THE EFFECT OF AUDIO VISUAL TOOLS ON STUDENT LEARNING: A CASE STUDY OF UGANDA CHRISTIAN UNIVERSITY STUDENTS

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UGANDA CHRISTIAN UNIVERSITY

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DECLARATION

I, Reyna Karen Angeyo, declare that this research study is of my own effort and this academic paper has not been presented anywhere else in fulfillment for any award degree.

Signature..... Date 8th April 2026.....

REYNA KAREN ANGEYO

S23B90/005

APPROVAL

The study meets all academic criteria and is therefore eligible for approval. I grant my permission for its submission to the Uganda Christian University Board.

Signature..... Date 08/04/2026

Ms. Rachel Nassuna

Supervisor

DEDICATION

To my parents, for all the support into making this research possible.

ACKNOWLEDGEMENT

Thank you to my research supervisor, Ms. Rachel Nassuna for the guidance and persistent efforts in shaping this dissertation with detail.

ABSTRACT

Today, audio visual tools have become a common aid in higher education learning. Tools like study videos, lecture recordings, course related infographic have become every student's go to for purposes of understanding, comprehending and memorizing course content. While previous studies have demonstrated evidence of the benefits of these tools, the extent to which they are effective on student learning remains in question. Therefore, this study aims at examining the influence of audio visual tools in context of students in higher education institutions of learning.

The study uses survey questions to find out the experiences of students while using audio visual tools such as videos, recorded lessons and images to find out which tools are more effective for learning, understanding and memorizing academic content at Uganda Christian University. The findings showed that study/instructional videos were most used tools for student learning in contrast to recorded lecturers which were the least used. Majority of the students highlighted the downside of Moodle as being less interactive with restricted access linked to tuition payments.

For the recommendations, the value of audio visual tools is dependent on their method of implementation during the process of student learning. Lectures should design relevant and interactive online material. The university ought to invest in better internet connectivity and equipping staff with digital competent skills to boost their use of audio visual tools in the learning process.

Key words of the study: audio visual tools, student learning outcomes, Uganda Christian University.

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CHAPTER ONE

1.0 INTRODUCTION

This chapter presents an overview of the research study. It highlights the background behind the study and is then narrowed down to the statement of the problem. This is followed by the study's purpose and specific measurable objectives. This chapter also clarifies the research framework and defines the boundaries of the study.

1.1 BACKGROUND TO THE STUDY

The global education landscape has been essentially reshaped by the integration of audio visual tools into teaching and learning (UNESCO, 2023). This evolution from early 20th Century filmstrips to highly sophisticated digital platforms, has established audio visuals tools as critical resources in higher education (Noetel et al, 2023). Universities worldwide use tools like videos, digital presentations, online platforms and instructional charts to improve student understanding, motivation and participation (Mayer, 2020). This practice is supported by Mayer's Cognitive Theory of Multimedia Learning, which suggests that learner's process information more effectively through combined auditory and visual channels (Mayer & Fiorella, 2022).

Across Africa, the adoption of audio visual tools gradually and steadily grows as a number of institutions continue to pursue digital transformation to enhance instructional delivery and access (Twinomuhangi et al, 2023). Many universities now employ eLearning systems and multimedia presentations to strengthen instructional delivery (Ofori et al., 2023). These technologies have helped to bridge the gap and expand access to quality education. However, their effectiveness in improving student learning outcomes is frequently constrained by challenges such as limited ICT infrastructure and high costs of implementation (Adamba &Odundo, 2023).

In Uganda, the Ministry of Education has promoted technology adoption through implementation of policies like the National ICT Policy Framework (Ministry of education and Sports, 2003). Universities such as Uganda Christian University have invested in digital infrastructure, implementing blended learning systems that utilize tools like projectors and digital learning platforms such as Moodle and BigBlueButton.

The COVID-19 pandemic also significantly accelerated the reliance of these platforms for education continuity (World Bank, 2020). Despite these institutional investments, a significant difference still exists on how both lecturers and students utilize audio visual tools. Whereas some find them effective for promoting active learning, others have encountered technological related barriers including unreliable internet connectivity and varying levels of digital literacy among users (Nkomo & Daniel, 2023). Therefore, this study seeks to examine the effect of audio visual tools on student learning at Uganda Christian University.

1.2 STATEMENT OF THE PROBLEM

Student learning outcomes at Uganda Christian University (UCU) remain low despite increased adoption of audio visual tools in teaching and learning. Audio visual resources such as projectors, instructional videos and charts as well as online platforms are intended to make lessons more interactive, stimulate interest and enhance comprehension by engaging multiple senses, a principle supported by learning science (Mayer, 2020). However, their potential impact is frequently undermined by factors including limited access to reliable technology, inconsistent internet connectivity and low levels of digital literacy (Twinomuhangi et al., 2023).

Consequently, the presence of audio visual tools in classrooms does not automatically translate into improved understanding or better knowledge retention among students, a common finding in technological research (Basser et al., 2023). This gap raises questions about whether these technologies are deployed effectively to support meaningful learning or adopted primarily as a modern teaching approach without proper integration (Alhabeeb & Rowley, 2023). It is therefore critical to examine the actual effect of audio visual tools on student learning at Uganda Christian University.

PURPOSE OF THE STUDY

The purpose of this study is to examine the effect of audio visual tools on student learning at Uganda Christian University.

1.3 OBJECTIVES OF STUDY

1.3.1 GENERAL OBJECTIVE

To find out the influence of audio visual tools on student learning at Uganda Christian University

1.3.2 SPECIFIC OBJECTIVES

I. To evaluate the effect of digital learning platforms such as Moodle on student learning engagement at Uganda Christian University.

