EFFECT OF INTRODUCING AUDIOVISUAL LEARNING MATERIALS ON DISTANCE LEARNING STUDENTS' PERFORMANCE AND ITS COST IMPLICATIONS FOR UGANDA MARTYRS UNIVERSITY

Richard Ouma

Abraham Kule

Edward A. Ssemwogerere

Email: rouma@umu.ac.ug

1

ABSTRACT

The study investigated the effect of introducing audiovisual learning materials on distance learning students' performance, perceptions of learning and its cost implications for Uganda Martyrs University (UMU). The study employed a case study research design using both quantitative and qualitative approaches. It considered a showcase of the use of audiovisual learning materials in one module in Micro finance. The study established the cost implications of introducing audiovisual learning materials and the effect of audiovisual learning materials on students' performance and perceptions in the selected module against other modules without audiovisual learning materials. Four staff members and 17 micro finance final year students participated in the study. Interviews were used to probe teaching and support staff perception, cost and challenges they face in developing and using audiovisual materials. Questionnaire was used to capture students' perception of the impact of using audio visual materials on their academic performance. The findings of this study indicate that the importance of using audio visual learning materials in distance education should be underscored. Academic staff face several challenges in developing and using audio visual teaching materials. It is costly to in terms of money and time to develop and use audio visual materials. These findings have implications for the university in developing distance learning policy, other teaching faculties to improve on their distance learning delivery, and for further research.

Key words: Audiovisual learning materials, Distance Learning students, Cost implications, Perceptions of learning

INTRODUCTION

Uganda Martyrs University student enrollment stands at 3364, of whom 2541 are enrolled in distance-learning programmes. Two of the eight teaching units (i.e., Faculty of Agriculture and Faculty of Education) are purely distance learning units, while the Faculty of Business Administration and Management and Institute of Ethics and Development Studies offer both distance and on-campus study programs. The Center for Distance Learning Studies (CDLS) was introduced in 2006 to oversee and improve the quality of distance learning programs run by the University.

According to the research findings of the CDLS 2006/2007, students recommended that the current modules need to be simplified. The time for them to discuss with their facilitators is not sufficient. Besides, some miss the tight scheduled face-to-face period due to sickness, lack of fees and or other family-related problems. It thus becomes hard to cope up if one missed the introduction of the module or its facilitation yet it is the main way of teaching and delivering learning materials to the learner. At times, conditions at the facilitation center may not allow a student to concentrate and get what the facilitator is giving out. In addition, practicing for retention and fluency is very minimal, as it demands good reading skills. Audiovisual learning materials come in as an aid to this mode of learning where students relate with their past mode and then the audio visual.

**Costs of Producing Audiovisual Learning Materials**

The design of educational software is complex. Though it is easy to say that a variety of software methods are useful and that an educator should select and use a variety of them, designing and developing any educational software is time consuming and difficult (Alessi and Trollip 2001:40). Indeed instructors work in different situations and

3

face several challenges in developing learning materials for their students (Bingimlas 2009). Some multimedia methodologies (e.g. tutorial and drill) are more straightforward to develop whereas others (like simulation and open-ended learning environments) are more difficult. Alessi and Trollip (2001) say what is appropriate for the designer is the learners' experience, subject area, needs and skills and educational philosophy. The rule of thumb is that at the beginning, the multimedia designer should start with the simpler and more directed methodologies, such as tutorial and drill, before tackling the more complex and constructivist methods, such as hypermedia, simulations and open-ended learning environments.

Alessi and Trollip (2001) give the different phases in the production of education software: 1) Planning (defining the scope, content, characteristics of learners and other users, constraints, costs; producing a planning document, and style manual; determining and collecting resources; conducting initial brainstorming, defining the look and feel of the project and obtaining the client sign off). 2) Design: (developing initial content ideas, conducting task and concept analyses, doing a preliminary programme description, preparing a prototype, creating flow charts and storyboards, preparing scripts and obtaining client sign off). 3) Development: (preparing the text, writing programme code, creating the graphics, producing audio and visual, assembling the pieces, preparing support materials, doing an alpha test, making revisions, doing the beta test, making final revisions, obtaining the client sign off and validation).

