A

Thesis Report

On

Access to ICT and Its Effectiveness on Learning Activities of Undergraduate Students

For Partial Fulfillment of the Requirements for the Degree of Master of Computer Information Systems (MCIS) Awarded by Pokhara University

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ABSTRACT

The purpose of this study is to find the use of information and communication technology and its effectiveness on learning activity of undergraduate students. The use of information and communication technology in education to enhance learning activities. Information and communication technology has been an inevitable part of undergraduate student's learning activities to improve learning and sharp their creativity. Nowadays, student and learners are mostly using various kinds of technologies like desktop computer, laptop, smart phones, tablet pcs, smart watches, email and internet technology on their daily life for academic achievements.

Qualitative research methodology was used in this study and data collected through questionnaire distribution. Five undergraduate college and their students of Dhangadhi are participant for this study. Technical questionnaire with different options in different sections provided to undergraduate students. Likert scale options also provided in their accessibility and skills measurements and support their responses in different section. ICT is used by schools, colleges, and universities to enhance teaching learning methodology for their students also It is equally important for creativity and innovation through technology.

Analysis of the responses received from the five undergraduate college students indicates that their access to hardware device, software system, internet technology, and their operating skills can significantly transform their learning activities. Therefore, this research has revealed the use of ICT and its effectiveness on learning activities of undergraduate students through this survey.

Questionnaire, as a research tool has distributed to collect data from undergraduate college students for the research.

Keywords: - Information and Communication Technology, *Information Technology, Learning Activities, Undergraduate Students, Internet Technology, Survey*

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LIST OF ABBRIVATIONS

AMC: - Aishwarya Multiple Campus

BBA: - Bachelor of Business Administration

BBM: - Bachelor of Business Management

BBS: - Bachelor of Business Study

BCA: - Bachelor of Computer Application

BE: - Bachelor of Engineering

B.Sc.: - Bachelor of Science

BSW: - Bachelor of Sociology Work

ICT: - Information and Communication Technology

IoT: - Internet of Things

IT: - Information Technology

JMC: - Jai Malika College

KCC: - Kantipur City College

KIST: - Kathmandu Institute of Science and Technology

KM: - Kilometer

KMC: - Kailali Multiple Campus

KU: - Kathmandu University

MIS: - Management Information System

NCIT: - Nepal College of Information Technology

NTA: - Nepal Telecom Authority

OCT: - Optical Coherence Tomography

PC: - Personal Computer

SPA: - Sudur Pashchimanchal Academy

SPSS: - Statistical Package for Social Sciences

TAM: - Technology Acceptance Model

TKP: - The Kantipur Post

TU: - Tribhuwan University

VDC: - Village Development Committee

CHAPTER 1

INTRODUCTION

1.1 Background to the Study

Information technology (IT) is the use of computers to store, retrieve, transmit, and manipulate data, [1] or information, often in the context of a business or other enterprise. [2] IT is considered to be a subset of information and communications technology (ICT). Humans have been storing, retrieving, manipulating, and communicating information since the Sumerians in Mesopotamia developed writing in about 3000 BC, [3] but the term information technology in its modern sense first appeared in a 1958 article published in the Harvard Business Review; authors Harold J. Leavitt and Thomas L. Whisler commented that "the new technology does not yet have a single established name. We shall call it information technology (IT)." Their definition consists of three categories: techniques for processing, the application of statistical and mathematical methods to decision-making, and the simulation of higher-order thinking through computer programs. [4]

It is also the branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science [11]. In this research ICT refers to technologies that provide access to information through telecommunications. It is similar to information technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication mediums. In other words information and communication technology refers to the use of electronic device, operating system use, application software access and their operating skill, internet access technology, and their opinion about these mentioned technologies.

This study was conducted in Dhangadhi. Dhangadhi is first Sub-Metropolitan City in far-western part of Nepal. It is the capital city of state no 7 located in Kailali District in the Seti Zone. It was established in 1976 and became the first Sub-Metropolitan City in the Far-west after it was upgraded to a Sub-Metropolitan from Municipality on 18 September

2015 incorporating Fulbari and Urma VDCs [12]. At the time of reconstruction, it had a population of 1, 47, 741 and 19 wards which is covered by an area of 261.75 KM^2 and shares its boundary with Godawari Municipality in the north, Kanchanpur district in the west, India in the south, and Gairiganga Muncipality and Kailali VDC in the east. Information and communication technology has played vital role in education and learning in this 21^{st} century to change academic learning methodologies and support to develop knowledge based modern society. Modern technology will help to develop knowledge-based society, well planned smart cites by the means of creativity and research work. Information and communication technology is not only limited to university education it also equally important to development whole nation. It can be equally important to enhance teaching and learning activities. In teaching and learning activities, it is importantly used to upgrade the learning methodologies through the research activities. Various technologies are used today by students and learners like smart phones, tablet PC, smart watches, smart television, desktop, laptop, palmtops, and internet technology differently to ease learner's ways of learning and making their creative things.

Information and communication technology, definitely play crucial role in giving greater advantages to education leaders, researchers, school college students to learn new things. Learning new things, promoting and enhancing their skills and opportunities can be only possible through technology. This research focus on identifying the use of ICT and its effectiveness on learning activities of undergraduate students and how they are adopting ICT in their education system.

1.2 Problem Statement

In developing nations, technological enhancement and enrichment is an ideal goal in every sector irrespective of educating to provide quality education and enhance learning activities. The main challenge to technological enrichment in remote areas is lack of technical infrastructure including hardware, software and other tools. Students and learners are rapidly using smart phones, social media sites, different applications to communicate and even practice to use of online resources through different ways. Implementing technology is very much challenging task in remote areas, so it is very

important to enhance the technical knowledge and identify the use of information technology on their learning activities.

Understanding the use of information and communication technology by undergraduate students and its effectiveness in learning methodology has important to keep quality education through research work. No study has ever conducted entitled use of information and communication technology and its effectiveness on learning activities of undergraduate student in Dhangadhi. Thus, there is need to study about technology use and its effectiveness in learning activities.