II. To examine the effect of instructional charts and graphs on student understanding of visual concepts at Uganda Christian University.

III. To analyze the effect of audio recordings on student retention of course material at Uganda Christian University.

IV. To assess the effect of instructional videos on student's comprehension of course content at Uganda Christian University.

1.4 RESEARCH QUESTIONS

I. How do digital learning platforms such as Moodle affect student's learning engagement?

II. What is the effect of instructional charts and graphic on student understanding of visual concepts?

III. How do audio recordings influence student's retention of course material?

IV. To what extent do instructional videos enhance student's comprehension of course content?

1.5 SCOPE OF STUDY

1.5.1 CONTENT SCOPE

The study focuses on two key variables, that is to say audio visual tools being the independent variables and student learning, participation and academic performance which are the dependent variables.

1.5.2 GEOGRAPHICAL SCOPE

The research will be conducted at Uganda Christian University, Mukono Campus.

1.5.3 TIME SCOPE

The study will cover the academic year 2025 for a period of three months during which data will be collected and analyzed.

1.6 CONCEPTUAL FRAMEWORK

The conceptual framework for this study illustrates the relationship between audio visual tools as the independent variable and student learning outcomes as the dependent variable at Uganda Christian University. This framework is adopted from the Richard E. Mayer's Cognitive Theory of Multimedia Learning (Mayer & Fiorella, 2022), which suggests that learners understand and retain information more effectively when instruction combines both verbal and visual elements. According to this theory, the human brain processes information through dual channels that is to say auditory and visual elements, hence learning is enhanced when these channels are used together in a well-structured and meaningful way. This framework illustrates the direct relationship between the key variable as shown below;

CONCEPTUAL FRAMEWORK

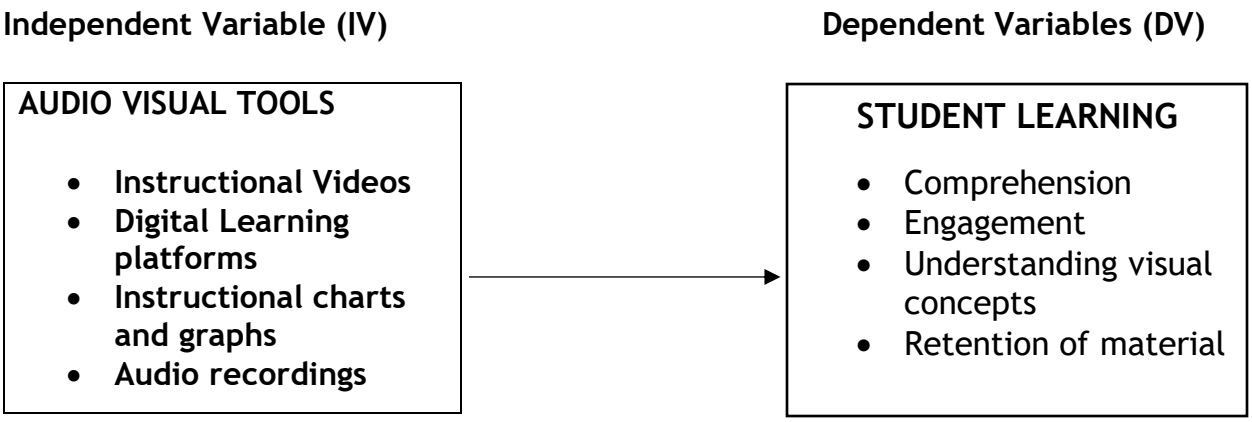

Figure 1: Relationship between audio visual tools and student learning outcomes.

In this framework, audio visual tools are categorized as independent variables and these include videos, digital learning platforms, instructional charts and audio recordings. Instructional videos are designed to combine visual demonstrations with verbal explanations, which enhance student's comprehension of course content by simplifying complex concepts and supporting visual learning. Digital learning platforms such as Moodle create interactive environments that promote active participation and collaboration among students, thereby increasing learning engagement (UNESCO, 2023). Instructional charts and graphs improve student's understanding of visual

concepts by representing data and information in a simplified and organized manner in form of graphs. (Okonkwo et al., 2023). Likewise, audio recordings strengthen student's retention of course material by allowing repeated access to lectures, reinforcing memory and long term learning. (Zhao & Chen, 2024).

The dependent variable, student learning is measured through specific learning outcomes such as engagement, comprehension, understanding and retention.

Overall, this conceptual framework demonstrates that the effective use of audio visual tools can lead to improved student learning experiences and outcomes. The framework is adapted from Mayer and Fiorella's (2022) Cognitive Theory of Multimedia Learning, supported by recent studies on multimedia integration in higher education (UNESCO, 2023; Adebayo & Kinyua, 2024; Zhao & Chen, 2024; Ali et al., 2023; Okonkwo et al., 2023). These sources collectively emphasize that the use of technology-enhanced learning tools improve student engagement, comprehension and retention when appropriately aligned with instructional objectives and learner needs.

1.7 SIGNIFICANCE OF THE STUDY

The findings will help lectures understand how to effectively incorporate audio visual tools into teaching practices.

The study will increase student awareness on the benefits of engaging audio visual tools to improve their academic performance.

The results from the study will be used by university administrators as a basis to guide decision making in regards to audio visual tool investment as a technological teaching aid.

The data gathered from the study will be used by future researchers and scholars as a foundation for future studies on the role of technology in higher education learning.