The Commonwealth of Learning (2005) is in agreement with Alessi and Trollip (2001). It says that when creating learning materials for open and distance learning, there should be a design process as shown below:

Figure 1: The instructional design process
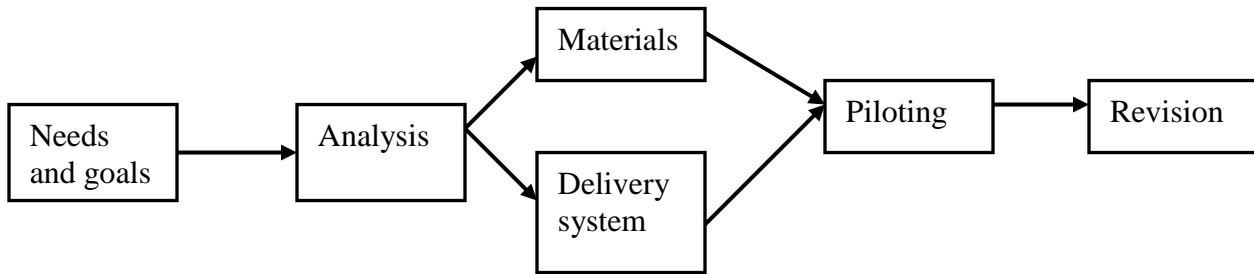
In the classroom-based teaching according to Commonwealth of Learning (2005), the basic resource is the teacher. He or she may use other resources but the teacher remains the central component of the system. He or she defines what is to be learnt, provides information, gives examples, explains, questions, sets learning tasks both for individuals and groups, marks work, answers learners' questions, checks what learners have learnt, provides feedback to individual learners on their progress, provides other resources, gives advise on how to use those resources, gives study advice and helps with individual problems. In distance learning, on the other hand, there is no teacher. The teacher is replaced by a combination of learning materials and the tutors. Therefore, the learning materials have to provide what the teacher provides in the traditional learning environment. Creating learning materials that can do this is a complex and technical task (Commonwealth of Learning 2005:4). It can therefore be said that developing any educational software may be difficult and demand a lot of money, time, energy and acceptability.

Effect of audiovisual learning materials on students' performance

According to Draude and Brace (2002), audiovisual learning materials have far reaching effects on students' performance. Computer technology provides students and teachers with unprecedented opportunities to transform the teaching and learning process, from the most common and simple uses to the most sophisticated (Sulla, 1999, cited by Draude and Brace 2002). Educators are readily embracing the challenges of integrating that technology into their teaching.

In an experiment about the effects of audiovisual stimuli on learning through micro-computer-based class presentation at the School of Education of Tel Aviv University, Israel, Hativa and Reigngold (1987), revealed significantly better immediate and delayed learning of the stimulus group over the control group. Beneficial effects of the stimulus treatment showed to be inconsistent across post-tests for the learning of either low- or high-aptitude students

Effect of audiovisual learning materials on students' perception of learning

Draude and Brace (2002) in their research at Middle Tennessee State University found out the following: 1) the use of instructional technology positively affects student learning by appealing to different learning styles. It helps students to visualize things that may not be drawn on a chalkboard and it better illustrates concepts and makes it easier for instructors to supplement teaching with enrichment and extra activities; 2) Increases Student interest and satisfaction. Some students find that instructional technology when used effectively can make learning more stimulating and interesting. Students write that increased interactivity, added visual components and variety in instructional delivery methods help to increase their satisfaction.

Alessi and Trollip (2001) argue that audiovisual learning materials enhance students' memory, comprehension, active learning, motivation, transfer of learning, control of the learner, caters for individual differences and cooperative and collaborative learning. However, it can be observed that the impact of the audiovisual learning materials depends on the level of preparation by both the teacher and the students involved in the use of such an innovation in the teaching-learning process.