The present study is only focus on use of information and communication technology and its effectiveness on learning activities to undergraduate students. What kinds of hardware device, operating system, application software, internet technology are used? What is the skills to access those technologies and how the information and communication technology effect in learning activities etc. This study will help to identify and enhance the learning methodology in education and make better use of technology in learning.

1.3 Research Objectives

1.3.1 General Objective

The main objective of this study is to investigate the access to information and communication technology and its effectiveness on learning activities of undergraduate students in Dhangadhi.

1.3.2 Specific Objectives

The specific objectives of the study are outlined as follows:

a. To determine the use of technological hardware, software system, internet technology and its accessibility for academic and non-academic purpose by the undergraduate students
b. To determine the availability, uses frequency and skill level of ICT in college and classroom for education activities
c. To determine the status of changes in learning method and overall academic performance after using information and communication technology

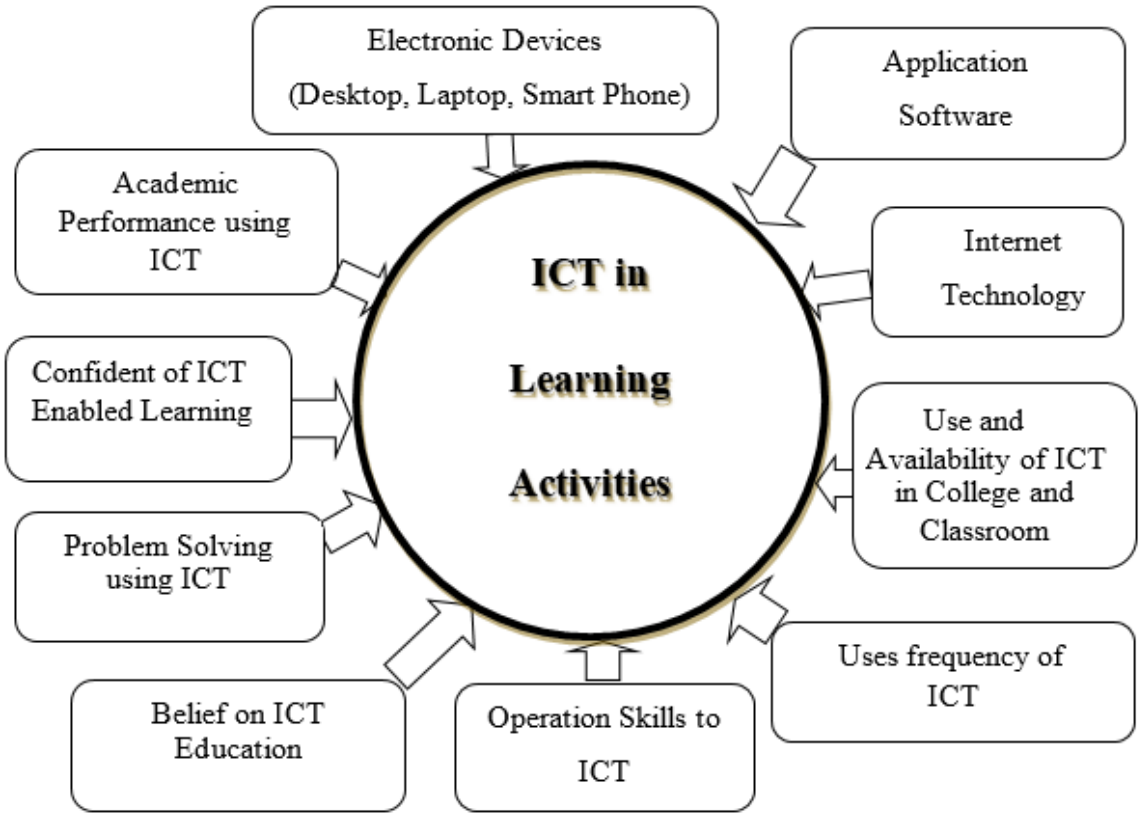

Figure 1.3. 1 Key Research Dimensions

1.4 Significance of the Study

This technical study specially focus on uses of electronic device such as smart mobile, desktop computer, laptop, software technology like operating system, application software and internet technology and its effectiveness on learning activity of undergraduate students. To identify the use of these technology and its effectiveness on learning activities help to enhance their learning ability and attitude. Therefore, it can be significant to those who have been working in the area of education in Dhangadhi.

In this study, five educational instructions of Dhangadhi has directly involved, especially college students of Bachelor of Business Study (BBS), Bachelor of Sociology Work (BSW), Bachelor of Business Administration (BBA), Bachelor of Business Management (BBM), Bachelor of Computer Application (BCA), Bachelor of Computer Engineering (BE-Computer) and Bachelor of Science (B.Sc). Identifying student access on information and communication technology and its effectiveness on learning activity will

significantly be useful for imparting their education learning activities through the use of different technologies.

1.5 Limitation of the Study

This study was limited to five undergraduate colleges in Dhangadhi. This study focus on access to information technology and its effectiveness on their learning activities by their undergraduate students.

1.6 Research Questions

This research work answers the following research questions from the study:

i. What are the technological hardware and software systems used by the undergraduate student?
ii. What is the internet access source and its use for academic and non-academic purpose?
iii. Does ICT availabilities in college and classroom for academic purpose?
iv. What is the access frequency and skill level of using hardware and software system to improve academic performance by the undergraduate students?
v. What types of learning resources and ways of sharing these learning materials to others?
vi. What changes has made after using ICT for education and learning by the undergraduate students?
vii. What is the overall academic performance of the student after using information and communication technology?

1.7 Organization of Research Study

A thesis research is found to be difficult to understand; and creates confusion if it has not been organized into various sections. Hence, the entire thesis research has been segregated into seven parts for convenience. They are as follows:

Introduction: The first chapter contains the introductory part of the study. This chapter describes the major issues to be investigated along with the objectives and significance of the study.