1.8 DEFINITION OF KEY TERMS

Audio visual tools: Instructional materials that combines sound and visual elements to enhance teaching and visual elements to enhance teaching and learning (Zhao & Chen, 2024)

Instructional videos: Structured videos designed to explain or demonstrate learning concepts for better comprehension (Mayer & Fiorella, 2022)

Digital Learning Platforms: Online systems such as Moodle that support teaching, interaction and assessment in higher education (UNESCO, 2023)

Instructional charts and graphs: Visual aids that present information or data clearly to support understanding (Okonkwo et al, 2023)

Audio recordings: Recorded lectures or podcasts that reinforce learning through repeated listening (Zhao and Chen, 2024)

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION

This chapter provides a thorough analysis of existing literature from other research papers with regard to audio visual tools in institutions of higher learning and their result on learning objectives. Considering the advancement of educational technologies in higher education, multimedia tools have proved to be instrumental in today's learning environment. The literature review utilizes findings from present day research as a basis to develop a data driven conceptual framework of the study. The review explores contemporary scientific studies with support of Mayer's Cognitive Theory of Multimedia Learning to investigate the influence of audio visual tools on student learning outcomes. the chapter gives a basis for the theoretical framework and moves forward to provide an analysis of independent and dependent variables drawing arguments from other studies and concludes with the identification of research gap.

2.1 THEORETICAL FRAMEWORK

This study is using Richard E. Mayer's Cognitive Theory of Multimedia Learning as the core framework. According to Mayer 2020, humans comprehend information through different but interlinked channels such as visual, verbal and auditory pathways. Therefore, the learning process becomes effective when the above channels are used at the same time with purposeful curated content that stimulates active understanding rather than passive listening.

The Cognitive Theory of Multimedia Learning avails a fundamental method; the study can use to understand the value of audio visual tools being evaluated. For instance, audio recordings stimulate auditory sense to boost retention of study material, visual aids like charts and graphs induce the sense of sight to ease understanding of visual concepts and study videos make use of audio, verbal i.e. via narration and visual elements to improve comprehension.

Mayer & Fiorella, 2022 argue that the theory goes beyond basically attaching multimedia tools to teaching methods but rather presents an empirical basis to determine whether result oriented inclusion of audio visual tools can factually realize

student learning outcomes of comprehension, engagement, understanding of visual concepts and retention of material. Additionally, a study from Li et al in 2023 confirms that structured learning material notably enhanced knowledge application and critical thinking among students compared to traditional text based material.

2.2 THE GLOBAL AND REGIONAL SHIFT OF AUDO VISUAL AIDS

The use of audio visual tools in educational landscape has become a common practice amongst universities worldwide. Following the COVID-19 pandemic, institutions have fully embraced educational technologies such as Learning Management Systems like UCU Alpha and eLearning platforms such as Moodle and BigBlueButton, complemented with video conferencing applications such as Zoom and Google Meet as the new normal. A survey conducted by UNESCO IN 2023 showed that institutions with established learning technologies were significantly more enduring towards academic setbacks while offering multiple learning options to ensure continuity.

Involving the African content, digital transformation is still ongoing. However, it comes with its own set of challenges and opportunities. Twinomuhangi et al, 2023 highlights that whereas universities have increased efforts to acquire educational tools and technologies, their full potential is still constrained by digital inefficiencies such as limited internet network coupled with low digital skillset amongst learners and lecturers as well as financial restraints along with high maintenance costs of LMS and eLearning platforms and equipment. It is pertinent to understand that the availability of audio visual tools, does not instantly lead to better academic performance but rather the need to explore the extent with which these tools can be fully utilized in order to improve learner performance.

2.3 Analysis of Specific Audio-Visual Tools and Learning Outcomes

2.3.1 Digital Learning Platforms and Student Engagement

Digital learning Platforms are spaces designed with an interactive user interface for the purpose of creating an active two way learning environment between the tutor and student. In this study, their effect is measure by the level of student engagement and is further categorized as behavioral i.e. student’s attitude and response, emotional

namely subjective perceptions, and cognitive to mean analytical or intellectual involvement.

Results obtained from a research study by Garcia-Martinez et al, 2023 discovered that Learning Management Systems with interactive interfaces such as disqus forums, tests and submission portals encourage student involvement as compared to traditional teacher based learning. Furthermore, Singh and Thuman, 2019 observed in their research that systematic integrated learning models contribute to enhanced learning engagement. Therefore, this finding is important for universities that seek to find out how digital learning platforms impact learner engagement, particularly in the context of Uganda Christian University.

2.3.2 Instructional Videos and Student Comprehension

Instructional videos apply the core principle of Richard E. Mayer's Cognitive Theory of Multimedia Learning, that amplifies our brain's capability to analyze visual and audio content at the same time to help in student comprehension. The visual and auditory channels make abstract or complex processes definite by showing processes in action, visualizing relationships and providing contextual examples that text alone cannot achieve. Results from a comprehensive 2023 meta-analysis of over 100 studies showed that video based instruction significantly boosts comprehension, particularly for procedures and concepts because it reduces text heavy information by integrating explanations with demonstrations (Noetel et al, 2023).

However, the effectiveness of the videos depends greatly on their design. Research indicates that short, segmented videos focused on single learning objectives are far more effective than long ones as they prevent an overwhelming flow of information which disrupts mental processes and allows for better processing (Chen &Yang, 2024). This means that for videos to enhance student comprehension at Uganda Christian University, they must be purposefully integrated into lessons, paused for discussion, paired with guiding questions or even used to guide case studies rather than simply being displayed passively. Therefore, the impact of study videos on student

comprehension is dependent on its application during the learning process rather than simply its existence.

2.3.3 Instructional Charts/ Graphs and Understanding of Visual Concepts

Instructional charts and graphs assist in understanding of visual concepts by translating advanced topics into simplified bits of information. As stated by Mayer 2020, well-illustrated graphical presentations enable students to easily identify patterns and trends without straining their brains. This is especially important in science subjects and data interpretation.

