students through a discussion forum; 2. Guiding students through synchronous e-learning by conducting video conferencing with PowerPoint presentation; 3. Guiding students through asynchronous e-learning by uploading their group mini-course projects assisting these students to download the projects to do assigned exercises, and upload their files onto the platform for the trainees; and, 4. Downloading the files of these students, and scoring them accordingly.
		2. Using discussion board - lecturer-student interaction	3	
		3. Using discussion board - Student-student interaction	3	
		4. Using emails and instant messaging with students	1	
		5. Conducting synchronous e-learning using video conferencing with a PowerPoint	3	
		6. Conducting asynchronous e-learning by uploading Producer project for students	4	
		7. Students downloading projects and uploading assignments onto the platform	3	

Instructional Design/Strategies of E-learning Training Content

This section of the chapter looks at the analysis of the content in terms of delivery, monitoring and evaluation. In order to achieve the objectives instruction has to be properly delivered. Also, the delivery and trainees' learning activities should as well be monitored. Eventually, the lesson objectives are tested – evaluated in this case – and those techniques as described by experts are aligned with the readiness situation.

Delivery, Monitoring and Evaluation Strategies of Training Content

The four experts have again been coded as 1st expert through the 4th expert and strategies ranging from delivery, monitoring and evaluation formed the themes of the interview. Individual results on these themes and a brief introduction of the experts could be found in Appendix N. However, table 4.19 gives a summary analysis of these themes.

Table 4. 19.
Summary of instructional methods and strategies as discussed by expert

Instructional Methods	Strategies used in the Methods
Demonstration Learning (1,2,3,4)	-After assignments get them to learn something by doing
	-Different categories of e-learning should be handled by using the e-learning platform with its different functions to introduce the categories
	-Hands-on activities for understanding the whole process of instructional design
	-Produce a demonstration programme
Guided Learning, Open Exploration (1,2,3,4)	-With URLs to help them understand
	-Sharing is good strategy for adult learners, especially in certain technology;
	-Again, get them started;
	-Video conferencing, discussion board - having classroom activities to utilize these functionalities
	-Help them to utilize some of the advance features of the platform;
	-Give learners an idea of anticipated problems by examples;
	-Give trainees opportunity to do work where they can get help - many function on the platform;
	-Introduce to learners how this software can be used;
	-Do video capturing;
	-Introduces FTP and shows them how to upload materials
	-Build in many materials but use Q&A to make sure they understand some of the concepts;
	-Is most helpful in teaching learning theories;
	-Probing helps instructors to know whether learners are confusing things up
	-Give general concepts for those things that students need to go through;
Collaborative Learning & Sharing (1,2,4)	-Allow them to share
	-Group projects for adult learners are more suitable than individual projects
	-Form groups of 3 to 4 students to perform project;
	-Collaborative learning is important – use it;
	-Encourage group assignment;
	-Encourage social skills
	-Emailing each other, instant messaging, chat rooms, discussion forums;
	-PES, giving each other grades
	-Ask learners to upload the reflection in PES for peer comments
	-Ask for examples in their own experiences of how those theories can be related;
	-Debate and sharing makes a good match;
	-Sharing is good strategy for adult learners, especially in certain technology;
	-Some debates come from sharing as well.
Motivational Learning (1,3,4)	-Encourage face-to-face interaction
	-Arouse their interest
	-To go online the platform – use platform often, reducing teaching load
	-Some do not participate so instructor should motivate them or reinforce their participation through performance evaluation;

Table 4.19.
Summary of instructional methods and strategies as discussed by experts (Continued)

Instructional Methods	**Strategies used in the Methods**
Discovery Learning (2,3)	-Using PES to discover some aspects;
	-One should try to know what the learners like most and utilize that
	-Interested students can move to discovery learning for more advanced concepts; in definitions and categories of e-learning;
	-Going online before introduction to explore different kinds of e-learning that people are putting online;
	-Exploring abundant reusable objects on the web that can be put in their own e-learning courses
Learning by Examples (2,4)	-Use of video, pictures, images, graphics to show to learners;
	-Conceptual knowledge best learnt through scaffolded materials
	-Design a mini-course, but first introduce different topics related to the mini-course;
	-Upload materials on the internet for the students to download and view;
	-Introduce some content and give interesting examples, e.g. multimedia that with sound;
	-Use videos of their interest; use lot of interesting examples to teach
Lecture & Discussions (1,2)	-A classroom session is designated to the discussion of the ADDIE model;
	-Knowing why ICT in education – module 2
Assignments (2,4)	-Other real online resources can be assigned for students to study on their own
	-Give students assignment
Brainstorming (1,3)	-Using brainstorming as a discovery process
	-Use brainstorming
Reflections (1,2)	-Asking them to keep journals and reflect on the progress of the those journals
	-Given learners homework to write reflections;
Scenario-based Learning (3,4)	-Use scenario-based teaching activities;
	-To write a story, or design a topic, develop materials and design content based on ADDIE
Debates, Discourse & Critique (1,2)	-Make them debate;
	-Debates can come out spontaneously from students – direct it skilfully;
	-Debates to get them understand the advantages and disadvantages of issues;
	-Use of debates is useful for advanced learners;
	-Present students with some conflicting, provoking theories in a very good way to focus on some important teaching points
	-Debate and sharing makes a good match
	-Doing critique in class
Trial and Error Learning (2,4)	-Design projects for the different topics;
	-Give learners the opportunity to learn from their errors;
	-Get them to do some activity similar to the mini-project;
	-Introduce content by asking them to do a project on it and then ask them redo the project to learn
	-Allow trainees to redo their work, opportunity to present and modify their work;
	-Show their work in progress;
	-Instructor stopping sessions to make sure students are doing the right thing

Table 4.19.
Summary of instructional methods and strategies as discussed by experts (continued)

Instructional Methods	Strategies used in the Methods
Extra Search/Reading (1)	-Read materials, visit websites
Giving Work in Bits (1)	-Breaking down assignments into different parts
Self-pace Learning (1)	-Use self-paced learning – asynchronous
Warm-up Exercise (1)	-Use warm up activities
Presentations (2)	-Hands-on session - Producer design for instance;
Social-Network Learning (3)	-Use msn, face book, blog, etc
Grading (4)	-Grade each assignment, and allow them to see their grades and redesign for the next class if shown in the feedback process -Presentation should not be at the end
Deadlines (4)	-Give deadlines and are urged them to hand in before deadline
Monitoring (1,2,3,4)	-Use assistants to help in the monitoring activity
	-Assistants have a critical role in a lecturer's work in a training process;
	-Moodle can do the monitoring by using the chat-room, discussion, and other functions that will leave records of students' activities
	-Hands-on activities needs onsite monitoring;
	-On learning theories is to ask learners to write a reflection – after introducing the abstract concept; -PES good for tracking students; give learners opportunity to present and modify their work;
	-Have teaching or training assistants going around
	-Reflecting on the progress of the said journals
Evaluation (1,2,3,4)	-Give students assignments
	-Evaluate achievements from their projects
	-Use IRS as the main tools also for evaluation
	-Moodle can do the monitoring by using the chat-room, discussion, and other functions that will leave records of students' activities -Use normative forms in the hands-on activities
	-Use PES, as the main tools also for evaluation; PES is mainly for peer
	-Use summative forms in the theory-based contents evaluation
	-Some do not participate, so instructor should motivate them or reinforce their participation through performance evaluation -PES good for peer evaluation;
	-Moodle can use something like a peer evaluation system
	-Is most helpful in teaching learning theories; probing helps instructors to know whether learners are confusing things up -Breaking down assignments into different parts
	-Peer review is more normal with her

In this analysis the experts made mention of many strategies of delivery, monitoring and evaluation methods that could be used to address the proposed modules of the training programme.

On the evaluation, those issues that came up in the content analysis feature again. Key issues that the researcher saw as critical to evaluation are the use of Moodle platform, breaking down assignments for trainees, laying emphasis on peer evaluation, on normative evaluation with hands-on activities, and equity, herein referred to as marking achievement.

On monitoring too, they all saw it as a necessary way of testing if the lesson objectives have been achieved. However, key issues that came up in the analysis are utilising assistants in the training process, using chat rooms and other functions of Moodle to keep track of trainees, keeping record of specific journals and reflecting on these for everybody, monitoring hands-on activities while onsite, and utilising PES if one is able to synchronise it.

Generally on demonstration learning method, the researcher realised that this would be ideal for hands-on exercises, especially in modules on, five and six. All four experts spoke positively on this method of delivery. For the counterpart theory or concept based modules such as two, three and four, all the four experts recommended guided learning and open exploration.

However, differences came up in the collaborative learning and sharing method of delivery. This is useful in both hands-on and concept-based modules, and first, second and fourth experts all spoke favourably for this. Motivational learning also showed some slight disagreement where first, third and fourth experts all spoke well of. According to the analysis, it is useful for both concept and hands-on based modules of the training.

Discovery leaning showed up for second and third expert, who at some point spoke about the concept based modules as relevant content of the training. They even advocated using some of those modules in a hands-on fashion. Use of examples has been supported by second and fourth experts and this for both concepts and hands-on from their explanations.

Lecture and discussions, and reflections have been supported by first and second experts. These are two methods useful in the theory and concept based modules.

Scenario-based learning, which could be seen as learning by examples if not the specific examples offered herein, has been proposed by both third and fourth experts. And in a similar vein trial-and-error form of learning came up from second and fourth experts. While the former is useful for concept-based learning, the latter is ideal, in this particular case, for hands-on exercises.

Those methods that were offered by single experts, yet very important to the research study are extra search/reading, giving-work-in-bits, self-paced learning and warm-up exercises. These are offered by the first expert only, while the fourth expert offered giving grades and deadlines for students' work, the second expert offering presentations and the third expert offering network learning. It must be noted that extra search/reading and warm-up exercises are all concept-based methods while presentations, social networking, giving-work-in-bits, self-paced learning, grading, and giving deadlines are useful for both concept/theory based and hands-on exercises.

Discussion

The training content, as proposed by the researcher, has been divided into hands-on content and the theory/concept-based content. The numerous strategies that are adopted from the research interview and translated into methods of delivery, monitoring and evaluation shall be adopted based on convenience. These form the proposed design of training instruction.

The researcher's discussion therefore centres on what is applicable during the training. All the four major methods of learning theories shall be utilised during the training. For instance, in some specific lessons that would require some behaviourist approach, the trainees will remain passive while the instructor design the learning environment as outlined in table 2.1 of the literature review. When instructors probe they are somehow rendering trainees passive while at the same time helping them out to develop concepts or schemas which are both cognitive and constructivist.

To give a more profound description based on the design of the research study the researcher gives the following example: In the second and third lessons of the first module trainees could learn through both demonstrations and trail-and-error, or either of them. This

method is largely constructivist in nature, while at the same time cognitive in the sense that concepts are being developed during their interaction. The way schemas are developed as inferred by Leflore (Abbey, 2000:105) in examples and non-examples (chapter 2 of this research study) is a better description. Also, the researcher assumes that since lecturers are at different computer and internet skills levels, they shall be working in groups blended with those highly trained and those lowly trained (bachelor's degree holders and master's degree holders and above, as discussed in the crosstabs analysis of lecturer analysis of this research study). Those with programming skills can be of immense help to those with basic word processing skills, and when they share the result will be remarkable – share and not debate (Other areas will require debates, for instance, understanding ASSURE and ADDIE models. They could all search on the web and debate on which model they think is best. No one will take offence since in this case those lecturers with little computer and internet skills will be given opportunities to speak their minds). The idea of grouping is in support of the infrastructural need of UTG. Group trainees in hands-on activities, especially if there are more trainees than computers. Table 4.20 give a description of how lessons are supposedly sequenced, and what instructional methods, in the researchers mind, could best be used to address the lessons.