The purpose of this study was to investigate the effect of introducing audiovisual learning materials on distance learning students' performance and perceptions of learning as well as the cost implications (in terms of money, time and energy) of introducing these materials at UMU. The study addressed four research questions:

1. What are the effects of audiovisual learning materials on students' perception of learning in the selected module against other modules where there are no audiovisual learning materials?
2. What are the effects of audiovisual learning materials on students' performance in the selected module against other modules where there are no audiovisual learning materials?
3. What challenges are faced in developing and using Audio Visuals Learning Materials
4. What are the cost implications of introducing audiovisual learning materials in the selected module in terms of money, time, energy and acceptability?

METHODOLOGY

A case study research design and triangulation research methodology was employed. Qualitative data was generated from both interviews with staff and questionnaire for students, and from the coursework and examination results.

Sample

Samples were selected from students, academic and support staff of distance learning. Simple random sampling techniques were used to select the subjects.

Purposive random sampling was used for the selection of the distance-learning students. Simple random sampling was used in the selection of each of the academic staff (facilitator).

Category	N	n
CDLS staff	3	2
Academic staff	2	2
Micro finance Students	179	17
Total	**184**	**21**

Instruments

Questionnaires were used to elicit data from the students. The questionnaires consisted of open-ended questions. The students were asked to give their views about the effect of the audiovisual learning material on their performance compared to the module in which audio-visual materials were not used.

Interviews were used to collect qualitative data from staff. This elicited more detailed information about the students' perceptions about the effect of audiovisual learning materials from the staff perspective. For the academic staff, the interview brought out the record of the students' performance in a module that was taught using the audiovisual learning materials and that one where the audiovisual learning materials were not used. The CDLS staff were interviewed on the cost of producing the audio-visual materials.

Documentary sources involved the acquisition and use of the coursework and examinations results of the students. A comparison was made between results of

students from the module where audio visual learning materials were used with the one where they were not applied.

Data Analysis

As per data analysis, qualitative analytic process was used for qualitative data ie Qualitative data obtained from interviews and questionnaires were organized according to the research questions and presented in a descriptive form.

Computer package Ms Excel was utilised in the processing and packaging of quantitative data. Quantitative data were analysed by comparing means of results of Micro finance students from a module with audiovisual learning materials and the module without. The mean gain in scores obtained by students for each module were established and a comparison made to ascertain the impact of using audio visual learning materials on students performance.

RESULTS

This section presents the results of the findings. It considers the effect of audiovisual learning materials on students' perception of learning; effect of audiovisual learning materials on students' performance; challenges faced in using audio visuals learning materials and finally, the cost implications of introducing audiovisual learning materials.

1. Effect of Audiovisual Learning Materials on Students' Perception of Learning

1.1 Perception of Modules without Audio Visuals

As per Students' Perception of Modules without Audio Visuals, the questionnaire findings revealed that such modules are fit for full time students and not distance learners. It further indicated that they impede learning process, are more academic

than practical, and are boring for both the teacher and the students. The respondents (students) on the other hand noted that Modules without Audio Visuals are cheap and less demanding in terms of power and computers, they encourage students not miss lectures and are less laborious, and less time and money demanding on the part of the teacher as it is needless to search for audiovisual materials.

1.2. Perception of Modules with Audio Visuals

Concerning Students' Perception of Modules with Audio Visuals, the questionnaire findings were that the modules are helpful as audiovisuals augment the text materials, add value and are easier to be understood by the learners. They are also time saving and speeds up learning, are less tedious on part of the students, they make the learning process more practical and enjoyable as they transfer knowledge from theory to visual or practical state. Nevertheless, the respondents also noted that Modules with Audio Visuals breed laziness among some students, encourages absenteeism among the students and at times the teacher, and are tedious and expensive to prepare on the side of the teacher.