A 2023 experimental study performed by Adamba and Odunda in 2023 among university students in Kenya, identified that learners who studied using well explained charts, graphs and diagrams outperformed those who relied on written explanations during the data interpretation examination. However, it is crucial to note that the benefit of visual aids is dependent on factors such as simplicity and applicable importance in order to establish their effect on student learning outcomes. This implies, the format in which charts and graphs are designed plays a key role in promoting the understanding of visual concepts.

2.3.4 Audio Recordings and Knowledge retention

As mentioned by Zhao and Chen 2024, audio recordings use the guiding principle of repetitive listening of lecture recordings or study podcasts to store information in the long term memory. Besser et al, 2023 adds to this by emphasizing the testing effect which states that consistent reviewing of study material over a designated time period reinforces the long term memory.

Additionally, Besser conducted a controlled experiment that involved two different groups of students. One group received summarized curated weekly audio lectures while the other did not. Results from the exam found that the group which received curated weekly audio lectures performed considerably well compared to the other group which did not get the material. This experiment showed the group that received audio lectures successfully retained information from the audios.

This finding is crucial because it highlights that the benefit comes not from passive recording, but from active curation. The effective podcasts were concise, focused on core concepts and structured for review. Hence, these are the qualities that transform a simple recording into a strategic learning aid. For Uganda Christian University, this suggests that the retention benefit of audio tools depends on how well they are curated, whether they highlight key points, provide mnemonics, segment large contents into manageable portions and making them strategic revision aids for helping students remember course material.

2.4 Summary of Literature Review

In summary, the existing literature provides a strong case for the positive effect of audio visual tools on student learning, built on the solid theoretical foundation of Mayer's (2020) Cognitive Theory of Multimedia Learning and supported by evidence from various studies (Noetel et al., 2023; Garcia-Martinez et al., 2023). The general agreement among researchers that tools such as digital learning platforms, instructional videos, charts, graphs and audio recordings can improve student engagement, boost comprehension, help in understanding visual concepts and strengthen memory of course material. However, this only happens when these tools are well designed and used in supportive learning settings.

2.6 Identification of the Research Gap

However, a significant gap remains in the review. While international and theoretical models give useful insights and research from other places like Africa and Asia (Twinomuhangi et al, 2023; Vishnupriya & Bharathi, 2022) provides helpful comparisons, there is a clear shortage of recent, practical and specific research done within Ugandan universities, especially at Uganda Christian University (UCU).

The problem is that even with investments in Learning Management Systems like Moodle, student results remain a concern. Although the current literature helps to explain reasons like internet problems, limited digital skills and teaching methods, it does not actually measure the effect of UCU'S own audio visual tools on its student's learning.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 INTRODUCTION

This chapter an abstract of the research methods used to find out how audio visual tools affect student learning. It contains the research approach to be used, target population to be picked, sampling size and technique. It also includes the research method which will be applied to collect data. A set of ethical considerations have been put in place to guide the process of data analysis and concludes with a summary of the chapter.

3.1 RESEARCH APPROACH AND RESEARCH DESIGN

This research study will apply the quantitative research design. This is because the quantitative approach enables the researcher to measure audio tools and student learning outcomes as independent and dependent variables respectively, using factors such as frequency level of tools used and learning outcomes i.e. high/low/neutral. This in turn ultimately correlates with the objective of the study to examine the effect of audio visual tools on student learning.

The design of the research study is the cross sectional survey. This means gathering data from samples of the target population in a particular timeframe so as to give a general review of the present conditions in the case study. Using survey research method enables data collection from a large number of respondents involving subjective opinions, consumptions habits and individual learning objectives. The results gathered and analyzed are generalized as a representation of the entire student population at Uganda Christian University.

3.2 POPULATION

The population of the study is the whole group of people the results from the survey research symbolize. In relation to the topic in question, the population is the undergraduate students registered for study at Ugandan Christian University, Mukono Campus for the academic year 2025, which is also the timeline the study is conducted.

3.3 TARGET POPULATION

The target population refers to the particular segment of the population where a special control group is selected. Of all students enrolled at Uganda Christian University Mukono Campus, undergraduate students of the academic year 2025 are the target population for the study. The reason is that most of them are still learning which audio tools work best to help them understand course material.

3.4 SAMPLING SIZE

The sampling size is derived from the target population. For this study, a total of 30 students from various faculties will be the sample size due to the fact that it is achievable and can be accomplished within a shorter time interval. The findings from these respondents provide new insights in line with the use of audio visual tools.

3.5 SAMPLING TECHNIQUE

The sampling technique will apply the Stratified Random Sampling method. This requires dividing the target population into smaller groups and from each subgroup random sample is picked. In this study, undergraduate students will be subdivided into the various schools and faculties such as undergraduates under School of Law, Agriculture, Engineering among others. From these, students are chosen at random to ensure a balanced representation.

3.6 RESEARCH METHOD

The research method employed is the survey method. With the aid of a well-developed structured questionnaire, responses collected are analyzed to obtain results from the study. The survey research method offers a vast response from several respondents which are translated into data that is compared and analyzed to derive a relationship between the frequency of audio visual tools and their effect on student learning outcomes

3.7 Data Collection Tool

A structure questionnaire composed of open and closed ended questions is the primary data collection tool. The questionnaire will be divided into four sections to ensure a chronological flow that is;

Section A consists of Demographic information (e.g. faculty, year of study, role)

Section B consists of Usage patterns of audio visual tools (frequency of use for videos, Moodle, charts, audio recordings)

Section C consists of the perceived effects on learning outcomes (using the 5-point Likert scale from Strongly Agree to Strongly Disagree for statements on engagement, comprehension, understanding of visuals and retention)

Section D consists of open ended section for additional comments on challenges and suggestions.