Table 4. 20.
Lesson sequencing showing instructional methods applicable to each lesson

	Module Lessons	Examples of Applicable Instructional Methods
Module 1: Understanding e-learning platform	**1.** Introducing the platform to be used in the training process	Lecture & Discussion; Presentations
	2. Registration as trainees	Demonstration; Trial & Error
	3. Demonstrations on use of relevant functions	Demonstration; Trial & Error
Module 2: Rationale behind the use of e-learning	**1.** Need for a paradigm shift in education	Guided Learning, Open Exploration
	2. Importance of the web to learners	Guided Learning, Open Exploration
	3. Definitions and categories of e-learning	Discovery Learning; Demonstration
Module 3: Understanding how learning takes place	**1.** Relating Behaviourist learning theory to e-learning	Collaborative Learning & Sharing; Lecture & Discussions
	2. Relating Gestalt theory to e-learning	Collaborative Learning & Sharing; Lecture & Discussions
	3. Relating Cognitive theory to e-learning	Collaborative Learning & Sharing; Lecture & Discussions
	4. Relating Constructivist theory to e-learning	Collaborative Learning & Sharing; Lecture & Discussions
Module 4: Knowing instructional design	**1.** Understanding ADDIE model	Scenario-based Learning; Debates, Discourse & Critique
	2. Understanding ASSURE model	Scenario-based Learning; Debates, Discourse & Critique
	3. Understanding the phases of ADDIE model	Scenario-based Learning; Debates, Discourse & Critique; Demonstration Learning

Table 4.20.
Lesson sequencing showing instructional methods applicable to each lesson (Continued)

	Module Lessons	Examples of Applicable Instructional Methods
Module 5: Mini courseware project	**1.** Downloading Microsoft Producer and related files needed in the production and installationing them on the personal and laboratory computers	Demonstration Learning; Guided Learning
	2. Developing PowerPoint slides, and recording short video/movie clips	Collaborative Learning & Sharing; Assignments; Trial and Error Learning
	3. Importing slides/video/audio and placing them on the time-lines	Guided Learning; Learning by Examples; Trial and Error Learning
	4. Capturing the videos and slides with own image and/or with explanation	Guided Learning; Learning by Examples; Trial and Error Learning
	5. Previewing presentation, making necessary corrections and/or synchronising project	Guided Learning; Learning by Examples; Trial and Error Learning
	6. Publishing mini-project	Guided Learning; Learning by Examples; Trial and Error Learning
	Uploading project on FTP server	Guided Learning; Learning by Examples; Trial and Error Learning
	7. Group presentation of mini-projects	Warm-up Exercise; Presentations; Motivational Learning
Module 6: Evaluation of training programme	**1.** Guiding registration of students	Monitoring & Evaluation
	2. Using discussion board - lecturer-student interaction	Monitoring & Evaluation
	3. Using discussion board - Student-student interaction	Monitoring & Evaluation
	4. Using emails and instant messaging with students	Monitoring & Evaluation
	5. Conducting synchronous e-learning using video conferencing with a PowerPoint	Monitoring & Evaluation
	6. Conducting asynchronous e-learning by uploading Producer project for students	Monitoring & Evaluation
	7. Students downloading projects and uploading assignments onto the platform	Monitoring & Evaluation

The list of strategies is given by experts so designers or users of the model would have to see which strategies will work in their respective situations. The whole arrangement could be of immense help to trainers since it combines both theory and practice, and is largely informed by renowned e-learning experts in professorial ranks, and also by an empirical study of e-learning support systems of UTG (a Developing World university), and e-learning related characteristics of lecturers, as well as professionally opinionated e-learning training content.

CHAPTER 5. CONCLUSIONS AND RECOMMENDATIONS

Chapter Overview

This last chapter of the thesis research study addresses two general issues. One is conclusions on the purposes of the study and the other is on the recommendations for the University, the government of The Gambia, the University's line Department, philanthropic organisations and further research areas.

Conclusions

ADDIE as described by almost all the experts interviewed is a complex process. The key issues in the analysis process that the researcher focused on are administrative or support systems analysis, which includes ICT infrastructure, training and human resource base, budgets and other capital supports and motivation; the learner analysis which describes the prerequisite computer and internet skills readiness level, and the characteristic trends in the lecturers, and the instructional analysis which has to do with the content and objectives. Again, the key issues that this research dealt with in the design phase are the content relevance, delivery strategies and evaluation. Evaluation herein refers to assessment of the training content modular objectives.

Academic institutions are left with no choice but to embrace the pedagogical paradigm shift; and that is to embrace e-learning as a mode of delivery in their institutions. And for the fact that over the past UTG has not been using digital learning as a mode of delivery, and the pilot phase of the Pan-African e-Network Project which requires lecturers interaction with an e-learning platform, the use of instructional design along the lines of learning theories, trainees and the institutional environment is a dire need. In this way lecturers will develop the right attitudes towards the web and build the necessary skills to blend theory and practice to design lessons that will motivate users. This will in turn create a competitive advantage for UTG over other institutions.

Lecturers in the UTG who responded have indicated their readiness to take up e-learning in terms of their computer and internet skills. However, at the administrative level much is needed. The fact that they depend entirely on what The Gambia Government and

Donor Agencies give is indicative of their marginal readiness, and cannot adequately sustain a viable e-learning system. Already there are problems of bandwidth, hardware in terms of physical computer accessibility which keeps a large number of both students and lecturers away from internet access.

Therefore, to achieve this training objectives expert opinions and a thorough delivery observation are necessary, which included discussions, reflections, and assignments. A research framework has been developed in accordance with the research study. Qualitative approach is used to explore university e-learning through observation of an e-learning teaching process, and an in-depth expert interviews to propose a suitable e-learning instructional design of a training content. This centred on strategies to present an adopted training content. The content is built on the realisation that computer and internet skills are essential if lecturers have to interact with e-learning platforms synchronously and asynchronously; that these lecturers must have to appreciate the importance of the web in the delivery of education; and that practical expert knowledge would have to be blended with theory. Later, a qualitative interview, which centred on analysis of the instructional content, informed the formulation of the training modules. And it is sequentially arranged to guide lecturers to effectively interact with an e-learning platform. Later, open coding has been deployed to examine data, and to generate themes by categorising issues that prominently or less prominently showed up. The responses were grouped and later categorised for discussion. Eventually, the interviews with the expert group, e-learning class observation and relevant literature all align the learning theories, adult learning principles, and e-learning delivery principles.

So much have been offered by the experts and one can easily tell if the strategies attributed to these methods are behavioural, gestalt, cognitive or constructivist. Much has been desired but part of these valuable technological mechanisms could not be used due to capital support. Two other issues (IRS and PES) are new technologies in e-learning and are found to be very useful in the whole process but could not be incorporated due to cost. They would have been ideal in both monitoring and evaluation processes.

Therefore, to use this proposal, one can draw from the numerous strategies to address the content objectives. Development, implementation and evaluation phase of the

model shall be completed once funds are available.

Recommendations

This part of the research makes some recommendations for those institutions or stakeholders in the welfare of UTG and how they should contribute in the paradigm shift or the implementation of e-learning.

University of The Gambia

This institution has a big role to play in The Gambia's socio-economic development. However, this role cannot be fulfilled if pedagogical paradigm shift is not embraced. It shall require a collective effort though, but the bulk of the task lies on the Administrative management of the Institution. The more important things for redress are the human capital base, motivation and provision of good infrastructure.

The Government of The Gambia

The Gambia has an inspiring higher education policy. However, the task is for the University to translate these dreams into reality. The Government therefore should support the University to further strengthen its human and material capital resources. A possible way to do this is to have the University collaborate with the Departments of State, and other corporate institution in training and research endeavours.

Department of State for Higher Education, Research, science and Technology

This Department oversees the University and are directly responsible for its up keeping. The University on the other hand has the human resource that the State Department needs for its educational, research and technological sectors. A possible collaboration in this regard will be quite effective. The Department should also pursue the integration of tertiary and higher education institutions. This will help the University and other institutions to maximise the limited resources such as bandwidth and human capital.

Philanthropic organisations

It would be essential for donor agencies to divert their support towards knowledge economy. In the researcher's opinion poverty is not the lack of physical resources, but the inability of the mind to utilise one's resources to meet one's needs. Investing in knowledge economy is synonymous to creating solutions for the knowledge recipients' problems such as poverty alleviation, meeting up millennium development goals and 'Silicon Valley' dreams.

Further research

Instructional design is a tiring but thorough process, nonetheless, the trend this research study takes shall have to continue. The model adopted by this study would require development, implementation and evaluating processes. This calls for further research. Other areas of concern for research are the more thorough lecturer analysis for e-learning readiness of the entire higher education system in The Gambia, and a more in-depth analysis of strategies.

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APPENDIX A. PILOT E-MAIL TO UTG LECTURERS

Dear Sir/Madam,

First, I must apologise for trying to take part of your valuable time, however, your kind consideration greatly contribute to my welfare and to the welfare of the University of The Gambia.

I have been a student at the UTG and have shared along the chores of its technological handicap, which has inspired me to do a research on needs assessment or readiness of the UTG to embrace e-learning as a teaching technique. This means we are collectively going to find out how lecturers of the University of The Gambia can ease their work load by accessing and presenting to students the digital information that is available to any other university in the developed world.

Sir/Madam, I am therefore asking for ten minutes or less of your time to answer a few questions in the attached file and send it back to me. Time is actually not on my side so the earlier you help the better for me. And be rest assured of my sincere gratitude, and that your information will be treated with the highest level of confidentiality.

While awaiting your invaluable assistance, I continue to pray for your success and the advancement of our only university, UTG.

Sincere regards,
Yusupha Touray
Graduate Student
Institute of International Workforce Education & Development (IWED)
National Taiwan Normal University (NTNU)
162, Heping East Road, Section 1, Taipei, Taiwan

E-mail: yusuftouray@yahoo.co.uk
Mobile: 886-935-8176-58
Fax: 886-2-2351-0454

APPENDIX B. PILOT QUESTIONNAIRE FOR UTG STUDENTS

This is a survey questionnaire on e-learning readiness assessment of the University of The Gambia. Read each item and answer them in your best judgement.

Name	Surname:
.....	.....
Gender:	**Age:**
Male Female	..... years
Educational Qualification:	
.....	
Department:	**Year of Study:**
.....	.....
Do you have a personal computer (PC/Laptop) at work place? Specify the CPU, Processor.	**Which IT training have you attended before:** 1. ..... 2. .....

Appendix B (Continued).

Access to Internet Technology

Access to internet technology refers to both computer hardware and software access and also to internet facilities. This Likert type items are targeted to represent the actual situations. Read and mark in one of the boxes (1 to 5) that best qualify your situation. There are 7m items altogether and all them should be answered, and only one box should be marked for each item.