Literature Review: The second chapter is for literature review and it contains brief review of related and pertinent review available. This includes review of technical articles, review of related studies related to technology and other related study.

Research Methodology: The third chapter describes the research methodology to be applied in the study and it deals with the model of analysis, nature and sources of data collection, sampling tools and techniques etc.

Data Presentation, Analysis and Results: In the fourth chapter data collected from various sources are presented and processed in readable and understandable form. The table, graphs, bar diagrams, pie charts are drawn from the data obtained in this part of study. Also shows mean, median, standard deviation, variance, reliability analysis, and measure of central tendency.

Summary, Conclusions and Recommendations: The last chapter deals with the deductive conclusion in which the entire study is summed up. The conclusion acquired from the study are presented in this section of thesis. The major findings, for which the study has been carried, are also the subject matter of this chapter.

CHAPTER 2
LITERATURE REVIEW

2.1 Background

Literature review is one of the important parts of any thesis work. To gain useful and background information about the problem over the study, literature review is essential. For this thesis work, the development of literature review has been enriched by many researchers by their contribution in conceptual review. The researcher has reviewed the related literature and found no such studies undertaken on access to ICT and its effectiveness on learning activities of undergraduate students in Nepal. Therefore, studies conducted other than Nepal have been reviewed here. Technological progress backed up by science has left various effects on education and its components.

2.2 Introduction

In today's world cannot be imagined without the presence of information and communication technology. Everywhere, technology is dominating the life. Computer, information and communication technology are inseparable parts in human life. In every kind of change either it be educational, economic or social change technology plays a vital share. The massive use of technology has assisted educational sectors where students and learners are found to be using high technology. Educational toys, tools for spelling, math, reading, geography, online tutorials, games, and so on are really useful to learning.

Technology is a powerful contributor to learning if it is used to deepen students' engagement in meaningful and intellectually authentic curriculum. Technology is a tool. It should be selected when it is the best tool for students to learn. Technology can be a particularly effective tool for English language learners and can enhance the participation of children with disabilities. Children in elementary schools should begin to use familiar technology tools as a part of their academic program. Teachers should model the use of technology in support of the curriculum so that children can see the appropriate use of technology and benefit from exposure to more advanced applications that they will use independently when they are older [22].

Students today live in a very technological world. Most students use some form of technology on a daily basis including; texting, social networking, and web surfing. Students see these types of technologies as useful and extremely enjoyable. These very same students that are accustomed to these types of technologies will relate to using technology at school. If their learning environment mirrors the ways in which they engage with the world, they will excel in their education [23]. Technology can transform the classroom into an interactive learning environment.

Stating the vitality of technology on education [14], describe that every day, many students are spending countless hours immersed in popular technologies-such as Facebook or MySpace, World of Warcraft, or Sim City-which at first glance may seem like a waste of time, and brain cells. But these genres of technologies- Social Networking, Digital Gaming, and Simulations-deserve a second, deeper, look at what's actually going on.

Many studies have shown the advantages of using technology in classroom instruction. Technology can be used as a tool for establishing meaningful projects to engage students in critical thinking and problem solving. Technology can be used to restructure and redesign the classroom to produce an environment that promotes the development of higher-order thinking skills [24]. Technology also increases student collaboration. Collaboration is a highly effective tool for learning. Students cooperatively works together to either create projects or they can learn from each other by reading the work of their peers [25].

Another study found that integrating technology and peer-led discussions of literature can produce increased student engagement and motivation. Technology used in these small group discussions of literature includes wikis, online literature circles, and online book clubs. With these technologies, students were able to connect with readers from other schools, states, and even other countries. This type of technology is an assessable and motivational way to expose students to other ideas and cultures. These online literature discussions have the ability to create a sense of community and foster positive social interaction [26].

2.3 Conceptual Framework

For the purpose of this study in light of ICT integration to enhance a quality teaching and learning experience in schools, two theories of Diffusion of Innovations [28] and Technology Acceptance Model (TAM) [27], has been identified and adapted to the research setting as the conceptual framework for this research (Figure 2.3.1). Rogers's theory stated as the process by which an innovation is communicated through certain channels and over time among the members of a social system. The process will start with "knowledge" of the first channel that represents characteristics of the decision-making unit by the ICT users in order to integrate the technology. And it ends with "confirmation" by the users to accept the technology and integrate it accordingly. The TAM theory comprises of various parts which is representing the process of ICT acceptance by the users including; behavioral intension, perceived usefulness and perceived ease of use. While, perceived usefulness refers to the degree to which person believes on the benefit from the use of a particular technology by improving the job performance, perceived ease of use refers to the importance of a technology in being user-friendly for the users. Generally, TAM theory was developed to measure the effectiveness or success of a technology in helping understanding the value and efficacy of a particular system. It is also considered as one of the most influential theories in contemporary information systems research. However, the theory has evolved with more specific variables explaining how a user can accept a technology over the years.