Before distribution, the questionnaire will undergo a pilot check to ensure the clarity and simplicity of the questions.

3.8 Ethical Considerations

A set of instructions have been put in place to make sure the questionnaire meets the respondents' right to privacy while they attempt the questionnaire as stated below;

The questionnaire includes a section explaining the purpose and topic of the study. Respondents are free to choose to answer or decline the survey at will. However, proceeding to answer the questionnaire will imply the respondent's consent towards participating in the survey. The respondent will not be required to fill out any personal details and contact information. This is to verify their right to anonymity is not violated.

3.9 Data Analysis

The method of data analysis to be used is the Descriptive Statistical Method to organize, analyze and simplify the data gathered for easy interpretation using tables. All responses from participants will be reviewed and complied using excel spreadsheets for analysis and calculating percentages of the collected data, for the closed ended questions. Responses from open ended questions will also be interpreted to reveal repeated topics, opinions and recommendations to understand the qualitative results.

3.10 Summary

This chapter provides a detailed plan on how the data is conducted and analyzed. The study uses quantitative research framework supported by a cross sectional survey. Data will be collected from a sample size of 30 students and examined using the descriptive statistical method. Ethical guidelines have been established to make sure the participants maintain their right to privacy.

CHAPTER FOUR: DATA RESENTATION, ANALYSIS AND INTERPRETATION

4.0 INTRODUCTION

This chapter uses a structured approach to present the research findings that were obtained from the survey conducted at Uganda Christian University. Numerical data acquired from open ended questions is demonstrated using tables whereas opinions from closed ended questions are analyzed for recurring themes. The chapter is aimed at providing factual data as a basis to draw conclusions on whether audio visual tools enhance student understanding, engagement and retention of study material.

4.1 Response Rate

The survey was given out to a sampling size of 30 students representing the entire population of undergraduate students from different faculties and schools in the university. The survey questionnaires distributed were fully answered and returned evidencing maximum participation, which enhances reliability and accuracy of the survey findings while countering non response biases from the target sample size.

4.2 Demographic Characteristics of Respondents

Table 4.1 provides data on the demographic profiles of the respondents. All survey responders are students registered at Uganda Christian University, Mukono Campus from various faculties and schools including the years of study.

Table 4.1 Demographics Profile of Survey Respondents (N=30)

Faculty/ School Affiliation	**Number of students**	**Percentage**
School of Journalism, Media and Communication	17	56.7%
School of Law	7	23.3%
Faculty of Engineering, Design and Technology	5	16.7%
Faculty of Agricultural Sciences	1	3.3%
Year of Study		

Year 3	23	76.7%
Year 4	4	13.3%
Year 2	3	10.0%

According to the above demographics data, third year students hold the majority with a percentage of 76.7% which possibly implies they have more experience with using eLearning university systems as compared to Year 1 and 2 students. Based on faculty/affiliation, there is an unbalanced representation as most students who answered the survey came from School of Journalism, Media and Communication at 56.7%, leaving the rest at low percentage. While the findings provide useful insights, they may not accurately depict the mixed nature of student experiences throughout the different faculties/schools and years of study.

4.3 PRESENTATION AND ANALYSIS OF DATA ACCORDING TO RESEARCH OBJECTIVES

4.3.1 EFFECT OF DIGITAL LEARNING PLATFORMS ON STUDENT ENGAGEMENT

The survey used determinants such as frequency usage patterns and observable effects to measure the influence of Moodle on student engagement. Table 4.2 illustrated the level of Moodle usage among students.

Table 4.2 Students Moodle usage patterns.

Usage Pattern	Number of Students	Percentage
Daily	8	26.7%
Weekly	9	30.0%
Monthly	7	23.3%
Rarely	5	16.7%
Never	1	3.3%

The data shows that Moodle has become a regular part of academic life for most students, with 56.7% accessing the platform at least weekly. Despite this, 26.7% of students who rarely or never use Moodle suggest a diverse involvement in student

learning. table 4.3 presents the students perception of Moodle impact on their engagement.

Table 4.3: Student Percentage of Moodle's' Engagement Value

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q8: Using Moodle makes me more active in my courses	7 (23.3%)	6 (20.0%)	15 (50.0%)	1 (3.3%)	1 (3.3%)
Q9: Features like quizzes and forums make learning more interesting	8 (26.7%)	8 (26.7%)	11 (36.7)	2 (6.7%)	1 (3.3%)

Whereas a total of 56.7% of students use Moodle, from the table above, 50.0% of students are neutral on Moodle's role in boosting active engagement. This implies that using the platform on a daily or weekly basis does not automatically translate to increased student engagement for majority of the respondents. On the other hand, quizzes and forums overall received positive feedback with 53.3% of students agreeing these features make learning more interesting compared to 36.7% who remained neutral.

Illustration

Response category	Number of students	Raw Percentage	Calculation	Result (53.4% and 36.7%)
Strongly Agree	8	26.7%	(8÷30)×100	Part of 53.4%
Agree	8	26.7%	(8÷30)×100	Part of 53.4%
Agree +Strongly Agree	**16**	**53.4%**	**26.7%+26.7%**	**"53.4% agreeing"**
Neutral	11	**36.7%**	(11÷30)×100	**"36.7% neutral"**
Disagree	2	6.7%	(2÷30)×100	
Strongly Disagree	1	3.3%	(1÷30)×100	
Total	**30**	**100%**		

4.3.2 EFFECT OF INSTRUCTIONAL CHARTS/GRAPHS ON UNDERSTANDING OF VISUAL CONCEPTS

The survey aimed at measuring the rate at which students use chats/graphs to understand visual concepts. Table 4.4 below shows the rate at which students interact with visual aids to facilitate learning.