	Items	1	2	3	4	5
1	I have access to computer (even without internet) at my work place	1 hour or less of the working hours of the day	About 3 hours of the working hours of the day	About 4 hours of the working hours of the day	About 5 hours of the working hours of the day	More than 6 hours of the working hours of the day
2	I have access to internet and/or intranet at my work place	1 hour or less of the working hours of the day	About 3 hours of the working hours of the day	About 4.5hours of the working hours of the day	About 6 hours of the working hours of the day	More than 7 hours of the working hours of the day
3	My personal computer outside my work place has internet access	Less than 3 hours of the day	About 3 to 8 hours of the day	About 9 to 14 hours of the day	About 15 to 20 hours of the day	More than 20 hours of the day
4	The computer I use has the following features: enough RAM and enough storage on hard drive	Far less than 512 MB of RAM and 40 GB storage on hard drive	A little less than 512 MB of RAM and 40 GB storage on hard drive	About 512 MB of RAM and 40 GB storage on hard drive	About 1 GB of RAM and 80 GB storage on hard drive	more 1 GB of RAM and 80 GB storage on hard drive
5	The computer I use has a CD-ROM, efficient firewall and antivirus	None of them are available	All of them are available but are not in working condition	All of them are available and are functioning fairly well	All of them are available are functioning well	All of them are available and are functioning quite Satisfactorily
6	The computer I use has features such as speakers, web-cam, Bluetooth devices, audio devices, etc	The computer I use does not have such features	such features are available but they are not in good condition	Such features are available but I do not use them	Such features are available but I rarely use them	Such features are available and I use them often
7	The computer I use has software such Microsoft Office, adobe acrobat, internet browsers, etc	The computer I use does not have such software	The computer I use has such software but they are out-dated	The computer I use has such software but few of them are of standard	The computer I use has such software and most of them are of standard	The computer I use has such software and all of them are of standard

Appendix B (Continued).

Internet Technology Skills

Internet technology skills refer to those skills that are required to operate a computer. It involves basic computer skills as well as internet skills. This Likert type items are targeted to represent the actual situations. Read and mark in one of the boxes (1 to 5) that best qualify your situation. There are 6 items altogether and all of them should be answered, and only one box should be marked for each item.

	Items	1	2	3	4	5
1	Keyboarding; using mouse; creating files , saving files and editing files, are some of the basic computer skills of which I possess	Less than two of such basic computer skills	2 to 3 of such basic computer skills	4 to 5 of such basic computer skills	6 to 7 such computer basic skills	Almost all the basic computer skills
2	e-mail, chat, surf, saving files, creating folders, uploading files, using search engines, entering passwords, sending e-mails with attached files are some of the basic internet skills of which I possess	Less than 3 of such basic internet skills	3 to 4 of such basic internet skills	5 to 6 of such basic internet skills	7 to 8 of such basic internet skills	More than 9 of such basic internet skills
3	I am able to read and learn, or follow the direction on a computer screen to accomplish a task.	I cannot do any such thing on a computer	I can do it but only with help from some one	I make few mistakes though but I can do it	I make almost no mistake while doing it	I can comfortably do it without mistakes
4	I would be able to use online tools (e.g., email, chat) to do assignments and upload them for my instructor.	I cannot do any such thing on a computer	I can do it but only with help from some one	I make few mistakes though but I can do it	I make almost no mistake while doing it	I can comfortably do it without mistakes
5	I would be able to carry on a conversation with many students using the Internet (e.g., Internet chat, instant messenger and video conferencing)	I cannot do any such thing on a computer	I can do it but only with help from some one	I make few mistakes though but I can do it	I make almost no mistake while doing it	I can comfortably do it without mistakes
6	I would be able to relate the content of short video clips (1-3 minutes typically) to the information I have read online or in books.	I cannot do any such thing on a computer	I can do it but only with help from some one	I make few mistakes though but I can do it	I make almost no mistake while doing it	I can comfortably do it without mistakes

Appendix B (Continued).

Attitudes towards IT

Attitude toward internet measures the interest one has in internet technology. This Likert type items are targeted to represent the actual situations. Read and mark in one of the boxes (1 to 5) that best qualify your situation. There are 5 items altogether and all of them should be answered, and only one box should be marked for each item.

	Items	1	2	3	4	5
1	I would prefer concentrating on my work even when there are online distractions (e.g., friends sending emails or Websites to surf).	I would prefer such distractions all the time	Most of the time I would prefer such distractions	I do not know whether I would prefer distractions or not	Most of the time I would prefer concentration on my work	I would always prefer concentration on my work
2	I think that I would be able to concentrate on my work even when there are offline distractions (e.g., television, children, and such).	I would prefer such distractions all the time	Most of the time I would prefer such distractions	I do not know whether I would prefer distractions or not	Most of the time I would prefer concentration on my work	I would always prefer concentration on my work
3	It is important for me to browse my e-mail	I would prefer not to browse my e-mail at all	Most of the time I would prefer not to browse my e-mail	I do not know whether I would prefer browsing or not	Most of the time I would prefer to browse my e-mail	I prefer to browse my e-mail always
4	I think internet technology will help a lot in promoting education	I do not think so at all	I think it contributes very little	I do not know whether it contributes anything or nothing	I think it contributes enough in promoting education	I think it contributes all that is needed in promoting education
5	If I were asked to draw a budget for e-learning and traditional face-to-face in my institution, I would allocate	Nothing for e-learning	The least for e-learning	For e-learning just what I will allocate for traditional face-to-face learning	More to e-learning than traditional face-to-face	Almost all to e-learning so that it will replace traditional face-to-face learning

APPENDIX C. PILOT QUESTIONNAIRE FOR UTG LECTURERS

Questionnaire for lecturers

This is a survey questionnaire on e-learning readiness assessment of the University of The Gambia. Read each item and answer them in your best judgement.

General information

Name (Optional):	Surname (Optional):
.....	.....
Gender:	**Age:**
Male Female	..... years
Educational Qualification:	
.....	
Department/Institute:	**Duration in teaching/lecturing:**
.....	.....
Courses you lecture:	**Which IT training have you attended before:**
1.	1. .....
2.	2. .....
3.	3. .....
Do you have a personal computer (PC/Laptop) at work place? Specify the CPU, Processor.	**Do you have a personal computer (PC/Laptop) outside of workplace (e.g. dorm, home)? Specify the CPU, Processor.**
.....	.....

Appendix C (Continued).

Access to Internet Technology

Access to internet technology refers to both computer hardware and software access and also to internet facilities. This Likert type items are targeted to represent the actual situations. Read and mark in one of the boxes (1 to 5) that best qualify your situation. There are 7 items altogether and all of them should be answered, and only one box should be marked for each item.

	Items	1	2	3	4	5
1	I have access to computer (even without internet) at my work place	1 hour or less of the working hours of the day	About 3 hours of the working hours of the day	About 4 hours of the working hours of the day	About 5 hours of the working hours of the day	More than 6 hours of the working hours of the day
2	I have access to internet and/or intranet at my work place	1 hour or less of the working hours of the day	About 3 hours of the working hours of the day	About 4.5hours of the working hours of the day	About 6 hours of the working hours of the day	More than 7 hours of the working hours of the day
3	My personal computer outside my work place has internet access	Less than 3 hours of the day	About 3 to 8 hours of the day	About 9 to 14 hours of the day	About 15 to 20 hours of the day	More than 20 hours of the day
4	The computer I use has the following features: enough RAM and enough storage on hard drive	Far less than 512 MB of RAM and 40 GB storage on hard drive	A little less than 512 MB of RAM and 40 GB storage on hard drive	About 512 MB of RAM and 40 GB storage on hard drive	About 1 GB of RAM and 80 GB storage on hard drive	more than 1 GB of RAM and 80 GB storage on hard drive
5	The computer I use has a CD-ROM, efficient firewall and antivirus	None of them are available	All of them are available but not in working condition	All of them are available and are functioning fairly well	All of them are available and are functioning well	All of them are available and are functioning quite satisfactorily
6	The computer I use has features such as speakers, web-cam, Bluetooth devices, audio devices, etc	The computer I use does not have such features	such features are available but they are not in good condition	Such features are available but I do not use them	Such features are available but I rarely use them	Such features are available and I use them often
7	The computer I use has software such Microsoft Office, adobe acrobat, internet browsers, etc	The computer I use does not have such software	The computer I use have such software but they are out-dated	The computer I use have such software but few of them are of standard	The computer I use have such software and most of them are of standard	The computer I use have such software and all of them are of standard

Appendix C (Continued).

Internet Technology Skills

Internet technology skills refer to those skills that are required to operate a computer. It involves basic computer skills as well as internet skills. This Likert type items are targeted to represent the actual situations. Read and mark in one of the boxes (1 to 5) that best qualify your situation. There are 6 items altogether and all of them should be answered, and only one box should be marked for each item.

	Items	1	2	3	4	5
1	Keyboarding; using mouse; creating files , saving files and editing files, are some of the basic computer skills of which I possess	Less than two of such basic computer skills	2 to 3 of such basic computer skills	4 to 5 of such basic computer skills	6 to 7 such computer basic skills	Almost all the basic computer skills
2	e-mail, chat, surf, saving files, creating folders, uploading files, using search engines, entering passwords, sending e-mails with attached files are some of the basic internet skills of which I possess	Less than 3 of such basic internet skills	3 to 4 of such basic internet skills	5 to 6 of such basic internet skills	7 to 8 of such basic internet skills	More than 9 of such basic internet skills
3	I am able to read and learn, or follow the direction on a computer screen to accomplish a task.	I cannot do any such thing on a computer	I can do it but only with help from some one	I make few mistakes though but I can do it	I make almost no mistake while doing it	I can comfortably do it without mistakes
4	I think that I would be able to use online tools (e.g., email, chat) to give assignments to students who are in different time zones.	I cannot do any such thing on a computer	I can do it but only with help from some one	I make few mistakes though but I can do it	I make almost no mistake while doing it	I can comfortably do it without mistakes
5	I would be able to present course related information in video formats	I cannot do any such thing on a computer	I can do it but only with help from some one	I make few mistakes though but I can do it	I make almost no mistake while doing it	I can comfortably do it without mistakes
6	I would be able to carry on a conversation with many students using the Internet (e.g., Internet chat, instant messenger and video conferencing)	I cannot do any such thing on a computer	I can do it but only with help from some one	I make few mistakes though but I can do it	I make almost no mistake while doing it	I can comfortably do it without mistakes

Appendix C (Continued).

Attitudes towards IT

Attitude toward internet measures the interest one has in internet technology. This Likert type items are targeted to represent the actual situations. Read and mark in one of the boxes (1 to 5) that best qualify your situation. There are 5 items altogether and all of them should be answered, and only one box should be marked for each item.

	Items	1	2	3	4	5
1	I would prefer concentrating on my work even when there are online distractions (e.g., friends sending emails or websites to surf).	I would prefer to be distraction all the time	Most of the time I would prefer distraction	I do not know whether I would prefer distraction or not	Most of the time I would prefer concentration on my work	I would always prefer concentration on my work
2	I think that I would be able to concentrate on my work even when there are offline distractions (e.g., television, children, and such).	I would prefer to be distraction all the time	Most of the time I would prefer distraction	I do not know whether I would prefer distraction or not	Most of the time I would prefer concentration on my work	I would always prefer concentration on my work
3	It is important for me to browse my e-mail	I would prefer not to browse my e-mail at all	Most of the time I would prefer not to browse my e-mail	I do not know whether I would prefer browsing or not	Most of the time I would prefer to browse my e-mail	I prefer to browse my e-mail always
4	I think internet technology will help a lot in promoting education	I do not think so at all	I think it contributes very little	I do not know whether it contributes anything or nothing	I think it contributes enough in promoting education	I think it contributes all that is needed in promoting education
5	If I were asked to draw budget for e-learning and traditional face-to-face in my institution, I would allocate	Nothing for e-learning	The least for e-learning	For e-learning just what I will allocate for traditional face-to-face learning	More to e-learning than traditional face-to-face learning	Almost all to e-learning so that it will replace traditional face-to-face learning

APPENDIX D. PILOT QUESTIONNAIRE FOR UTG ADMINISTRATION

Questionnaire for University Management (Administration)

Name	Year of establishment
.....	.....

Number of lecturers		Number of students		Main University Library	
Male	Female	Male	Female	Number of main university libraries	Number of computers in the libraries
.....	.....	.....	.....	.....	.....