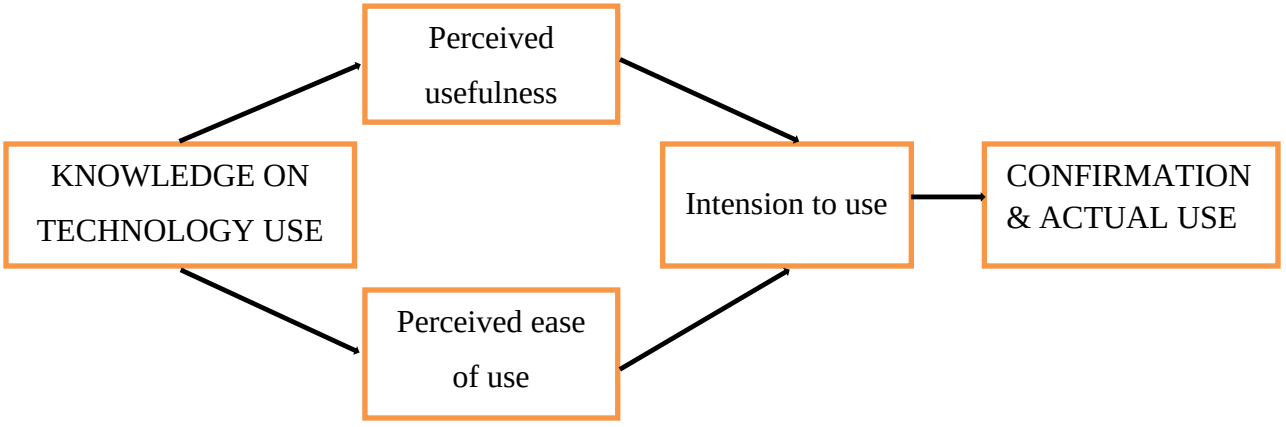

Figure 2.3. 1 Conceptual framework of study

The proposed framework includes various factors directly associated with the core aim of the study that explains how knowledge and perceptions will affect the perceived usefulness and ease of use of ICT integration. The factors embedded in the conceptual framework have been meticulously interlaced, so that the interrelationship among them constitutes to measure their effectiveness on ICT integration by teachers. However, intension to integrate ICT by teachers is the main variable that supports the key elements in the above framework such as ease-of-use, functionality, flexibility, accessibility and integration. In addition, the intention of teachers to use the technology is strongly influenced by their perceptions on usefulness of the system as well as perceived ease of use and determines their actual use of ICT. The proposed framework has guided this research in investigating the factors affecting the technology integration by school teachers.

These all literatures show that there exists the positive relationship and/or contribution of technology to education and learning activities. My research will reveal the use of ICT and its effectiveness on learning activities of undergraduate students Dhangadhi

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is the specific procedures or techniques used to identify, select, process, and analyze information about a topic. This chapter describes how the research was carried out and the methods that were used in the study. It explains the research design, the study population, convenient sampling method and procedures, data collection procedures and instruments, data analysis and reporting.

3.2 Research Process

This research has conducted on the faculty of management, science and technology, and humanities students of five undergraduate college in Dhangadhi. The steps for this research are shown in the figure below: -

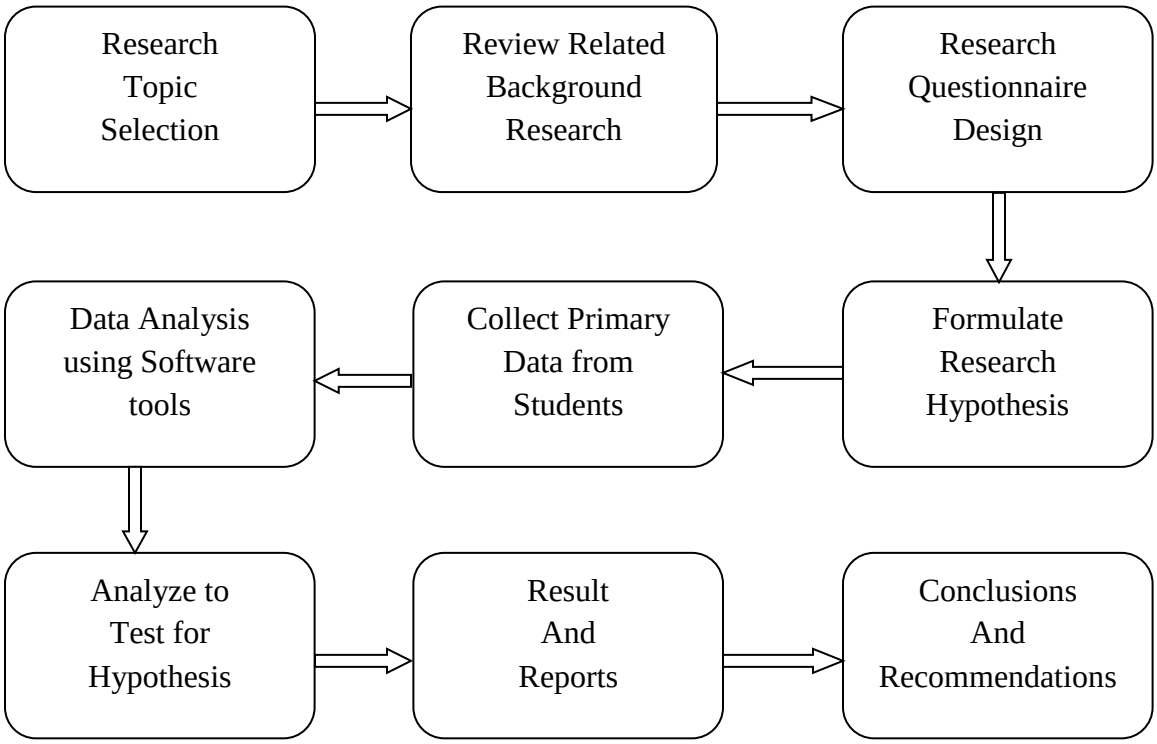

Figure 3.2. 1 Research process

3.3 Research Design

In this research, quantitative methodology was used to collect and analyze the data obtained from all the respondents. The researchers developed the questionnaire and finalized it before being distributed to the targeted group of respondents. Few sections on the questionnaire were designed specifically to address research objectives in regard with the information and communication technology effectiveness on learning activities of undergraduate students in Dhangadhi. Therefore, the questionnaire was distributed to obtain the data from the respondents.

The research design was descriptive research design. This study is focused to information and communication technology and its effectiveness on learning activities of undergraduate college students. The primary data has collected from undergraduate senior and junior semester/year college students. These data have collected as primary sources and evaluated to present the current information and communication technology access by the students. Each participant has given a set of questions and there were some pre-defined options. Students has selected their best option from the available set of option provided to them.