The (Facilitator/lecturer) noted that the students perceived the use of Audio Visual learning Materials as an improved learning guide. The interview findings from the CDLS staff revealed that Audio Visual Learning Materials are needed in order to; supplement the printed modules, stimulate learning of visual and audio among the learners and to connect students to their past of learning through the teacher instruction. It was further noted that the students' perception depends on how they are prepared, by their facilitator, to make use of this innovation in learning.

2. Effect of audiovisual learning materials on students' performance

2.1 Impact of Modules without Audio Visuals on Students' Performance

It was established that the Modules without Audio Visuals impacted on students' performance in such a way that they found it difficult to remember, retain and keep knowledge of the subject matter taught, theories were not replicated in the current environment, had very minimal impact on learning and performance given that little was absorbed during the teaching-learning process.

2.2 Impact of Modules with Audio Visuals on Students' Performance

With regard to the impact of Modules with Audio Visuals on Students' Performance, the majority of the respondents observed that those modules aroused their curiosity, concentration, and motivation in addition to shaping their quest to learn. Power Point Presentation was identified as one particular audiovisual related material and was useful to several learners. A few respondents however, noted that Modules with Audio Visuals reduced their self-drive motivation and some became lazy to do further research as the audiovisual could reveal a lot of information about the course subject matter.

From the facilitator/lecturer's perspective, it was established that students performed better in modules with audio visual learning materials compared to those without. In module 13 and 14 with audio visual learning materials, there were 1 and 2 students that got total marks below 64% as compared to modules 15 and 16 without audio visual learning materials that had 4 and 5 students scoring below 64% respectively Considering the mean mark per module 13 which was taught with audio visual learning materials had a mean mark of 69.7% as compared to the mean of 61.3% of module 16 without audio visual learning materials.

3. Challenges Faced in Using Audio Visuals Learning Materials

Majority of the respondents/students pointed out lack of computer knowledge as the main challenge. Unclear output from the devices used that led to poor pictures and voice project was also noted. Two of the respondents (11.8%) did not face any challenge in the process of using Audio Visuals Learning Materials.

Concerning the measures used to overcome the challenges in using Audio Visuals Learning Materials, the students identified their participation in discussions, doing more research on the existing literature and practice on the computer as the measures they employed. However, three of the respondents (17.7%) pointed out that they hardly took any initiative to overcome the challenges they faced when using Audio Visuals Learning Materials.

From the interview findings, it was found that the process of developing audio-visual materials is very difficult and it needs a lot of time to determine the fitting material for a text. It also requires ample time to make an appointment with a resource person for video recording.

In the case of the Facilitators' self assessment of his skills and knowledge in developing and using Audio Visual Learning Materials in teaching, he noted that he is informed, skilled and competent with a lot of enthusiasm. Despite that observation, the interviewee showed that he had difficulties in editing audios. The findings also revealed that in the bid to overcome the identified challenges, the respondent/lecturer sourced from the already stored visuals. The Internet was a great source.

Concerning the respondents from CDLS involved in the development of audiovisual learning materials, the interview revealed that the process is very challenging but exciting. It requires a lot of time to prepare and may be problematic to make a proper choice of appropriate audiovisual materials. The process at times involved use of personal equipment with the associated risk of having it damaged

4. Cost implications of introducing audiovisual learning materials

The questionnaire findings revealed that some students found it problematic to use some of the audio visual materials provided. These specifically included the CDs and DVDs and the argument was based on the costs associated in terms of buying computers. In addition, some students (especially those living in rural areas) identified inability to access electricity in their areas.

As per the interview findings, the costs of developing and using audio visual materials were in terms of:

4.1 Money

The resource person in the process of developing audio visuals interviewed clarified that a unit of an audio visual material can be saved on one DVD, which cost about 1000/=. The Source of funds for developing Audio Visual Learning Materials is majorly through the University Research Budget.