Departments

No.	Name of Department	Population		Computers per Department	
		Students	Lecturers	Number of computers for students	Number of computers for lecturers
1					
2					
3					
4					
5					
6					

Status of Support Systems

	Items	1	2	3	4	5
1	internet/intranet server(s) of the institution is/are up and running	1 hour or less of the working hours of the day	About 3 hours of the working hours of the day	About 4 hours of the working hours of the day	About 5 hours of the working hours of the day	More than 6 hours of the working hours of the day
2	The bandwidth size of the institution's network is big enough to allow streaming of multimedia materials	Bandwidth size does not allow multimedia at all even with small number of people (less than 50 users) on the internet	Bandwidth size allows multimedia only with small number of people (less than 50 users) on the internet	Bandwidth size allows multimedia with more than 50 users on the internet	Bandwidth size allows multimedia with 100 -500 users on the internet	Bandwidth size allows multimedia with more than 500 users on the internet
3	The status of server and/or bandwidth size affect the work of lecturers and students in the institution	Students and lecturers are extremely affected by the poor conditions of server and bandwidth size	Students and lecturers are slightly affected by the poor conditions of server and bandwidth size	Students and lecturers are not affected by conditions of server and bandwidth size	Work of students and lecturers are enhanced by the good conditions of server and bandwidth size	Work of students and lecturers are extremely enhanced by the good conditions of server and bandwidth size

Appendix D Continued).

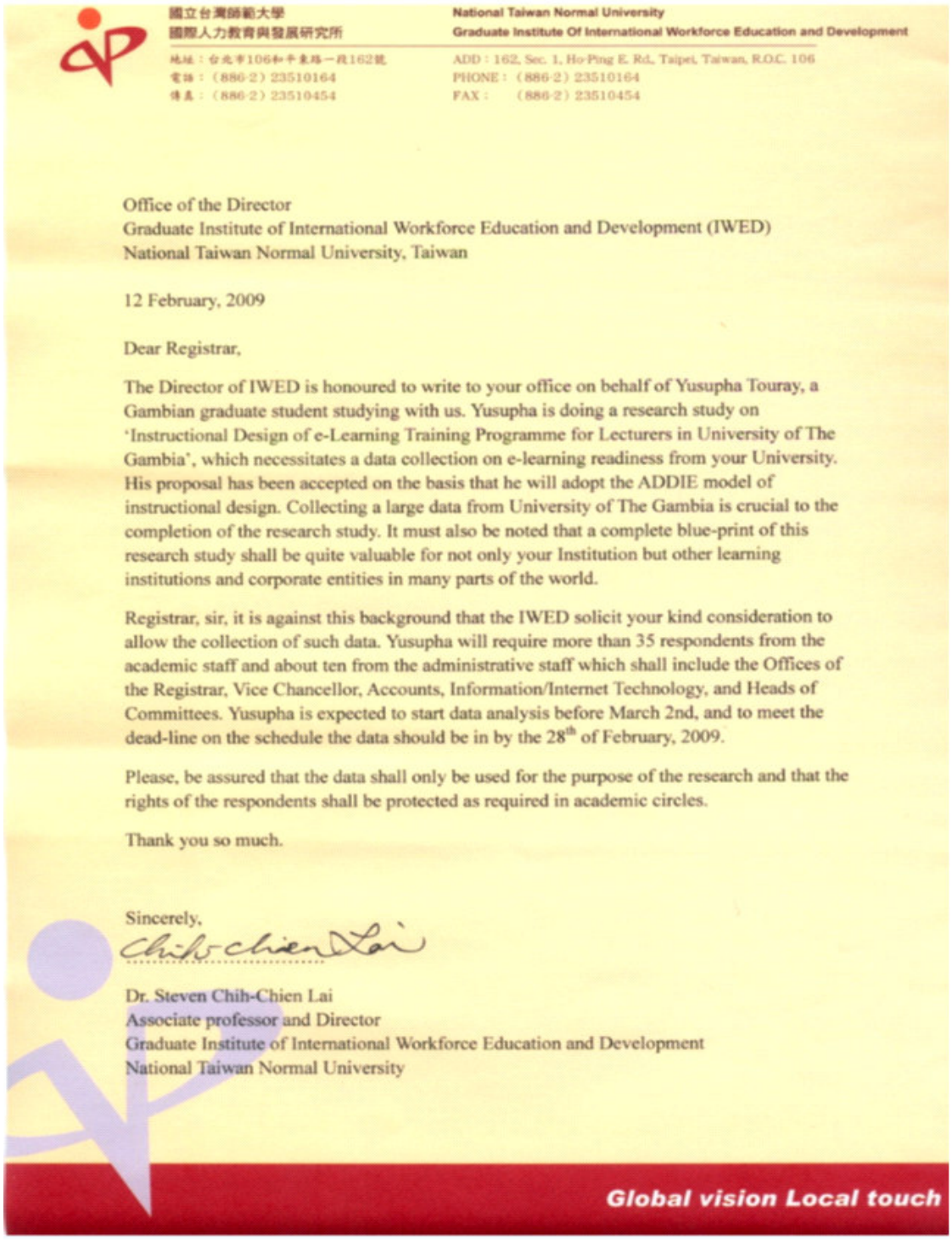
Training

	Items	1	2	3	4	5
1	The budget allocated for the training of staff in the institution	Is not available or never used for training of staff	Is not adequate for staff training even	Is used for training but there are minor budgetary constraints	Is used for training with no constraints at all	Is used for training and is not even exhausted
2	During training sessions trainees (lecturers and other staff) attend, however,	Only about one-fifth or less attends voluntarily	About two-fifths attend voluntarily	About three-fifths attend voluntarily	About four-fifths attend voluntarily	All of them attend voluntarily
3	Of the trainings conducted in the institution internet technology related ones are	Not conducted at all	Least conducted	Conducted only when there are very urgent needs for such training	Conducted even when the needs are not very urgent	Conducted more than any other related training
4	Specialists such as content experts, graphic artists, instructional designers, computer programmers that will help in the implementation and maintenance of e-learning	Are not available	Are available but not skilful enough to implement and maintain e-learning	Are available but only a few are skilful enough to implement and maintain e-learning	Are available and most of them are skilful enough to implement and maintain e-learning	Are available and all of them are skilful enough to implement and maintain e-learning

Incentives

	Items	1	2	3	4	5
1	Incentives are given to lecturers in order to promote e-learning in the institution	There are no incentives for e-learning	Lecturers do not seem to appreciate these incentives	Some of the lecturers seem to appreciate these incentives	most of the lecturers seem to appreciate these incentives	All the lecturers seem to appreciate these incentives
2	The institution plans to give or continue giving incentives in the future to promote e-learning	There are no such plans or intentions even	There may be intentions but no plans are underway yet	Such plans are being considered because there are intentions	There are plans underway but yet to be finalised	The plans are finalised and are ready for implementation
3	In order to promote internet technology in the institution internet related competitions are organised for students	Not true at all	There are plans to organise such competitions	Such a competition has been organised once in the history of the institution	competitions as such have been organised in the past 10 months	competitions as such have always been organised and there are plans for more
4	In this institution there are opportunities for staff with internet technology competency to be promoted to higher positions	Internet technology is not one of the criteria used for promotion	There are plans to include internet technology skills as one of the promotion criteria	Internet technology skills is one of the criteria used but not very significant	Internet technology is considered equally with other criteria for promotions of staff	Internet technology is considered more than most of the criteria for promotions of staff

APPENDIX E. EMAIL TO UTG GATE-KEEPER



國立台灣師範大學
國際人力教育與發展研究所
地址：台北市106和平東路一段162號
電話：(886-2) 23510164
傳真：(886-2) 23510454

National Taiwan Normal University
Graduate Institute Of International Workforce Education and Development
ADD：162, Sec. 1, Ho-Ping E. Rd., Taipei, Taiwan, R.O.C. 106
PHONE：(886-2) 23510164
FAX：(886-2) 23510454

Office of the Director
Graduate Institute of International Workforce Education and Development (IWED)
National Taiwan Normal University, Taiwan

12 February, 2009

Dear Registrar,

The Director of IWED is honoured to write to your office on behalf of Yusupha Touray, a Gambian graduate student studying with us. Yusupha is doing a research study on 'Instructional Design of e-Learning Training Programme for Lecturers in University of The Gambia', which necessitates a data collection on e-learning readiness from your University. His proposal has been accepted on the basis that he will adopt the ADDIE model of instructional design. Collecting a large data from University of The Gambia is crucial to the completion of the research study. It must also be noted that a complete blue-print of this research study shall be quite valuable for not only your Institution but other learning institutions and corporate entities in many parts of the world.

Registrar, sir, it is against this background that the IWED solicit your kind consideration to allow the collection of such data. Yusupha will require more than 35 respondents from the academic staff and about ten from the administrative staff which shall include the Offices of the Registrar, Vice Chancellor, Accounts, Information/Internet Technology, and Heads of Committees. Yusupha is expected to start data analysis before March 2nd, and to meet the dead-line on the schedule the data should be in by the 28th of February, 2009.

Please, be assured that the data shall only be used for the purpose of the research and that the rights of the respondents shall be protected as required in academic circles.

Thank you so much.

Sincerely,
Chih-chien Lai

Dr. Steven Chih-Chien Lai
Associate professor and Director
Graduate Institute of International Workforce Education and Development
National Taiwan Normal University

Global vision Local touch

APPENDIX F. EMAIL ATTACHED LETTER TO LECTURERS AND MANAGEMENT OF UTG

Graduate Institute of International Workforce Education and Development (IWED)
National Taiwan Normal University, Taiwan

15th February, 2009

Dear Sir/Madam,

I am Yusupha Touray, a former student of the University of The Gambia; now a graduate student in Taiwan at the aforementioned Institute. As a requirement for my degree I am writing a thesis on 'Instructional Design of e-Learning Training Programme for Lecturers in University of The Gambia', which shall draw expert opinions from the ranks of instructional designers, e-learning experts and trainers. I am adopting the ADDIE model of instructional design for the training programme, which is built on a strong foundation of needs analysis. Besides my academic requirement the research study is meant to serve as a blue-print for universities and corporate institutions to implement e-learning as a training mechanism. In that regard, I am kindly asking for about ten minutes of your invaluable time to respond to the attached questionnaire on e-learning readiness status of UTG.