Table 4.4 Frequency of Chart/Graph Usage in Learning Materials

Usage Frequency	Number of Students	Percentage
Daily	3	10.0%
Weekly	8	26.7%
Monthly	3	10.0%
Rarely	11	36.7%
Never	5	16.7%

Results from table reveal 36.7% of students use instructional charts/graphs on a daily and weekly basis while the greater 53.4% of students rarely or never use visual tools. This signifies the tools are being underutilized by most students regardless of their benefits in simplifying the comprehension of visual concepts. Thus, the value of instructional charts/graphs is unrealized. Despite that, Table 4.5 demonstrates data on the perceived effectiveness of charts and graphs which appears to be in favor of the visual tools.

Table 4.5 Perceived Effectiveness of Charts and Graphs

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q12: Charts and graphs make visual information easier to understand	9 (30.0%)	13 (43.3%)	6 (20.0%)	2 (6.7%)	0 (0%)
Q13: I remember information longer when its shown in a diagram	9 (30.0%)	11 (36.7%)	8 (26.7%)	2 (6.7%)	0 (0%)

Regardless of the low usage levels of charts/graphs, 73.3% of students from question 12 were in agreement that charts and graphs make visual information easier to understand, with an additional 66.7% from question 13 in support of diagrams improving their retention of information. Drawing from 53.4% of students who rarely/never use visual aids, and the high positive perceived value of these tools i.e. 73.3% and 66.7%, there is a gap for these tools to be adopted into student learning to foster understanding among students.

4.3.3 EFFECT OF AUDIO RECORDINGS ON KNOWLEDGE RETENTION

This survey designed questions to find out the regularities of student while using audio recordings along with its perceived value towards learning. Table 4.6 provides findings on usage rate of audio recordings by the respondents.

Table 4.6 Frequency of Audio Recordings Usage

Usage Frequency	Number of Students	Percentage
Daily	7	23.3%
Weekly	6	20.0%
Monthly	4	13.3%
Rarely	10	33.3%
Never	3	10.0%

In comparison to Moodle, instructional charts/graphs and videos, audio recordings are the most inconsistent tool used amongst the audio visual tools. Data reveals that 43.3% of the students rarely or never use audio recordings in contrast to other tools that is chart/graphs, videos and Moodle. This indicates that audio recordings remain ineffectively added to learning material. Furthermore, Table 4.7 highlights various student's opinions on audio recordings for memorizing content.

Table 4.7: Perceived Value of Audio Recordings for Learning

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q14: Listening to recorded lectures helps me remember information for exams	6 (20.0%)	8 (26.7%)	10 (33.3%)	5 (16.7%)	1 (3.3%)
Q15: Audio recordings are useful for reviewing important points	6 (20.0%)	8 (26.7%)	9 (30.0%)	6 (20.0%)	1 (3.3%)

The findings demonstrate a unique pattern of perceptions on audio recordings. The total percentage of students who support the value of audio recordings for memorization is equally proportional to those who are either neutral or disagree with the use of the tool. This derives the conclusion of while some students acknowledge the benefit of using audio recordings, their function plays a relatively limited role towards achieving student leaning outcomes.

4.3.4 EFFECT OF INSTRUCTIONAL VIDEOS ON COMPREHENSION OF COURSE CONTENT

Throughout the entire survey, instructional videos emerged as the overall best learning tool for students. Table 4.8 gives a representation of the usage level of students who used study videos for learning.

Table 4.8 Frequency of Instructional Video Usage

Usage frequency	Number of Students	Percentage
Daily	12	40.0%
Weekly	9	30.0%
Monthly	4	13.3%
Rarely	5	16.7%
Never	0	0%

Findings recorded high levels of video usage rates at 70% both daily and weekly with 40% accessing videos on a daily basis. This shows instructional videos play a vital role towards helping learners make meaning of course content. Data from Table 4.9 further compliments their value.

Table 4.9 Perceived Impact of Videos on learning

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q10: Instructional Videos help me understand difficult topics better	12 (40.0%)	11 (36.7%)	5 (16.7%)	2 (6.7%)	0 (0%)
Q11: Video explanations improve my overall grasp of course content	13 (43.3%)	10 (33.3%)	5 (16.7%)	2 (6.7%)	0 (0%)

An impressive 76.7% of students can affirm that videos enhance their understanding of challenging concepts, while 76.6% agree that video explanations improve their overall grasp of course material. This evidently demonstrates instructional videos as the most effective audio visual tool in helping student realize their learner goals. Conclusively, instructional videos are efficient for attaining academic goals by providing illustrated explanations that can be reviewed at learners' pace thus facilitating comprehension of course material.

4.3.5 ANALYSIS OF OPEN ENDED RESPONSES

(Challenges and Suggestions)

The open ended responses facilitated the process of gathering qualitative data which provided more insight alongside the quantitative data collected earlier. Question 16 asked about challenges or barriers to effectively using audio visual. From the analysis, a total of 13 students raise concerns about digital infrastructure, limited network connections with Eduroam and Moodle system failure. This consequently fuels delayed responsiveness of the eLearning systems which also limits consistent access to study material. Next, issues of restricted Moodle access based grounded on tuition payments. This means only students who paid all or a certain amount of tuition fees have access to resources on Moodle. However, this policy is unfavorable for students who are unable to meet the terms and conditions under the policy especially during critical events such as assessment periods.