4.2 Time

It was revealed, by the teaching staff, that the process of developing Audio Visual Learning Materials required plenty of time. The respondent from CDLS clarified further that production of a Unit of an audio visual learning material requires about 8 hours.

4.3 Energy

It was noted that the process needed a high level of self-motivation. In addition, involvement of resource persons was very necessary. The respondent from CDLS remarked that the process involved engagement of the brain for 8 hours to develop a unit of the audio visual learning material.

4.4 Acceptability by Learners

The findings interview revealed that learners were very receptive of the innovation

The project of developing and using Audio Visual Learning Materials was viable. "The Instructors were happy during orientation and the few students I talked too liked the materials", remarked by the interviewee who was also involved in the orientation of teaching staff in the development and use of audio visual learning materials. It was good to listen to the instructor and also see the instructor from the students' point of view. This implies that teaching staff as students accepted the new innovation, which was also later, appreciated and accepted by their learners during the implementation stage.

DISCUSSION

1. Effect of audiovisual learning materials on students' perception of learning

The results show that the students perceived the use of Audio Visual learning Materials as an improvement in the teaching-learning process. The questionnaire findings revealed that audio visual learning materials argument the text materials, they add value and are easier to be understood by the learners, are time saving and speeds up learning, are less tedious on the part of the students; and they make the learning process more practical and enjoyable as they transfer knowledge. The interview findings confirm the questionnaire findings in that the Audio Visual Learning

Materials play supplementary role to the printed modules and stimulate learning among the students.

The interview findings however, revealed that the students' perception of the use of audio visual learning materials depends on how they are prepared by their facilitator to make use of this innovation in learning. The implication is that careful introduction and use of audio visual learning materials is the way to go to enhance meaningful learning especially among the distance-learning students.

2. Effect of audiovisual learning materials on students' performance

Majority of the respondents   observed that modules with Audio Visuals aroused the learners' curiosity, concentration, and motivation in addition to shaping their quest to learn. This helped the students to improve on their performance in the learning process. On the other hand, the questionnaire findings revealed that Modules without Audio Visuals impacted on students' performance in such a way that they found it difficult to remember, retain and keep knowledge of the subject matter taught. The interview findings from the course facilitator also applauded the questionnaire findings by showing that the use of audio visual learning materials improved learning and positively impacted on students' performance.

The documentary source (Micro finance Department Results, 2010) reaffirmed both questionnaire and interview findings as the performance of students was better in modules with audio visual learning materials compared to those without. For example in module 13 and 14 with audio visual learning materials, there were 1 and 2 students that got marks below 64% respectively as compared to modules 15 and 16 without

audio visual learning materials that had 4 and 5 students scoring below 64% respectively. Similarly, a comparison of the mean mark scores of 69.7% and 61.3% of modules 13 with and module 16 without audio visual learning materials respectively is a clear indication of the impact of using audio visual learning materials on the students' performance.

3. Challenges faced in developing and using Audio Visual Learning Materials

The findings of the questionnaire and interview methods used recognise that developing and using Audio Visual Learning Materials is quite challenging. Despite this observation, there seems to be a mismatch between the questionnaire and interview findings on the challenges faced in developing and using Audio Visual Learning Materials. The interview findings revealed that the process is very difficult and it needs a lot of time to determine the fitting material for a text. The interview findings further revealed that the process is very challenging but exciting. The process at times involved use of personal equipment with the associated risk of having it damaged. As per the questionnaire findings, the majority of the respondents/students pointed out lack of computer knowledge as the main challenge. Unclear output from the devices used that led to poor pictures and voice projection was also noted. Two of the respondents (11.8%) revealed that they did not face any challenge in the process of using Audio Visuals Learning Materials.

4. Cost implications of Introducing Audiovisual Learning Materials

4.1 Money

As far as the monetary cost implications of developing Audio Visual Learning Materials is concerned, there is conformity between the findings of the questionnaire and

interviews. From the interview findings, it was established that the developing and using Audio Visual Learning Materials was a viable project. It was noted that considering the cost/benefit analysis, the benefits outweigh the costs. The snag according to the interview findings is that some students lacked access to computers. In a similar wave, the questionnaire findings revealed that some students found it problematic to use some of the audio visual materials provided. These specifically included the CDs and DVDs and the argument was based on the costs associated in terms of buying computers.