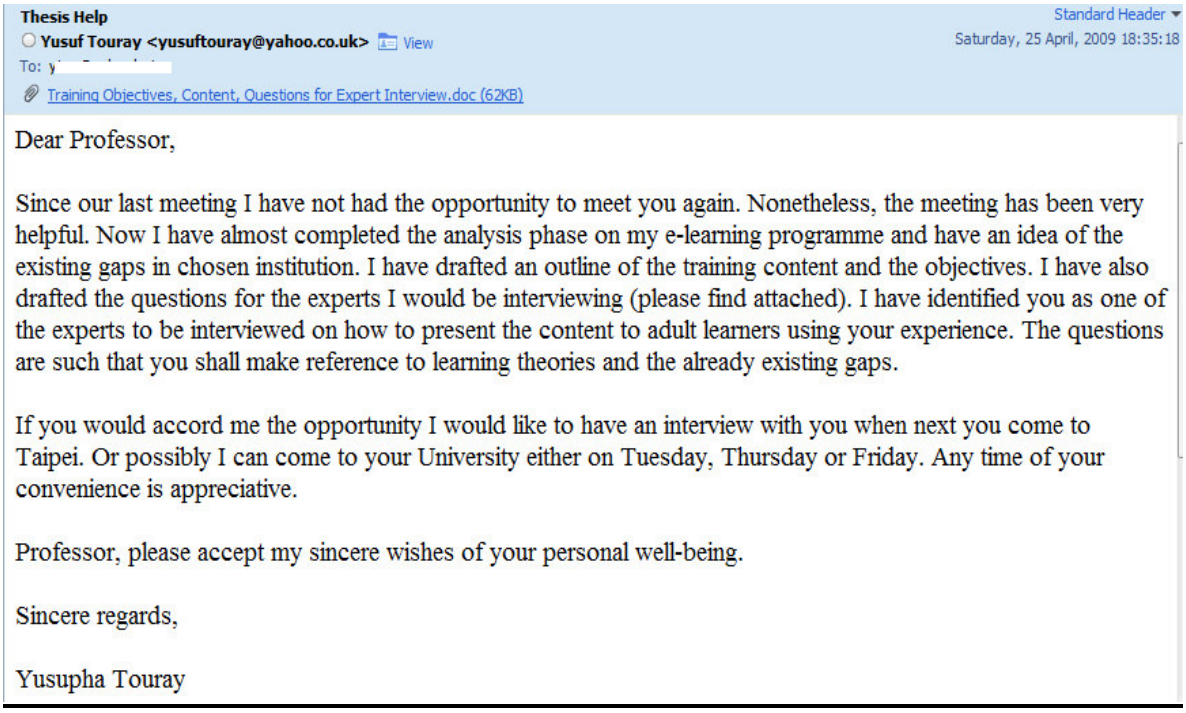
Sir/Madam, let me assure you of the confidentiality of whatever you offer in the form of your esteemed opinion. Furthermore, I shall be very grateful for your contribution to the completion of my graduate programme.

Allow me to thank you for the help you had already rendered to me during my days as a student in the University of The Gambia.

Yours sincerely,

Yusupha Touray
Graduate Institute of International Workforce Education and Development
National Taiwan Normal University

APPENDIX G. EMAIL SAMPLES TO E-LEARNING EXPERTS



Thesis Help
Yusuf Touray <yusuftouray@yahoo.co.uk> View
To: y
Training Objectives, Content, Questions for Expert Interview.doc (62KB)
Standard Header
Saturday, 25 April, 2009 18:35:18

Dear Professor,

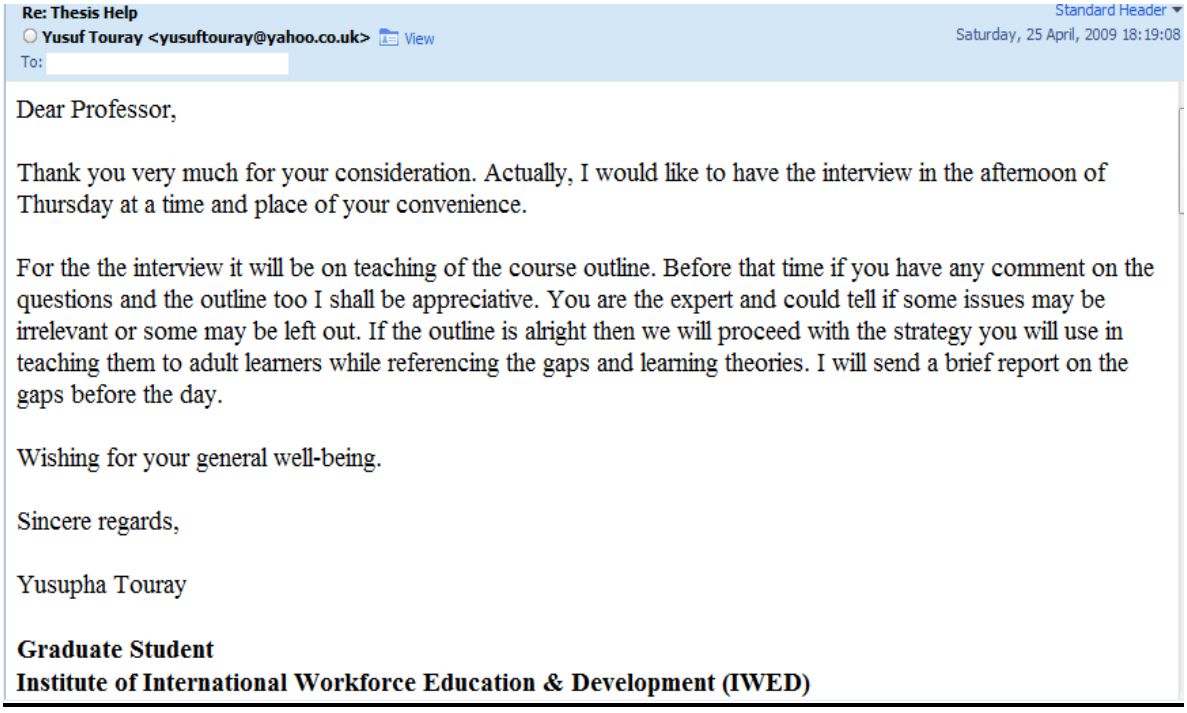
Since our last meeting I have not had the opportunity to meet you again. Nonetheless, the meeting has been very helpful. Now I have almost completed the analysis phase on my e-learning programme and have an idea of the existing gaps in chosen institution. I have drafted an outline of the training content and the objectives. I have also drafted the questions for the experts I would be interviewing (please find attached). I have identified you as one of the experts to be interviewed on how to present the content to adult learners using your experience. The questions are such that you shall make reference to learning theories and the already existing gaps.

If you would accord me the opportunity I would like to have an interview with you when next you come to Taipei. Or possibly I can come to your University either on Tuesday, Thursday or Friday. Any time of your convenience is appreciative.

Professor, please accept my sincere wishes of your personal well-being.

Sincere regards,

Yusupha Touray



Re: Thesis Help
Yusuf Touray <yusuftouray@yahoo.co.uk> View
To:
Standard Header
Saturday, 25 April, 2009 18:19:08

Dear Professor,

Thank you very much for your consideration. Actually, I would like to have the interview in the afternoon of Thursday at a time and place of your convenience.

For the the interview it will be on teaching of the course outline. Before that time if you have any comment on the questions and the outline too I shall be appreciative. You are the expert and could tell if some issues may be irrelevant or some may be left out. If the outline is alright then we will proceed with the strategy you will use in teaching them to adult learners while referencing the gaps and learning theories. I will send a brief report on the gaps before the day.

Wishing for your general well-being.

Sincere regards,

Yusupha Touray

Graduate Student
Institute of International Workforce Education & Development (IWED)

APPENDIX H. QUESTIONNAIRE FOR UTG LECTURERS

E-Learning Readiness Questionnaire for UTG Lecturers

This is a survey questionnaire on e-learning readiness on UTG lecturers' demographics, computer and internet access, and their skills related to computer and internet

PART ONE: Basic Data

Gender: Male Female

Age: years

How long have you been in UTG as a lecturer: years

List of courses you lecture in UTG

1.
2.
3.
4.
5.

List of academic qualifications you acquired:

1.
2.
3.
4.
5.

Your Department/Faculty in UTG:

1.
2.
3.

Status in UTG (tick the one that applies to your status):

a) Graduate Assistant
b) Assistant Lecturer
c) Lecturer Two
d) Lecturer One
e) Senior Lecturer
f) Associate Professor
g) Professor
h) Emeritus

Have you had any training related to internet and computer technology (e.g. word processing, HTML, programming, etc.)? Yes ___ No ___;

If yes, list them below:

1.
2.
3.
4.

PART TWO: Lecturers' access to computer and internet			
1	Do you still have your own computer (PC/laptop) that does not belong to UTG?	***Yes***	***No***
	If '**No**', go straight to question **'13'**.		
2	How long have you had a personal computer? ____ ***years***	____ ***Months***	
3	What is the model of your processor (e.g. Pentium 4, Celeron, etc)? _____		
4	What is the capacity of your RAM (e.g. 512 Megabytes, I Gigabyte, etc)? ___		
5	What is the capacity of your hard drive (for instance the amount of information that you can store in your computer; e.g. 32 Gigabytes, 60 Gigabytes etc.)? ___		
6	Do you have a web-camera facility on your computer (inbuilt or external)?	***Yes***	***No***
7	How often is the anti-virus on your computer updated (e.g. daily, weekly, etc)?_____		
8	What is the level of your Microsoft Office package (e.g. Microsoft Office 2003, Microsoft Office 2007, etc.)? _____		
9	Do you have a CD-ROM or DVD-ROM on your computer?	***Yes***	***No***
	If yes, specify: CD-ROM DVD-ROM		
10	Do you have an Adobe Acrobat Reader on your computer?	***Yes***	***No***
	If yes, specify the level (e.g. Adobe Reader 6, 7, 8, etc.): _____		
11	Can you access internet on your computer while away from UTG premises?	***Yes***	***No***
12	Outside UTG do you have problem downloading materials (e.g. movies, videos, etc) from the internet, using your own computer?	***Yes***	***No***
13	On average how long do you have access to internet while in UTG premises? ____ ***hours***		
14	Do you have problem downloading internet materials that are relevant to your teaching while in UTG premises?	***Yes***	***No***
15	On average how much money do you pay on internet in a day? _____ ***dalasi***		
16	Do you have a teaching web-site (personal or collective)?	***Yes***	***No***
17	Do you have access to online international publications (e.g. Sage, ProQuest, Emerald, etc.) that can help to keep you abreast?	***Yes***	***No***

PART THREE: UTG's Lecturers' Internet and Computer Skills

Internet and computer skills herein refer to those competencies required to use computer and internet comfortably. The items are targeted to represent the readiness level of the respondent lecturer in UTG. The 5-point Likert scales (1=totally disagree – 5=totally agree) should therefore be related to items 1 – 20. Please, read each item and mark in the boxes (1 – 5) the scale that best fits your opinion of that specific item.

1=Totally Disagree; 2=Strongly Disagree; 3=Somewhat Agree; 4=Strongly Agree; 5=Totally Agree

	Items	1	2	3	4	5
1	I have the basic skills to highlight, cut and paste texts.					
2	I have the basic skills to format characters, paragraphs and page margin.					
3	I have the basic skills to retrieve data.					
4	I have the basic skills to display data graphically from database.					
5	I have spreadsheet skills such as reading and understanding data.					
6	I have spreadsheet skills such as entering and manipulating data.					
7	I can enter and set formula on a spreadsheet.					
8	I can use search engines, enter passwords, and send e-mails with attachment.					
9	I can send chat and e-mail messages with attachment.					
10	I have the ability to use the scanner for my instruction.					
11	I can send e-mail messages to more than one person at a given time.					
12	I can communicate effectively with more than one person at a given time using online chats.					
13	I can communicate effectively with more than one person at a given time using video conferencing.					
14	I can access resources that are uploaded by my students on the internet.					
15	I can upload files onto the internet for my students to work on.					
16	I can take notes while watching instructional videos.					
17	I can search and access reading materials on the internet without help.					
18	I can use video camcorder to develop online multimedia instructions.					
19	I can make PowerPoint slides for PowerPoint presentation.					
20	I can set up the overhead projector to give a PowerPoint presentation.					
21	I have basic skills to transcribe (write) and read HTML.					

APPENDIX I. QUESTIONNAIRE FOR UTG ADMINISTRATION

UTG Readiness Questionnaire for Management (Administration)

Survey questionnaire on e-learning readiness in relation to infrastructure and operations

PART ONE: Basic Data

A. Basic Data on Individual Respondent

Name/Status of respondent: How long have you been in UTG?

years

B. Basic Data on UTG as a Whole

Part-time lecturers	Full-time lecturers	Total number of students in UTG:	Information on Library System: Total number of libraries in UTG	Information on Library System: Total number of computers in all the libraries:
Male:	Male:	Male:		With internet:
Female:	Female:	Female:		Without internet:

C. Basic Data on Departments/Faculties

	Name of Department/Faculty	Population: Students	Population: Lecturers	Computers per Department/Faculty: Computers with internet	Computers per Department/Faculty: Computers without internet
1					
2					

PART TWO: Information and Communication Technology (ICT) Infrastructural Development of UTG

The following are questionnaire on the institutional infrastructural development of information and communication technology (ICT). The 5-point Likert scales (1=totally disagree – 5=totally agree) should be related to items 1 – 14. Please, read each item and mark in the boxes (1 – 5) the scale that best fits your opinion of that specific item.