Four respondents observed problems with the digital platform interactive space with some describing it as boring and user-unfriendly, hinting on the need for improvements. Some foreign students also cited language barrier challenges while others identified content inconsistencies between the lecture notes and poor quality study videos.

Question 17 suggested for solutions to ensure audio visual tools attain student learning outcomes. Recommendations from respondents focused on areas such as improving infrastructure and internet connectivity, fast responses regarding technical failures and frequent system upgrades to boost performance. Six students called for training support for both lectures and students.

Content accessibility improvements were suggested five times, including requests for downloadable video and audio files to get around connectivity issues, integration of credible external resources and simplification of platform interfaces. Policy adjustments were recorded by three respondents, who advocated for more flexible access to learning tools regardless of tuition payment status, especially during examination periods. These qualitative insights provide crucial context for interpreting the quantitative findings and offer practical direction for institutional improvements.

4.4 General Summary

Results from the survey offer an empirical focal point regarding the influence of audio visual tools on student learning. Moodle stands as a crucial tool for course content but ineffective in terms of boosting student engagement. Instructional videos received the highest positive feedback on its usage patterns and perceived effectiveness towards enhancing student comprehension. This positions it as the most effective tool for attaining learning objectives. Both audio recordings and instructional charts/graphs had relatively high positive perceptions, however, their potential use remains underexploited thus leaving room for future exploitation.

The survey observed common barriers hindering effective use of audio visual tools. These included Moodle policy restrictions, unstable internet and frequent learning management system failure. Suggestions centered on readjusting Moodle access policy, improving accessibility to study content, training for both student and staff. All the above findings are grounded on scientific evidence which the study can analyze and develop data driven recommendations as seen in the subsequent chapters.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

5.0 INTRODUCTION

Chapter five further interprets the research findings obtained from Chapter Four. The chapter derives arguments and provides action oriented recommendations. All the detailed analysis made in this chapter are based on the observations made in the earlier chapters. The following discussions are primarily aimed at developing solutions in which audio visual tools can be applied best to improve student learning outcomes at Uganda Christian University.

5.1 DISCUSSION OF KEY FINDINGS

5.1.1 Discussion on the Effect of Digital Platforms on Student Engagement

Survey findings showed that 56.7% of students use Moodle on weekly basis in contrast to the other half who remained neutral on its level of interactivity. This is partly supported by a 2023 study of Garcia Martinez et al, that demonstrated increased engagement on online platforms like Moodle when used interactively.

At Uganda Christian University, Moodle's potential as a tool to actively engage students still remain limited to quizzes, tests, lecture notes and submitting assignments. This presents an opportunity for exploitation of Moodle's interactive features in order to achieve student learning outcomes.

5.1.2 Discussion on the influence of Charts and Graphs towards understanding visual concepts

According to the survey results, 73.3% of the respondents agreed that charts and graphs simplify abstract concepts. However, more than half of them (53.4%) said they rarely or never see these visual aids in their course materials. This finding aligns with research that confirms that visual tools help students grasp complex ideas better (Adamba & Oundo, 2023). The problem at UCU is not that these tools are ineffective, but that they are not used enough. If lecturers included more charts and diagrams in their teaching, students would likely understand and remember visual concepts much better.

5.1.3 Discussion on the effect of Audio Recordings on Retention

Audio Recordings were the least used tool, with many (43.3%) rarely or never listening to them. Opinions were split on whether they help with memory. This differs from some studies which found that podcasts can improve retention (Besser et al., 2023). A likely reason for the difference at UCU is that audio resources are not consistently provided across all courses, and when they are, that quality or relevance may vary. For audio tools to be effective, they need to be well made, easy to access, and directly tied to what it being taught.

5.1.4 Discussion on the Effect of Instructional Videos on Comprehension.

Most students (70%) use instructional videos weekly and over 76% agree these videos help them understand different topics. This strongly supports Mayer's (2020) theory that people learn better from words and pictures together. Videos work well at UCU because they allow for students to learn at their own pace, pause when needed and see demonstrations of complex processes. This tool has been successfully integrated and highly valued, showing that when a resource is reliable and useful, students will use it and benefit from it.

5.2 Conclusion

This study aimed to evaluate the effect of audio visual tools on student learning at Uganda Christian University. Based on the findings, it is concluded that the effect is varying and depends on how the tools are used. Instructional videos have a strong positive effect on comprehension. Charts and graphs are believed to be helpful but are underused. Moodle is widely used but only has a moderate on engagement because it not used interactively enough. Audio recordings have limited effect because they are not consistently available. Overall, the tools can improve learning, but only if they are well designed, properly integrated into teaching, and supported by reliable internet and fair access policies.

CHAPTER SIX: RECOMMENDATIONS AND AREAS FOR FUTURE STUDIES

6.0 RECOMMENDATIONS

This chapter contains recommendations, suggestions and areas for future study aimed at improving the use of audio visual tools to increase student learning outcomes at Uganda Christian University.

6.1 For Enhancing Digital Platform Engagement

Lecturers should move beyond using Moodle simply as a storage for notes and assignment submission. Instead, they could design simple mandatory weekly or monthly activities. For example, asking each student to post one question about the week's topic on the forum, or creating a short five question quiz that counts for a small percentage of marks. This approach would encourage regular active use and help students feel more connected to their courses.

6.1.1 For Increasing Visual Learning Support

Since students strongly believe charts and graphs help in understanding but rarely see them, departments could take concrete action. A practical start would be for certain faculties to identify two or three difficult topics that students struggle with and create clear visual summaries for those topics. These could be shared all classes teaching that material, saving individual lecturers time while giving students visual aids they need.