3.4 Study Area

This study was conducted in Dhangadhi. Dhangadhi is first Sub-Metropolitan City in far-western part of Nepal. It is the capital city of state no 7 located in Kailali District in the Seti Zone. It was established in 1976 and became the first Sub-Metropolitan City in the Far-west after it was upgraded to a Sub-Metropolitan from Municipality on 18 September 2015 incorporating Fulbari and Urma VDCs [12]. At the time of reconstruction, it had a population of 1, 47, 741 and 19 wards which is covered by an area of 261.75 KM^2 and shares its boundary with Godawari Municipality in the north, Kanchanpur district in the west, India in the south, and Gairiganga Muncipality and Kailali VDC in the east.

3.5 Population and Sampling

Total of 590 students, I have collected data from 200 respondents of five undergraduate college in Dhangadhi are selected as respondents for this study. The questionnaire as a research tool was distributed to the respondents as convenient sampling method to

college data. The questionnaires distributed are not equal in numbers to students from different five undergraduate college.

3.6 Instrument

A survey questionnaire with a total of 42 (5 personal information and 37 ICT related) items was used as the main instrument in this study to analyze the use and impact of information technology by the undergraduate college students from Dhangadhi. A total of 210 questionnaires were distributed where only 200 respondent has participate in the research. All respondents were asked to read the statements given and choose their answers in different sections. The questionnaires consisted of 7 sections. Section A is about the personal information of the respondents consists of 5 items that includes gender, age group, college name of the study, faculty of the study, and current year or semester of the study. The other 6 sections in the questionnaire focus more into student's perception and the elements of use and effectiveness of information and communication technology on their learning activities.

Section B comes with 5 items that looks into student's use of hardware device and internet technology in multiple choice type items, section C consists of 7 items that looks use of information technology in college and classroom, section D comes with 6 items that looks into the accessibility hardware devices and application software for their learning activities. Section E have 6 items that looks the skills to use hardware and software for learning purpose. Section F having 5 Likert scale items about information technology to know students opinion. Finally, section G come with 8 items that change in learning method after using information and communication technology. The questionnaire used for this quantitative study was adopted and modified from the original questionnaire designed [29] that is considered suitable for this research. Some of the items are designed and developed by the researchers accordingly with the title chosen so that the items developed are able to provide the answers needed for both research questions.

3.7 Likert Scale for Questionnaire Options

A **Likert scale** is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research. such that the term is often used interchangeably with rating scale, or more accurately the Likert-type scale. When responding to a Likert questionnaire item, respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Thus, the range captures the intensity of their feelings for a given item. A Likert scale is the sum of responses on several Likert items. The format of a typical five-level Likert item, for example, could be:

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

Likert scaling is a bipolar scaling method, measuring either positive or negative response to a statement. After the questionnaire is completed, each item may be analyzed separately or in some cases item responses may be summed to create a score for a group of items. Therefore, Likert scales are also called summative scales. Student will be provided with a set of questions and the response will be one of the available options. Each factor will be evaluated according to a scale of 5 grades as shown in Table 2.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Table 3.7. 1 The five grades considered for the evaluation of status

3.8 Reliability Analysis with Cronbach's Alpha

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability. A "high" value for alpha does not imply that the measure is unidimensional [9]. If, in addition to measuring internal consistency, you wish to provide evidence that the scale in question is unidimensional, additional analyses can be performed. Exploratory factor analysis is one method of checking dimensionality. Technically speaking, Cronbach's alpha is not a

statistical test – it is a coefficient of reliability (or consistency). Cronbach's alpha is one of the most widely-used measure of internal consistency.

Cronbach's alpha can be written as:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

Here N is equal to the number of items, c-bar is the average inter-item covariance among the items and v-bar equals the average variance.

Generally, alpha (α) coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from multi-point formatted questionnaires or scales.

Cronbach's Alpha	**Internal Consistency**
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Table 3.8. 1 Values of Cronbach's alpha and internal consistency

3.9 Inferential Analysis

Inferential analysis uses statistical tests to see whether a pattern that is observed is due to chance or due to the program or intervention effects. Inferential analysis is used to determine if there is a relationship between an intervention and an outcome as well as the strength of that relationship.

3.9.1 Inferential Analysis with Pearson's Correlation Analysis

Correlation is a technique for investigating the relationship between two quantitative, continuous variables. Pearson's correlation coefficient (r) is a measure of the strength of the association between the two variables. The Pearson's Correlation Coefficient is to measure the linear relationship in terms of strength and direction between two variables. It

is with a letter of "r" to represent Pearson correlation. The correlation coefficient ranges from +1.0 to – 1.0 and used to define the relationship between two variables.

Pearson's correlation coefficient (r)	Relationship
r = 1	Perfect positive linear relationship
r = 0	No linear relationship
r = -1	Perfect negative linear relationship

Table 3.9. 1 Values of Pearson's correlation coefficient (r) and relationship

3.9.2 Inferential Analysis with Multiple Regression Analysis

Multiple regression involves a single dependent variable and two or more independent variables. It is a statistical technique that simultaneously develops a mathematical relationship between two or more independent variables and an interval scaled dependent variable. Multiple linear regression analysis is an extension of simple linear regression analysis, used to assess the association between two or more independent variables and a single continuous dependent variable. The general form given for the multiple regression model is: $Y = ß_0 + ß_1X_1 + ß_2X_2 + \ + ß_kX_k + e$

3.10 Data Analysis Tools

After the successful of collection of primary data, the researcher has effortful to code, classify, tabulate data and make it error free maintaining consistency for the effective output. Data processing programs such as Microsoft Excel, IBM SPSS software version 25 was used to show mean, median, standard deviation etc. As it is mentioned above, the study is fully descriptive type. Outputs will be presented in some graphical outputs in bar-diagram, pi-chart etc.

Cronbach's alpha is used to determine the internal consistency or reliability of multi-item scale of questionnaire. Pearson's Correlation coefficient is used to show the linear relationship between two sets of data.

Inferential analysis is used to reach conclusion about association between variables. They are explicitly designed to test hypothesis. Multiple regression analysis is used to develop

a mathematical relationship between two or more independent variable and an interval scaled dependent variable.