1=Totally Disagree; 2=Strongly Disagree; 3=Somewhat Agree; 4=Strongly Agree; 5=Totally Agree

	Items	1	2	3	4	5
1	Internet/Intranet servers of UTG are always up and running, and do not affect lecturers and students while working online.					
2	The bandwidth size of UTG's internet network is big enough to allow streaming (flow) of multimedia (e.g. videos and colourful) materials.					
3	UTG has efficient firewall and anti-virus security that can adequately protect its internet system from attacks or internet security breach.					
4	UTG has a very secure and consistent access route.					
5	The remote access connection speed in UTG is fast enough to support e-learning at international level.					
6	There are enough computers in UTG to support online education of two or more classes at any one point, with a class size of 35 or more students.					
7	The computers in UTG have enough RAM capacity and hard drive space to support e-learning at international level.					
8	The computers in UTG have up-to-date internet browsers and adobe acrobat readers to support e-learning.					
9	The computers in UTG have up-to-date Microsoft Office package to support e-learning.					
10	The computers in UTG have up-to-date CD/DVD-ROMs to support e-learning.					
11	The computers in UTG have web-cameras that can support video conferencing.					
12	The computers in UTG have good speakers and recording devices that can support e-learning.					
13	Lecturers in UTG can access internet any time they wish while within the University premises.					
14	Electricity supply is one of the biggest internet access problems in UTG.					

PART THREE: Institutional e-learning readiness in the area of training and human capital

This is a questionnaire on University e-learning readiness in terms of training and human capital. The 5-point Likert scales (1=totally disagree – 5=totally agree) should be related to items 1 – 9. Please, read each item and mark in the boxes (1 – 5) the scale that best fits your opinion of that specific item.

1=Totally Disagree; 2=Strongly Disagree; 3=Somewhat Agree; 4=Strongly Agree; 5=Totally Agree

	Items	1	2	3	4	5
1	There are plans to train UTG lecturers on e-learning skills.					
2	The lecturers in UTG have adequate computer and internet competency to integrate information and communication technology (ICT) in their teaching.					
3	Students in UTG are adequately prepared with ICT skills that can enable them to effectively respond to e-learning delivery method.					
4	During trainings conducted by UTG, lecturers attend voluntarily					
5	In the past two years some internet technology related trainings have been conducted in UTG.					
6	There are e-learning content experts that can help in the implementation and maintenance of e-learning in UTG.					
7	There are graphic artists that can help in the implementation and maintenance of e-learning in UTG.					
8	There are instructional designers that can help in the implementation and maintenance of e-learning in UTG.					
9	There are computer programmers that can help in the implementation and maintenance of e-learning in UTG.					

PART FOUR: Institutional e-learning readiness in the area of budget allocations and financial or material support

This is a questionnaire on University e-learning readiness in terms of budget allocations, financial and material supports. The 5-point Likert scales (1=totally disagree – 5=totally agree) should be related to items 1 – 8. Please, read each item and mark in the boxes (1 – 5) the scale that best fits your opinion of that specific item.

1=Totally Disagree; 2=Strongly Disagree; 3=Somewhat Agree; 4=Strongly Agree; 5=Totally Agree

	Items	**1**	**2**	**3**	**4**	**5**
1	There is always an allocated yearly budget for training of lecturers and support staff in UTG.					
2	The budget allocated for information and communication technology related issues is recurrent and forth coming.					
3	Part of the annual subvention from The Gambia Government can accommodate e-learning initiatives in UTG.					
4	Part of the support from NGOs (non-governmental organisations) and NPOs (non-profit organisations) in forms of money and material resources can accommodate e-learning initiatives in UTG.					
5	UTG has the financial capacity to sustain e-learning even without financial and material resource supports for NGOs and NPOs.					
6	UTG can sustain e-learning initiative without financial and material resource supports from NGOs, NPOs, and The Gambia Government.					
7	UTG has the financial capacity to sustain e-learning even without The Gambia Government subvention.					
8	UTG has plans to allocate special budget for training of more people (lecturers and ICT support staff) in the area of internet technology.					

Appendix I (Continued)

PART FIVE: Institutional e-learning readiness in the area of incentives for motivation of lecturers

This is a questionnaire on University e-learning readiness in terms of budget allocations, financial and material supports. The 5-point Likert scales (1=totally disagree – 5=totally agree) should be related to items 1 – 8. Please, read each item and mark in the boxes (1 – 5) the scale that best fits your opinion of that specific item.

1=Totally Disagree; 2=Strongly Disagree; 3=Somewhat Agree; 4=Strongly Agree; 5=Totally Agree

	Items	**1**	**2**	**3**	**4**	**5**
1	Lecturers in UTG are motivated with material and financial incentives due to their engagement in e-learning related issues (e.g. ICT development of students and fellow lecturers, running online courses in UTG, etc).					
2	Lecturers in UTG are motivated by reducing their workload due to their engagement in e-learning related issues (e.g. ICT development of students and fellow lecturers, running online courses in UTG, etc).					
3	UTG administration has good plans (e.g. material and financial incentives) for lecturers that are willing to teach courses online.					
4	UTG administration will in the near future promote lecturers based on their performance in ICT and e-learning related issues.					
5	The UTG administration has plans to provide e-learning on-the-job training for lecturers.					

APPENDIX J. QUESTIONNAIRE FOR E-LEARNING EXPERTS

Questions for Expert Interview:

1. What is your opinion about the content of the training? Is relevant, too long or too short in scope?

2. Based on the trainees' characteristics what activities (for instance discovery and use of scaffolded materials) would you use to address these topics?

3. What are some of the problems related to peer-to-peer interactions in your e-learning course? Do you think the way they interact is effective? In the context of the UTG trainees, how would you make adjustments for effective peer interaction?

4. In your opinion what forms of technology would you recommend for these training programme? What are the implications of these forms of technology to these specific trainees?

5. What monitoring activities would you use for learners of this nature?

6. From your experience how do students react to the activities and materials you use in e-learning? How would you make adjustments if given the opportunity?

7. In your opinion what other instructional strategy should make this e-learning training more effective?

APPENDIX K. UTG LECTURERS DEMOGRAPHIC CODES

	Categories			
Demographics	**First group**	**No.**	**Second group**	**No.**
Gender	1= female	6	2= male	25
Age	1= less than 40	15	2= 40 or more	16
Years in UTG	1= 1yr or less	13	2= more than 1yr	18
Highest academic qualification a	1= bachelor's degree	8	2= master's degree and above	23
Department	1= social sciences	17	2= health and natural sciences	14
Lecturer status	1= graduate assistants and assistant lecturers	11	2= lecturers 2 and 1, senior lecturers and Professors	20
Internet/Computer training	1= higher computer and internet skills training	20	2= lower computer and internet skills training or none	11
Personal computer access	1= no personal pc	15	2= has personal pc	16
Teaching website	1= no	28	2=yes	3
Online journal access	1= no	20	2= yes	11
Basic computer skills	1, 2, 3, 4, 5, 6, 7, 10, 16, 18, 19, 20, 21			
Internet skills	8, 9, 11, 12, 13, 14, 15, 17,			

APPENDIX L. SUMMARY RESULTS FOR CHI-SQUARE TESTS

Hypothesis B1a			Computer and Internet Training						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Gender	Female	Count	3	3	6	2.13 (50% < 5)	.685 (1)	**.000 (1)**	-0.149
		% within gender	50	50	100				
		% within computer and internet training	15	27.3	19.4				
	Male	Count	17	8	25				
		% within gender	68	32	100				
		% within computer and internet training	85	72.7	80.6				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B1b			Teaching Website Ownership						
			Do not have any teaching website	Have a teaching website	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Gender	Female	Count	6	0	6	0.58 (50% < 5)	.797(1)	**0.015 (1)**	0.16
		% within gender	50	50	100				
		% within teaching website	100	0	19.4				
	Male	Count	22	3	25				
		% within gender	88.6	12	100				
		% within teaching website	78.6	100	80.6				
Total		Count	28	3	31				
		% of Total	90.3	9.7	100				

Hypothesis B1c			Online Journal Access						
			Have no access to online journals	Have access to online journals	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Gender	Female	Count	4	2	6	2.13 (50% < 5)	.015(1)*	**.000 (1)**	0.022
		% within gender	66.7	33.3	100				
		% within online journal access	20	18.2	19.4				
	Male	Count	16	9	25				
		% within gender	64.5	35.5	100				
		% within online journal access	80	81	80.6				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B1d			Personal Computer Access						
			Have no personal computer	Have personal computer	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Gender	Female	Count	5	1	6	2.90 (50% < 5)	3.638 (1)	**2.11 (1)**	0.343
		% within gender	83.3	16.7	100				
		% within personal computer	33.3	6.3	19.4				
	Male	Count	10	15	25				
		% within gender	40	60	100				
		% within personal computer	66.7	93.8	80.6				
Total		Count	15	16	31				
		% of Total	48.4	51.6	100				

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis B2a			Computer and Internet Training						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Age	Less than 40 years	Count	13	2	15	5.32 (0% < 5)	**6.229(1)***	4.495 (1)*	.448*
		% within age	86.7	13.3	100				
		% within computer and internet training	65	18.2	48.4				
	Not less than 40 years	Count	7	9	16				
		% within age	43.6	56.3	100				
		% within computer and internet training	35.5	81.8	51.6				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B2b			Teaching Website Ownership						
			Do not have any teaching website	Have a teaching website	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Age	Less than 40 years	Count	14	1	15	6.77 (0% < 5)	**.301 (1)**	.000 (1)	0.099
		% within age	93	6.7	100				
		% within teaching website	50	33.3	48.4				
	Not less than 40 years	Count	14	2	16				
		% within age	93.3	6.7	100				
		% within teaching website	50	33.3	48.4				
Total		Count	28	3	31				
		% of Total	90.3	9.7	100				

Hypothesis B2c			Online Journal Access						
			Have no access to online journals	Have access to online journals	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Age	Less than 40 years	Count	11	4	15	5.32 (0% < 5)	**.987 (1)**	0.382 (1)	0.178
		% within age	73.3	26.7	100				
		% within online journal access	55	36	48.4				
	Not less than 40 years	Count	9	7	16				
		% within age	56.3	43.8	100				
		% within online journal access	45	63.6	51.6				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B2d			Personal Computer Access						
			Have no personal computer	Have personal computer	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Age	Less than 40 years	Count	7	8	15	7.26 (0% < 5)	**.034 (1)**	.000 (1)	-0.033
		% within age	46.7	53.3	100				
		% within personal computer	46.7	50	48.4				
	Not less than 40 years	Count	8	8	16				
		% within age	50	50	100				
		% within personal computer	53.3	50	51.6				
Total		Count	15	16	31				
		% of Total	48.4	51.6	100				