4.2 Time

From the teaching staff respondent, it was revealed that process of developing Audio Visual Learning Materials required plenty of quality time. The interviewee involved in the production of audio visual learning materials revealed that it requires about 8 hours to produce a Unit of an audio visual learning material. As for the questionnaire findings, the students concern in terms of time is not in the process of making but that of learning how to use the developed audio visual learning materials.

4.3 Energy

The interview findings from the course instructor showed that the process of developing and using audio visual learning materials needed a high level of self-motivation. In addition, involvement of resource persons was very necessary. The interview findings further revealed that the process involved engagement of the brain for 8 hours to develop a unit of an audio visual learning material. The questionnaire findings unlike those of the interviewee method hardly revealed any energy input in the process of developing audio visual learning materials. This could be attributed to the nature of respondents i.e. students who were not involved in developing audio visuals. The findings however clarified the energy was needed to concentrate on

learning how to make use of the developed audio visual learning materials. The aspect of energy quantification could not be ascertained from the findings and this could be attributed to the qualitative nature of the findings from the used questionnaire instrument.

4.4 Acceptability by Learners

From data collected, analysed and findings established, the learners were very receptive of the innovation of introducing audio visual learning materials. The interview findings clearly showed the happiness of the students when the instructor/facilitator introduced the use of audio visual materials. This was an indication of acceptability of the innovation by the learners despite the challenges related to acquisition of the facilities especially computers in order to apply the introduced audio visual materials. Indeed the questionnaire findings showed the readiness of the students to listen and learn how to use audio visual learning materials. The issue of acceptance by the learners is also manifested in form of better performance in modules having audio visual materials as compared to those without.

Conclusions and Recommendations

This Study has attempted to provide an insight into the process of developing and using audio visual learning materials with specific reference to distance learning students of the department of micro finance at Uganda Martyrs University.

The concept of audio visual learning materials has been defined and its application in the teaching-learning process clearly developed through out the study. Four key issues about audio visual learning materials were identified for analysis. These include; (a) Effect of audiovisual learning materials on students' perception of learning (b) Effect of audiovisual learning materials on students' performance (c) Challenges

faced in developing and using Audio Visual Learning Materials and, (d) Cost implications of introducing audiovisual learning materials

The research study involved collection and analysis of mainly qualitative data with some quantitative data specifically showing the students' performance in two modules with and two modules without audio visual learning materials. Different methods of data collection (documentary sources, questionnaires and interviews) were identified and used in data collection. As per data analysis, qualitative analytic process was used for qualitative data while computer package Ms Excel was utilised in the processing and packaging of quantitative data.

The following recommendations for effective development and use of audio visual learning materials have been developed from this study:

The use of audio visual learning materials should be encouraged among all staff in order to arouse the learners' understanding of the subject matter. This may necessitate organizing sensitization seminars or workshops on audio visual learning materials as an engine for effective delivery in the teaching-learning process.

Staff training and development especially in the area of developing and using audio visual learning materials should be a concern of higher institutions of learning and should cut across faculties in the university setting. This also calls for Faculty Deans' orientation and training in the development and use audio visual before involving and training the other faculty staff. The Dean as a chief faculty administrator will then have an upper hand to influence his colleagues in the faculty to embrace the innovation.

Students should also be trained on how to use the different audio visual learning materials before they are used. Prior knowledge of the innovations will create a sense of attention and ability to effectively use the audio visual learning materials by the students. Students' active participation should be the norm during the training process.