3.11 Variable

Dependent Variable: Use and Availabilities of ICT

Independent Variable: Use Frequency of ICT, Skills of ICT, Learning through ICT, Problem Solving Using ICT, Improvement in Learning Activities using ICT, Overall Academic Performance using ICT

3.12 Hypothesis of the study

In other to carry out this research the following hypotheses have been assumed:

1. The Null (H_0) Hypothesis
2. The Alternate (H_1) Hypothesis

The null hypothesis states a conjecture in a positive form while the alternate states a conjecture in a negative [21]. For the purpose of this study, the hypothesis testing shall be stated as:

H_1: Use and availabilities of ICT is significantly relate to the effectiveness on learning activities of undergraduate students

H_2: Use Frequency of ICT is significantly relate to the effectiveness on learning activities of undergraduate students

H_3: Skills of ICT is significantly relate to the effectiveness on learning activities of undergraduate students

H_4: Learning through ICT is significantly relate to the effectiveness on learning activities of undergraduate students

H_5: Problem Solving Using ICT is significantly relate to the effectiveness on learning activities of undergraduate students

H_6: Improvement in Learning Activities using ICT is significantly relate to the effectiveness on learning activities of undergraduate students

H_7: Overall Academic Performance using ICT is significantly relate to the effectiveness on learning activities of undergraduate students

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND RESULTS

For the purpose of this study, several relevant data were collected interviewing with 200 students of different colleges in Dhangadhi Sub-metro politician city and they were also asked to fill up the questionnaire designed by the researcher which has been affix in annex of this study report. The collected data were statistically tested and analyzed suitably based on the measures and techniques set for this study and presented in the previous chapter.

In Nepal, technological development, especially information technology, has been started in 1995. Dhangadhi city, the hub for trade and commerce, education and hospitality and other different aspect, has also moved back to back with other cities in technological development. In the present chapter, analysis of the variables is presented in the different sections and subsections with the help of tabulation, graphical presentation and description methods of data presentation.

4.1 Data Analysis

After the successful collection of data then the analysis of the quantitative data is done by using the most popular statistical software package which is IBM statistical package for social science (SPSS) Version 25.0 as it is effective and efficient in terms of faster results.

4.1.1 Respondents Demographic Information

The respondent's demographic information from different five college are presented in this section. In this gender, age group, participant college information, and faculty of students, data are presentation in table and pi-chart.

4.1.1.1 Gender

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	128	64.0	64.0	64.0
	Female	72	36.0	36.0	100.0

	Total	200	100.0	100.0	

Table 4.1.1. 1 Gender

The whole respondents were found having access to ICT. According to the table 4.1.1.1, the number of male respondent have majority of 64% and 36% are female respondents. The total sample of respondents in this research is 200 students.

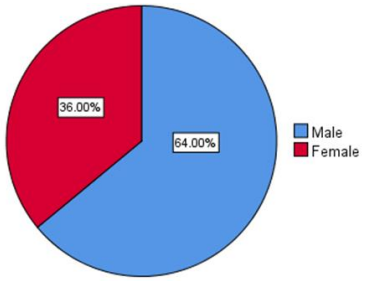

Figure 4.1.1. 1 Gender

The graphical presentation of the gender participant are shown in figure 4.1.1.1

4.1.1.2 Age Group

Variables		Frequency	Percent	Valid Percent	Cumulative Percent
Age Group	16-20	34	17.0	17.0	17.0
	21-25	164	82.0	82.0	99.0
	Above 25	2	1.0	1.0	100.0
	Total	200	100.0	100.0	

Table 4.1.1. 2 Age group

From the table 4.1.1.2, the highest number of users of information and communication technology found with age 21-25 years old which represents of 164 (82%) students of the whole sample size. The number of respondents with age 16-20 years old are 34 (17%) of the sample size. And the only 2 (1%) students found above 25 years old.

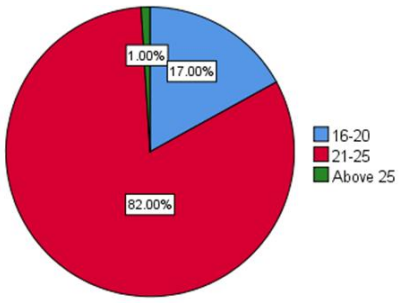

Figure 4.1.1. 2 Age group

The graphical presentation of the age group of participants are shown in figure 4.1.1.2

4.1.1.3 Participant College

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
College	AMC	44	22.0	22.0	22.0
	JMC	30	15.0	15.0	37.0
	KMC	36	18.0	18.0	55.0
	NAST	62	31.0	31.0	86.0
	SPA	28	14.0	14.0	100.0
	Total	200	100.0	100.0	

Table 4.1.1. 3 Participant college

The college information are shown in the table 4.1.1.3, the highest number of participants for this research work is found from NAST College 62(31%), 44(22%) from AMC College, 36(18%) from KMC College, 30(15%) from JMC College and only 28 (14%) from SPA College.

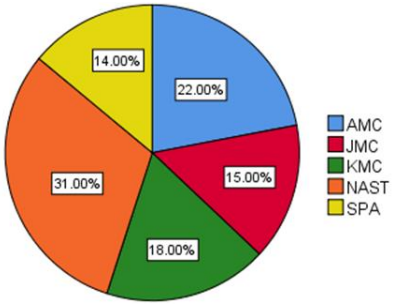

Figure 4.1.1. 3 Participant college

The graphical presentation of the age group of participants are shown in figure 4.1.1.3

4.1.1.4 Faculty of Study

Variables		Frequency	Percent	Valid Percent	Cumulative Percent
Faculty of Study	Science and Technology	96	48.0	48.0	48.0
	Management	74	37.0	37.0	85.0
	Humanities	30	15.0	15.0	100.0
	Total	200	100.0	100.0	

Table 4.1.1. 4 Faculty of study

The respondents faculty of study is presented in table 4.1.1.4, majority of 96(48%) found from faculty of science and technology, 74(37%) from faculty of management and only 30(15%) from faculty of humanities.