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis B3a			Computer and Internet Training						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Number of Years in UTG	Not more than 1 year	Count	12	1	13	4.61(25% < 5)	7.554 (1)**	**5.608 (1)***	.494**
		% within number of years in utg	92.3	7.7	13				
		% within computer and internet training	60	9.1	41.9				
	More than 1 year	Count	8	10	18				
		% within number of years in utg	44.4	55.6	100				
		% within computer and internet training	40	90.9	58.1				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B3b			Teaching Website Ownership						
			Do not have any teaching website	Have a teaching website	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Number of Years in UTG	Not more than 1 year	Count	13	0	13	1.26 (50% < 5)	2.399 (1)	**.871 (1)**	0.278
		% within number of years in utg	100	0	100				
		% within teaching website	46.4	0	41.9				
	More than 1 year	Count	15	3	18				
		% within number of years in utg	83.3	16.7	100				
		% within teaching website	53.6	100	58.1				
Total		Count	28	3	31				
		% of Total	90.3	9.7	100				

Hypothesis B3c			Online Journal Access						
			Have no access to online journals	Have access to online journals	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Number of Years in UTG	Not more than 1 year	Count	8	5	13	4.61(25% < 5)	.087 (1)	**.000 (1)**	-0.053
		% within number of years in utg	61.5	38.5	100				
		% within online journal access	40	45.5	41.9				
	More than 1 year	Count	12	6	18				
		% within number of years in utg	66.7	33.3	100				
		% within online journal access	60	54.5	58.1				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B3d			Personal Computer Access						
			Have no personal computer	Have personal computer	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Number of Years in UTG	Not more than 1 year	Count	7	6	13	6.29 (0% < 5)	**.267 (1)**	.023 (1)	0.093
		% within number of years in utg	53.8	46.2	100				
		% within personal computer	46.7	37.5	41.9				
	More than 1 year	Count	8	10	18				
		% within number of years in utg	44.4	55.6	100				
		% within personal computer	53.3	62.5	58.1				
Total		Count	15	16	31				
		% of Total	48.4	51.6	100				

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis B4a			**Computer and Internet Training**						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Lucture Status	Graduate assistants and assistants lecturers	Count	9	2	11	3.90 (25% <5)	2.230 (1)	**1.212 (1)**	0.268
		% within lecture status	81.8	18.2	100				
		% within computer and internet training	45	18.2	35.5				
	Lecturers 1 and 2, senior lecturers and professors	Count	11	9	20				
		% within lecture status	55	45	100				
		% within computer and internet training	55	81.8	64.5				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B4b			**Teaching Website Ownership**						
			Do not have any teaching website	Have a teaching website	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Lucture Status	Graduate assistants and assistants lecturers	Count	11	0	11	1.06 (50% < 5)	1.827 (1)	**.514 (1)**	0.243
		% within lecture status	100	0	100				
		% within teaching website	39.3	0	35.5				
	Lecturers 1 and 2, senior lecturers and professors	Count	17	3	20				
		% within lecture status	85	15	100				
		% within teaching website	60.7	100	64.5				
Total		Count	28	3	31				
		% of Total	90.3	9.7	100				

Hypothesis B4c			**Online Journal Access**						
			Have no access to online journals	Have access to online journals	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Lucture Status	Graduate assistants and assistants lecturers	Count	9	2	11	3.90 (25% < 5)	2.230 (1)	**1.212 (1)**	0.268
		% within lecture status	81.8	18.2	100				
		% within online journal access	45	18.2	35.5				
	Lecturers 1 and 2, senior lecturers and professors	Count	11	9	20				
		% within lecture status	55	45	100				
		% within online journal access	55	81.8	64.5				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B4d			**Personal Computer Access**						
			Have no personal computer	Have personal computer	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Lucture Status	Graduate assistants and assistants lecturers	Count	5	6	11	5.32 (0% < 5)	**.059 (1)**	.000 (1)	-0.044
		% within lecture status	45.5	54.5	100				
		% within personal computer	33.3	37.5	35.5				
	Lecturers 1 and 2, senior lecturers and professors	Count	10	10	20				
		% within lecture status	50	50	100				
		% within personal computer	66.7	62.5	64.5				
Total		Count	15	16	31				
		% of Total	48.4	51.6	100				

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis B5a			**Computer and Internet Training**						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Department	Social Sciences	Count	12	5	17	4.97 (25% < 5)	.606 (1)	**.161 (1)**	0.14
		% within department	70.6	29.4	100				
		% within computer and internet training	60	45.5	54.8				
	Natural and health sciences	Count	8	6	14				
		% within department	57.1	42.9	100				
		% within computer and internet training	40	54.5	45.2				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B5b			**Teaching Website Ownership**						
			Do not have any teaching website	Have a teaching website	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Department	Social Sciences	Count	16	1	17	1.35 (50% < 5)	.620 (1)	**.031 (1)**	0.141
		% within department	94.1	5.9	100				
		% within teaching website	57.1	33.3	54.8				
	Natural and health sciences	Count	12	2	14				
		% within department	85.7	14.3	100				
		% within teaching website	42.9	66.7	54.2				
Total		Count	28	3	31				
		% of Total	90.3	9.7	100				

Hypothesis B5c			**Online Journal Access**						
			Have no access to online journals	Have access to online journals	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Department	Social Sciences	Count	10	7	17	4.97 (25% < 5)	.533 (1)	**.124 (1)**	0.022
		% within department	58.8	41.2	100				
		% within online journal access	50	63.6	54.8				
	Natural and health sciences	Count	10	4	14				
		% within department	71.4	28.6	100				
		% within online journal access	50	36.4	45.2				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B5d			**Personal Computer Access**						
			Have no personal computer	Have personal computer	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Department	Social Sciences	Count	9	8	17	6.77 (0% < 5)	**.313 (1)**	.039 (1)	0.1
		% within department	52.9	47.1	100				
		% within personal computer	60	50	54.8				
	Natural and health sciences	Count	6	8	14				
		% within department	42.9	57.1	100				
		% within personal computer	40	50	45.2				
Total		Count	15	16	31				
		% of Total	48.4	51.6	100				

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis B6a			**Computer and Internet Training**						
			Higher computer and internet skills training	Lower computer and internet skills training or none	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Highest Academic Qualification	Bachelors degree	Count	8	0	8	2.84 (25% < 5)	5.930 (1)*	**4.025 (1)***	.437*
		% within highest academic qualification	100	0	100				
		% within computer and internet training	40	0	25.8				
	Masters degree and above	Count	12	11	23				
		% within highest academic qualification	52.2	47.8	100				
		% within computer and internet training	60	100	74.2				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B6b			**Teaching Website Ownership**						
			Do not have any teaching website	Have a teaching website	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Highest Academic Qualification	Bachelors degree	Count	8	0	8	.77 (50% < 5)	1.155 (1)	**.145 (1)**	0.193
		% within highest academic qualification	100	0	100				
		% within teaching website	28.6	0	25.8				
	Masters degree and above	Count	20	3	23				
		% within highest academic qualification	87	13	100				
		% within teaching website	71.4	100	74.2				
Total		Count	28	3	31				
		% of Total	90.3	9.7	100				

Hypothesis B6c			**Online Journal Access**						
			Have no access to online journals	Have access to online journals	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Highest Academic Qualification	Bachelors degree	Count	6	2	8	2.84 (25% < 5)	.518 (1)	**.084 (1)**	0.129
		% within highest academic qualification	75	25	100				
		% within online journal access	30	18.2	25.8				
	Masters degree and above	Count	14	9	23				
		% within highest academic qualification	60.9	39.1	100				
		% within online journal access	70	81.8	74.2				
Total		Count	20	11	31				
		% of Total	64.5	35.5	100				

Hypothesis B6d			**Personal Computer Access**						
			Have no personal computer	Have personal computer	Total	Minimum expected count	Pearson $\chi 2$ Value	Yate's continuity $\chi 2$	Phi
Highest Academic Qualification	Bachelors degree	Count	4	4	8	3.87 (50% < 5)	.011(1)	**.000 (1)**	0.19
		% within highest academic qualification	50	50	100				
		% within personal computer	26.7	25	25.8				
	Masters degree	Count	11	12	23				
	and above	% within highest academic qualification	47.8	52.2	100				
		% within personal computer	73.3	75	74.2				
Total		Count	15	16	31				
		% of Total	48.4	51.6	100				

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

APPENDIX M. EXPERT INTERVIEW DATA ON RELEVANCE OF E-LEARNING TRAINING CONTENT

1st Expert: University Professor; General Education; has a personal e-learning platform built for teaching both synchronous and asynchronous e-learning. Interview time: 30 minutes - (2:00 pm - 2:30 pm)

Theme	Module	Comments
Relevance	1. E-Learning Platform	- Platform should be part of the content; use moodle because it is relatively free
		- Should know about interface design and how these are used; needed for producer production
		- Apply what they learn into their teaching, should know the platform
		- Encourage them to go online the platform
	2. Rationale behind the Use of E-Learning	- Many things do not need to be included in training
		- Cost effectiveness and efficiency of training should be thought of
		- Training programme is different from graduate degree programme
		- Be very brief for some parts in training programme
		- Important to know about ICT technologies and why more people are using it now – give them statistics of usage
		- Trainers may not want to include how learning takes place, but to show them how to operate, so be direct and concise with them. They may have other things to do
	3. Learning Theories	- Use additional time for learning skills
		- Briefly introduce it and allow interested ones to search for more information
		- Provide URLs for interested ones on learning theories; they are meant to explain the underpinnings of what is during learning process
	4. Instructional Design	- ADDIE is institutional, or for universities
		- ADDIE takes the different steps into consideration
		- ASSURE focuses on certain period of time – course design particularly
	5. Mini Courseware Project	- Learn skills and know how to operate
		- Just need to be shown how to operate
		- Major purpose is to get familiar with the software and to apply what they learn into their teaching
		- Producer is only single software; so combine different software
		- Express other types of software e.g. Powercam, Camtacia
		- Be realistic on how much budget you have, put prices into consideration
		- Producer is relatively easier, and most people are familiar with PowerPoint
		- Recorded materials can be used in producer also
		- Consider compatibility of the programmes that should be taught
		- If learners cannot get connected onto the internet, make learning materials into CDs for use in standalone computers
	6. Evaluation of Training Programme	- Break down assignments into different parts
		- In each session you ask them to do a certain part

2nd Expert: University Professor; Human Resource Development; lectures e-learning. Interview time: 1 hour 30 minutes (3:30 pm - 5:00 pm)

Theme	Module	Comments
Relevance	E-learning platform	- Module one needs monitoring
		- Look at different kinds of e-learning that people are putting online
		- Hands-on activities needs onsite monitoring
		- Hands-on activities particularly excite learners
		- Use demonstration learning (show-and-tell) to expose them to different forms of e-learning in module 1, seeing is better than hearing (a picture is worth thousand words)
	Rationale behind the use of e-learning	- Ask learners to go through an online session to experience real online courses
		- Other real online resources can be assigned for students to study on their own
		- Use discovery techniques in definitions and categories of e-learning
		- Another place good for discovery is the abundant reusable objects on the web that can be put in their own e-learning courses
		- E-learning has better peer interaction that traditional face-to-face
	Learning theories	- Incorporate all the theories of learning specified for the training programme
		- Training instruction should not be limited to a specific theory
		- Q & A is most helpful in teaching learning theories
		- Present students with some conflicting, provoking theories in a very good way to focus on some important teaching points, and make them debate
		- Ask for examples in their own experiences of how those theories can be related,
	Instructional design	- Most of the practitioners of e-learning do not go through instructional design
		- There is a specific sequence that the learners have to go through
		- Some of the fundamental principles of ID are useful in any course design
		- Decide learning preferences before coming into specific instruction
		- Deciding prerequisite skills is good learner analysis
		- Use hands-on activities for understanding the whole process of instructional design
		- ADDIE is sophisticated but effective, and is very important for content analysis
		- ADDIE analysis process is a very cognitive approach
		- ADDIE good for e-learning course, though it takes too much time to teach
		- ASSURE model is a quick one for most teachers
	Mini courseware project	- Teachers can use video, pictures, images, and graphics to show to learners
		- Hands-on session - Producer design for instance, presentation should not be at the end
		- Give enough time to evaluate properly, and allow trainees to redo their work
	Evaluation of training programme	- Hands-on session - Producer design for instance, presentation should not be at the end, give enough time to evaluate properly
		- Give learners opportunity to present and modify their work – major monitoring activity
		- Ask learners to upload the reflection in PES for peer comments
		- Build in many materials but use Q&A to make sure they understand some of the concepts, probing help instructors to know whether learners are confusing things up
		- Q & A is most helpful in teaching learning theories
		- Ask for examples in their own experiences of how those theories can be related