The introduction and use of audio visual learning materials should be selective in nature. The process should consider the appropriateness and affordability of the audio visual learning materials. It would be meaningless to introduce audio visual which will not be applied by the students in case they cannot afford or access them in the day-to-day work and learning environment. This will thus depend on the instructor's knowledge and skills in using the innovation if he/she is to make it appropriate to the learning needs of the students.

For emphasis on key subject matter areas, it is advisable to introduce audio visual learning materials. The instructor is in a better position to clearly develop main points of the subject matter and, students can easily comprehend what is being taught in a relaxed learning atmosphere through effective development and use of relevant audio visual learning materials. Still, the issue of relevance and affordability of the innovation ought to be considered by the instructor.

The development and use of audio visual learning materials is a transition to sound multi-media learning and should be encouraged. The rationale is that audio visual learning materials usage in the teaching learning process is a get way to development and institutionalising the use of multi-media in the university hence a worthwhile development for academic progress. The familiar the innovation becomes to different faculty staff and students, the higher will be the urge to develop an organised multi-

media center in the college/university and the more creative and improved will be the faculty service delivery.

For adult learners in the working group, the development and use of audio visual should be encouraged beyond the boundaries of the classroom. The relevance of such materials even in their places of work ought to be analysed and encouraged. This thus benefits learning and could also add value on the productivity of the student as a worker especially those involved in the service industry such as teachers and bankers.

The university or faculties should stock a resource center of audio visual materials for current and future use. Both hard and soft copies of different audio visual materials should be safely kept for reference and any other use by both staff and students. This however, calls for training of staff involved in the resource center for good safety of materials and to ensure effective and timely service delivery.

In this showcase, a case study research strategy was used but it provides a basis for a more detailed investigation of the development and use of audio visual learning materials in the different programmes, faculties, and universities based on a survey strategy. Fresh studies can build on the findings already obtained. The methods of data collection and data analysis used can as well provide a good foundation for further research involving both qualitative and quantitative data. From the study, effective and efficient development and use of audio visual learning materials necessitate concerted efforts of the different stakeholders at institutional level especially the students, teachers/instructors, administrators, parents and policy

makers. The bottom line is to improve the students' learning environment, ensuring flexibility and affordability in learning without compromising quality in the service delivery.

REFERENCES

Alessi S. and Trollip. S. (2001), *Multimedia for learning, methods and development,* Allyn and Bacon, Needham Heights, Massachusetts.

Amin, M. E. (2005), *Social science research, conception, methodology and analysis*, Makerere University Printery, Kampala.

Bingimlas, K.A (2009) Barriers to Successful Integration of ICT I Teaching and Learning Environments, A Review of Literature, *Eurasia Journal of Mathematics, Science and Technology Education*, Vol 5, No 3, pp 235-245.

Center for Distance Learning Studies (2006), CDLS *Research Findings 2006/07*, un published research findings, Uganda Martyrs University.

Commonwealth of Learning (2005) *Creating Learning Materials for Open and Distance Learning:* a handbook for authors and instructional designers, Commonwealth of Learning, Vancouver.

Department of Micro finance (2010) *Bachelor of Micro finance, Year 2, 2008/2009 Coursework and Final Assignment Results*, UMU.

Draude and Brace (2002) *Assessing the impact of technology on teaching and learning*: student perspectives (retrieved on 12/4/2011) http://www.mtsu.edu/~itconf/proceed99/brace.html.

Hativa Nira and Reigngold Aliza (1987) *Effects of audiovisual stimuli on learning through microcomputer-based class presentation*, retrieved on (12/4/2011) http://www.springerlink.com/content/lk74542352490523/

Merriam, S. (1998) *Qualitative Research and Case Study Applications in Education*, San Francisco: Jossey-Bass.

Miles, M.B. and Huberman, A.M (1984) *Qualitative Data Analysis,* London: Sage.

Miles, M. and Huberman, A. (1994) *Qualitative Data Analysis: An Expanded Sourcebook, London: Sage.*

Strauss, A. and Corbin, J. (1997) *Grounded Theory in Practice*, Thousand Oaks: Sage.