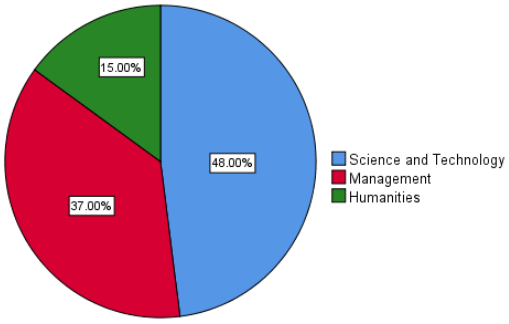

Figure 4.1.1. 4 Faculty of study

The graphical presentation of the faculty of participants are shown in figure 4.1.1.4

4.1.2 Use of Electronic Devices, and Internet Technology

Life of urban people has become more complex today as with the advent of new technologies (hardware and software) and accessibility of internet facilities.

4.1.2.1 Use of Electronic Device

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Devices	Mobile	5	2.5	2.5	2.5
	Desktop and Smart mobile	20	10.0	10.0	12.5
	Laptop and Smart mobile	140	70.0	70.0	82.5
	All	35	17.5	17.5	100.0

	Total	200	100.0	100.0	

Table 4.1.2. 1 Respondents electronic devices

The electronic devices of respondents is presented in table 4.1.2.1, majority of 140(70%) found that they have Laptop and Smart mobile devices, 35(17.5%) have all the devices smart mobile, desktop, and laptop, 20(10%) have desktop and mobile, only 5(2.5%) have smart mobile for their academic use.

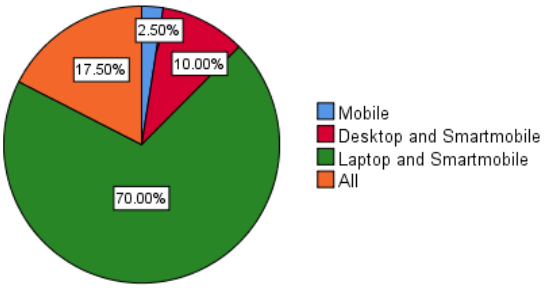

Figure 4.1.2. 1 Respondents electronic devices

The graphical presentation of the electronic devices of participants are shown in figure 4.1.2.1

4.1.2.2 Internet Access Availability

The internet has now become the essential part of urban people for easy life spending and performing various tasks in their day to day life. In Nepal almost 2.25 million of Nepalese people were found using internet for various purpose in 2017 (The Kantipur Publication). October, this figure was actually 63 percent of the total population in Nepal.

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Accessibility	Yes	200	100.0	100.0	100.0

Table 4.1.2. 2 Respondents internet availability

In this study, 200(100%) of respondents found that they have internet accessibility in their area which is show in the table 4.1.2.2

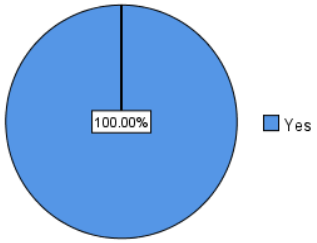

Figure 4.1.2. 2 Respondents internet availability

The graphical presentation of the internet accessibility of participants are shown in figure 4.1.2.2

4.1.2.3 Internet Access Source

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Internet Source	Wi-Fi	39	19.5	19.5	19.5
	Mobile Data	72	36.0	36.0	55.5
	Both	89	44.5	44.5	100.0
	Total	200	100.0	100.0	

Table 4.1.2. 3 Internet access source

From the study, 89(44%) of the respondents access both Wi-Fi and Mobile data as their internet access source, 72(36%) have access to mobile data, and only 39(19.5%) have Wi-Fi accessibility which are shown in the table 4.1.2.3

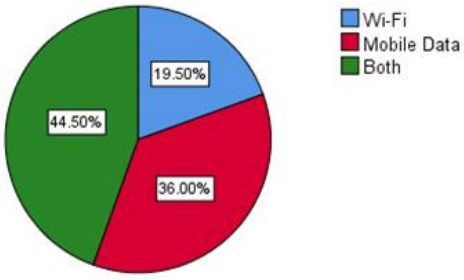

Figure 4.1.2. 3 Internet access source

The graphical presentation of the source of internet access of participants are shown in figure 4.1.2.3

4.1.2.4 Internet Access in a Day

Variable	Frequency	Percent	Valid Percent	Cumulative Percent

Access Hours	Below 1hrs	4	2.0	2.0	2.0
	1-3hrs	55	27.5	27.5	29.5
	3-5hrs	98	49.0	49.0	78.5
	5-7hrs	41	20.5	20.5	99.0
	More than 7hrs	2	1.0	1.0	100.0
	Total	200	100.0	100.0	

Table 4.1.2. 4 Internet access in day

As mentioned in table 4.1.2.2, 100% of the respondents have internet accessibility. The duration of accessibility of internet in a day is shown in the table 4.1.2.4 From the table 98(49%) of the respondents use 3 to 5hrs in a day, 55(27.5%) access 1 to 3hrs, 41(20.5%) access 5 to 7hrs, 4(2%) below 1hrs and only 2(1%) have more than 7 hours of access in a day.

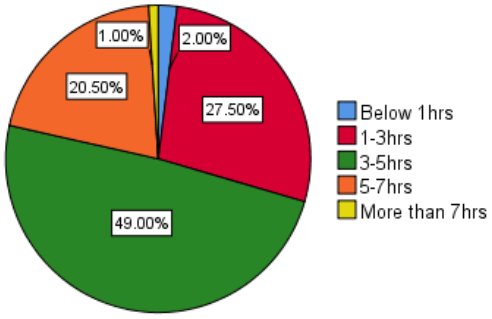

Figure 4.1.2. 4 Internet access in day

The graphical presentation of the respondent's internet access hours in a day is shown in figure 4.1.2.4

4.1.2.5 Internet Access in a Day for Education

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Access Hours	Below 1hrs	120	60.0	60.0	60.0
	1-3hrs	74	37.0	37.0	97.0
	3-5hrs	6	3.0	3.0	100.0
	Total	200	100.0	100.0	

Table 4.1.2. 5 Internet access in a day for education

As mentioned in table 4.1.2.4 majority of 98(49%) of the respondents use 3 to 5hrs in a day for general purpose. In table 4.1.2.5 majority of 120(60%) found they use internet below 1hrs for education purpose, 74(37%) respondents use 1 to 3hrs, 6(3%) 3 to 5hrs, and no any person found above 5hrs internet accessibility for their academic purpose in a day.