3rd Expert: University Professor; Information Management & electronic commerce, man-machine interface and information management; Instance Response System (IRS) and Peer Evaluation System (PES). Interview time; 1 hour 30 minutes (10:30 am - 12:00 noon)

Theme	Module	Comments
Relevance	E-learning platform	- Considered the use of Moodle and purchase services from vendors at cheaper rates to incorporate in the Moodle system - Other platforms may be very expensive
		- Agrees with the use of the discussion boards, video conferencing, uploading files, downloading files, email chat-rooms, and other relevant functions provided in Moodle - Teach functions of the platform step-by-step, trainees need to fully utilize it in the future - Different categories of e-learning should be handled by using the e-learning platform with its different functions to introduce the categories
	Rationale behind the use of e-learning	- It is relevant but less lecture or classroom time should be given to this content
		- Use of more complete hand-outs could be given on the history of the web and e-learning - Getting them started is most important
	Learning theories	- Describing this idea through a scenario-based discovery method
		- Brief definition of e-learning should be given - Different categories of e-learning should be handled by using the e-learning platform with its different functions to introduce the categories - Trainees will learn how to flexibly incorporate different types of e-learning into class activities in other to make e-learning more appealing
	Instructional design	- This as a most-teach content, because lecturers must have the techniques to teach - It may be difficult to do all that is demanded if they are to adopt the ADDIE model - The trainer should convince them that this is necessary, and should link educational theories to the platform
	Mini courseware project	- IRS motivates learners to respond to questions while other learners do not know - IRS classroom has a video recording functionality for presentations, records PowerPoint, and the instructor, and synchronizes all these together - It is standard equipment that remote controlled students to respond to teacher's questions, with another function of interactive whiteboard that detects motion and shows concurrently on the screen of the overhead projector - Estimated to cost about half a million Taiwanese dollars
		- Videotaping is good because most people do not want to appear bad on tape
	Evaluation of training programme	- Use of PES is mainly for peer evaluation, and can be utilised to discover some aspects - Some do not participate so instructor should motivate them or reinforce their participation through performance evaluation - Use IRS also for evaluation
		- Use normative forms of evaluation in the hands-on activities,
		-Use summative forms of evaluation in the theory-based contents

4th Expert: University Associate Professor; Industrial Technology Education ; lectures e-learning; Interview time; 1 hour 30 minutes (3:30 pm - 5:00 pm)

Theme	Module	Comments
Relevance	E-learning platform	- Give trainees opportunity to do work where they can get help – there are many functions on the platform - Problem solving should be part of the content; there have to be people to solve our problems
	Rationale behind the use of e-learning	- Trainees should have an idea about how the internet works - Trainees should know some major services of internet, e.g. FTP, HTTP, etc - Introduce FTP and shows trainees how to upload materials
	Learning theories	- Put emphasis on the e-learning content - Acknowledge personality differences
	Instructional design	- ADDIE is complicated, though is the most advanced model in my opinion - Write a story, or design a topic, then ask trainees to develop their materials and design a content based on ADDIE
	Mini courseware project	- Design mini-course, but first introduce different topics related to the mini-course - Get them to do some activity similar to the mini-project
	Evaluation of training programme	- Grade each assignment - Give students assignments - Evaluate achievements form their projects - Encourage group assignment - Encourage individual accountability - Encourage social skills

APPENDIX N. EXPERT INTERVIEW DATA ON DELIVERY, MONITORING AND EVALUATION STRATEGIES ON E-LEARNING TRAINING CONTENT

1st Expert: University Professor; General Education; has a personal e-learning platform built for teaching both synchronous and asynchronous e-learning. Interview time: 30 minutes - (2:00 pm - 2:30 pm)

Instructional process	Content Delivery, Monitoring and Evaluation Strategies
Content delivery	-Use brainstorming -Group projects for adult learners are more suitable than individual projects -Doing critique in class -Produce a demonstration programme -Read materials, visit websites -Breaking down assignments into different parts -With URLs to help them understand -Knowing why ICT in education – module 2 -To go online the platform – use platform often, reducing teaching load -Asking them to keep journals and reflect on the progress of the those journals -Use self-paced learning – asynchronous -Allow them to share -Use warm up activities
Monitoring and evaluation	-Reflecting on the progress of the said journals -Breaking down assignments into different parts -Peer review is more normal with her

2nd Expert: University Professor; Human Resource Development; lectures e-learning. Interview time: 1 hour 30 minutes (3:30 pm - 5:00 pm)

Instructional Process	Content Delivery, Monitoring and Evaluation Strategies
Content delivery	-Other real online resources can be assigned for students to study on their own -Ask learners to upload the reflection in PES for peer comments -Emailing each other, instant messaging, chat rooms, discussion forums; -PES, giving each other grades -Make them debate; -Debates can come out spontaneously from students – direct it skilfully; -Debates to get them understand the advantages and disadvantages of issues; -Use of debates is useful for advanced learners; -Debate and sharing makes a good match

Note : PES - Peer Evaluation System. IRS - Instant Response System

Appendix N (Continued).

2nd Expert: University Professor; Human Resource Development; lectures e-learning. Interview time: 1 hour 30 minutes (3:30 pm - 5:00 pm)	
Instructional Process	**Content Delivery, Monitoring and Evaluation Strategies**
Content delivery	-Present students with some conflicting, provoking theories in a very good way to focus on some important teaching points -Hands-on activities particularly excite learners; -To expose them to different forms of e-learning in module 1 -Interested students can move to discovery learning for more advanced concepts; in definitions and categories of e-learning; -Going online before introduction to explore different kinds of e-learning that people are putting online; -Exploring abundant reusable objects on the web that can be put in their own e-learning courses -Give general concepts for those things that students need to go through; -Defining some materials in e-learning or digital format that teaches ADDIE; -Students to go through an online session of ADDIE -Use of video, pictures, images, graphics to show to learners; -Conceptual knowledge best learnt through scaffolded materials -Hands-on activities for understanding the whole process of instructional design -A classroom session is designated to the discussion of the ADDIE model; -On how ADDIE applies to the development of an e-learning instruction; -Classroom instruction delivery in a separate way builds concepts using explanation and definition -Decide learning preferences before coming into specific instruction -Hands-on session - Producer design for instance; -Presentation should not be at the end -Build in many materials but use Q&A to make sure they understand some of the concepts; -Is most helpful in teaching learning theories; -Probing helps instructors to know whether learners are confusing things up -Given learners homework to write reflections; -On learning theories; is to ask learners to write a reflection, after introducing the abstract concept -Ask for examples in their own experiences of how those theories can be related; -Debate and sharing makes a good match; -Sharing is good strategy for adult learners, especially in certain technology; -Some debates come from sharing as well. -Allow trainees to redo their work, opportunity to present and modify their work; -Show their work in progress; -Instructor stopping sessions to make sure students are doing the right thing

Note : PES - Peer Evaluation System. IRS - Instant Response System

2nd Expert: University Professor; Human Resource Development; lectures e-learning. Interview time: 1 hour 30 minutes (3:30 pm - 5:00 pm)

Instructional Process	Content Delivery, Monitoring and Evaluation Strategies
Monitoring and Evaluation	-Hands-on activities need onsite monitoring -On learning theories is to ask learners to write a reflection – after introducing the abstract concept; -PES good for tracking students; give learners opportunity to present and modify their work; -Have teaching or training assistants going around -PES good for peer evaluation; -Moodle can use something like a peer evaluation system -Gives learners opportunity to present and modify their work; ask for examples in their own experiences of how those theories can be related -Is most helpful in teaching learning theories; probing helps instructors to know whether learners are confusing things up

Note : PES - Peer Evaluation System. IRS - Instant Response System

3rd Expert: University Professor; Information Management & electronic commerce, man-machine interface and information management; Instance Response System (IRS) and Peer Evaluation System (PES). Interview time; 1 hour 30 minutes (10:30 am - 12:00 noon)

Instructional Process	Content Delivery, Monitoring and Evaluation Strategies
Content Delivery	-Using brainstorming as a discovery process -Different categories of e-learning should be handled by using the e-learning platform with its different functions to introduce the categories -Using PES to discover some aspects; -One should try to know what the learners like most and utilize that -Task of the trainer is to try to convince them that this is necessary; -Link educational theories with the platform -Help them to utilize some of the advance features of the platform; -Use of more complete hand-outs could be given on the history of the web and e-learning; -Brief definition of e-learning should be given -Some do not participate so instructor should motivate them or reinforce their participation through performance evaluation; -IRS will motivate learners to respond to questions while other learners do not know -Use scenario-based teaching activities; -Use cases or some form of on-the-job training activities; -Describing this idea through a scenario-based discovery method (learning theories) -Use msn, face book, blog, etc -Need to be taught step-by-step to help the trainees used to all these functions on the platform; -Again, get them started; -Video conferencing, discussion board - having classroom activities to utilize these functionalities
Monitoring and Evaluation	-Assistants have a critical role in a lecturer's work in a training process; -Moodle can do the monitoring by using the chat-room, discussion, and other functions that will leave records of students' activities -Use IRS as the main tools also for evaluation -Moodle can do the monitoring by using the chat-room, discussion, and other functions that will leave records of students' activities -Use normative forms in the hands-on activities -Use PES, as the main tools also for evaluation; PES is mainly for peer -Use summative forms in the theory-based contents evaluation -Some do not participate, so instructor should motivate them or reinforce their participation through performance evaluation

Note : PES - Peer Evaluation System. IRS - Instant Response System

4th Expert: University Associate Professor; Industrial Technology Education ; lectures e-learning; Interview time; 1 hour 30 minutes (3:30 pm - 5:00 pm)

Instructional Process	Content Delivery, Monitoring and Evaluation Strategies
Content delivery	-Give students assignment
	-Give deadlines and are urged them to hand in before deadline
	-After assignments get them to learn something by doing
	-Encourage face-to-face interaction -Grade each assignment, and allow them to see their grades and redesign for the next class if shown in the feedback process
	-Form groups of 3 to 4 students to perform project;
	-Collaborative learning is important – use it;
	-Encourage group assignment;
	-Encourage social skills
	-Give learners an idea of anticipated problems by examples; -Give trainees opportunity to do work where they can get help - many function on the platform;
	-Introduce to learners how this software can be used;
	-Do video capturing;
	-Introduces FTP and shows them how to upload materials
	-Design a mini-course, but first introduce different topics related to the mini-course;
	-Upload materials on the internet for the students to download and view; -Introduce some content and give interesting examples, e.g. multimedia that with sound;
	-Use videos of their interest; use lot of interesting examples to teach
	-Arouse their interest
	-Know what they will spend time on through observation -To write a story, or design a topic, develop materials and design content based on ADDIE
	-Design projects for the different topics;
	-Give learners the opportunity to learn from their errors;
	-Get them to do some activity similar to the mini-project; -Introduce content by asking them to do a project on it and then ask them redo the project to learn
Monitoring and Evaluation	-Use assistants to help in the monitoring activity
	-Give students assignments
	-Evaluate achievements from their projects