6.1.2 For making Audio Resources More Useful

The varying responses to audio recordings suggests they need to be better designed. A good practice would be for lecturers to record brief summaries and not full lectures focusing only on the three or four most important points from a week's lessons. The study videos can range for about 10 to 30 minutes with top audio quality and sent to students as a study tool they can use during their reading time.

6.1.3 Countering technical barriers

Survey respondents emphasized issues such as poor network connectivity and restricted Moodle access. The university administration should strengthen technical staff

deployed to solve network problems and maintenance works for digital platforms. The administration should also go over and readjust the Moodle tuition based access policy to ensure financially restrained students do not miss out on essential study material.

6.1.4 Equipping digital skill competencies

A number of students and lecturers lack digital literacy on how to use audio visual tools. The University ICT services department should organize more digital training sessions and seminars for both students and lecturers to equip them with adequate skills they can apply while using audio visual tools.

6.2 AREAS FOR FUTURE STUDIES

These are the areas for additional research

Conducting further studies throughout other faculties and schools

The study comprised of a limited number of students from a few others faculties and schools. According to the survey, majority came from School of Journalism, Media and Communication while the few rest were picked from School of Law, Agriculture and Engineering. For future studies, another similar study could be conducted being inclusive of other faculties like Nursing, Medicine and Surgery, Business, among others. This would give a more elaborate result regarding which tool appears more efficient for most course units compared to the others so as to improve each faculties' learners needs.

Monitoring Students Performance

In a bid to find out whether audio visuals accurately produce better academic results, future research can be a implemented to determine the level of improved academic performance achieved from using audio visual tools as learning resources. For instance, two separate groups of students could be selected and taught independently; one group using an audio visual tool and the other using text based learning approach. Thereafter, a set of assessments can be set cumulatively while tracking student's results from different sets. The results can be used to make an evidence based conclusion on the efficiency of that audio visual tool in question.

Interpreting the lecturer's perceptions of audio visual tools

This study focused on students' understanding of audio visual tools however, the lecturers' perspectives on audio visual tools remain unknown. Future studies could be performed to find out the lectures' viewpoint on the effectiveness of audio visual tools as a teaching aid.

Measuring the long term impact of using audio visual tools on student learning

Another future study is measuring the impact of audio visual tools on student learning over a long period of time to determine which audio visual tools are most effective for studying throughout a learner's academic journey right from first to final year including changes in preference of tools and structure of course units.

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APPENDIX

APPENDIX A: RESEARCH QUESTIONNAIRE

A Survey questionnaire to determine the Influence of Audio Visual Tools on Student Learning. A Case Study of Uganda Christian University Students.

Dear Respondent,

You have been selected to take part in this research study that is aimed at examining the effect of audio visual tools such as Moodle, study videos, charts or graphs and audio recordings towards student learning.

No personal identifiers like name or registration number will be collected. This data will be used solely for academic purposes. By proceeding, you indicate your informed consent to participate.

Instructions for completion

Please read each question carefully

For open ended questions (Section D), please write your responses clearly in the space provided

There are no right or wrong answers, your honest opinion matters most.

SECTION A: DEMOGRAPHIC INFORMATION

1. What is your primary role at UCU?

Mark only one oval.

- ◯ Student
- ◯ Lecturer

2. Which faculty are you affiliated with?

Mark only one oval.

- School of Journalism, Media and Communication
- School of Law
- Faculty of Engineering, Design and Technology Other:
- Other_____

3. If you are student, what is your current year study?

Mark only one oval.

- Year 1
- Year 2
- Year 3
- Year 4

SECTION B: USAGE FREQUENCY OF AUDIO VISUAL TOOLS

For each tool below, indicate how often you use it in your **teaching** or **learning** at UCU

How often do you use audio visual tools
(no more than 2 responses per column)?

Mark only one oval per row.

	Daily	Weekly	Monthly	Rarely	Never
4. Moodle or other online learning platforms					
5. Instructional videos e.g. YouTube, recorded lectures					
Charts, graphs or diagrams in teaching material					

6. Audio recordings (e.g. podcasts, voice notes)	◯	◯	◯	◯	◯

SECTION C: PERCEIVED BENEFITS ON LEARNING OUTCOMES

Please indicate your level of agreement with each statement based on your experience at UCU. Tick one box that best matches your opinion.

SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

7. ABOUT MOODLE AND ENGAGEMENT

8. Using Moodle makes me more active in my courses

Tick all that apply.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

9. Features like quizzes and forums on Moodle make learning more interesting

Tick all that apply.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

ABOUT INSTRUCTIONAL VIDEOS AND UNDERSTANDING

10. Instructional videos help me understand difficult topics better

Tick all that apply.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly Disagree

11. Video explanations improve my overall grasp of course content

Tick all that apply.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly Disagree

ABOUT CHARTS/ GRAPHS AND VISUAL CONCEPTS

12. Charts and graphs make visual information easier to understand.

Tick all that apply.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly Disagree

13. I remember information longer when its shown in a diagram

Tick all that apply.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly Disagree

ABOUT AUDIO RECORDINGS AND MEMORY

14. Listening to recorded lectures helps me remember information for exams.

Tick all that apply.

- [ ] Strongly agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly disagree

15. Audio summaries are useful for reviewing important points

Tick all that apply.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly Disagree

SECTION D: OPEN ENDED FEEDBACK

16. In your experience, what is the biggest challenge or barrier to effectively using audio visual tools (like Moodle, videos, or recordings) for learning at UCU?

17. What recommendations you would share in order for UCU to improve the use of audio visual tools with the goal of enhancing student study goals and outcomes?

End of Questionnaire

Thank you again for your time and valuable input!