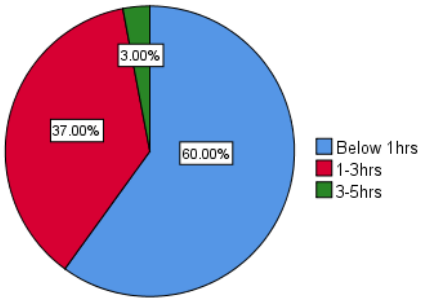

Figure 4.1.2. 5 Internet access in a day for education

The graphical presentation of the respondent's internet access for educational purpose is shown in figure 4.1.2.5

4.1.3 Use and Availability ICT in College and Classroom

I. Availability of ICT in your college

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Yes	200	100.0	100.0	100.0

Table 4.1.3. 1 Availability of ICT in college and classroom

As shown in table 4.1.3.1, 200(100%) respondents says they have ICT friendly college and classroom environment for their study purpose.

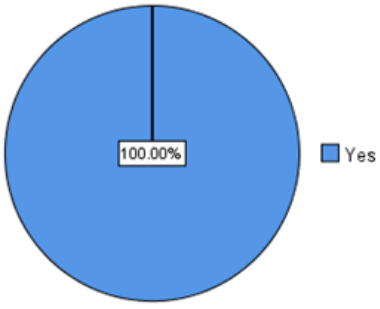

Figure 4.1.3. 1 Availability of ICT in college and classroom

The graphical presentation of the respondent's ICT friendly college and classroom environment is shown in figure 4.1.3.1

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Yes	200	100.0	100.0	100.0

Table 4.1.3. 2 Free Internet access facility at college and classroom

As shown in table 4.1.3.2, 200(100%) respondents says they have free internet access facility at their college and classroom environment for their study purpose.

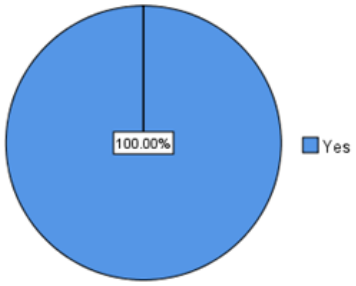

Figure 4.1.3. 2 Free Internet access facility at college and classroom

The graphical presentation of the respondent's free access of internet at their college and classroom environment is shown in figure 4.1.3.2

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Yes	182	91.0	91.0	91.0
	No	18	9.0	9.0	100.0
	Total	200	100.0	100.0	

Table 4.1.3. 3 Multimedia lanced classroom learning

Regarding the multimedia lanced classroom environment at college and classroom is shown in table 4.1.3.3, 182(91%) respondents says they have multimedia lanced environment, only 18(9%) respondent says they do not have multimedia lanced class room environment for their study purpose.

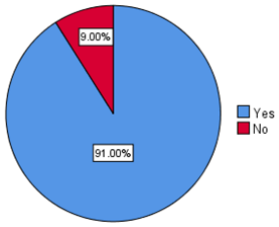

Figure 4.1.3. 3 Multimedia lanced classroom learning

The graphical presentation of the respondent's multimedia lanced classroom environment is shown in figure 4.1.3.3

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Yes	82	41.0	41.0	41.0
	No	118	59.0	59.0	100.0
	Total	200	100.0	100.0	

Table 4.1.3. 4 e-Library facility at college

From the table 4.1.3.4 82 (41%) have e-Library facility at their college, and majority of 118(59%) do not have e-Library facility at their college.

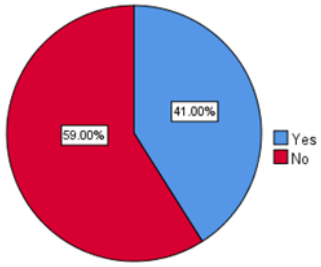

Figure 4.1.3. 4 e-Library facility at college

The graphical presentation of the respondent's e-Library facility at college and classroom environment is shown in figure 4.1.3.4

II. Use of ICT in college and classroom

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Mostly	80	40.0	40.0	40.0
	Occasionally	90	45.0	45.0	85.0
	Never	30	15.0	15.0	100.0
	Total	200	100.0	100.0	

Table 4.1.3. 5 Tought use of ICT in college and classroom

From the table 4.1.3.5 majority of 90(45%) of the respondents have occasionally taught using ICT, 80(40%) of students mostly using ICT for their academic activities, only 30(15%) of respondents do not use ICT for their academic activities at their college.

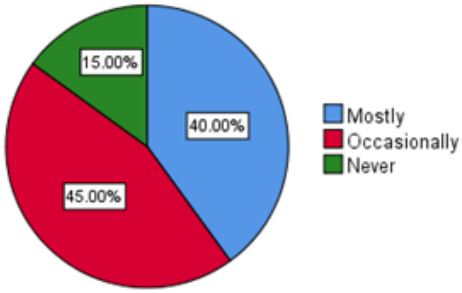

Figure 4.1.3. 5 Tought use of ICT in college and classroom

The graphical presentation of the respondent's ICT enabled teaching at college and classroom environment is shown in figure 4.1.3.5

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Mostly	58	29.0	29.0	29.0
	Occasionally	142	71.0	71.0	100.0
	Total	200	100.0	100.0	

Table 4.1.3. 6 ICT equipment in practical or project work

From the table 4.1.3.6, majority of respondents 142(71%) occasionally use ICT equipment in their practical or project work, and 58(29%) mostly use ICT equipment for their practical or project work at their college and classroom.

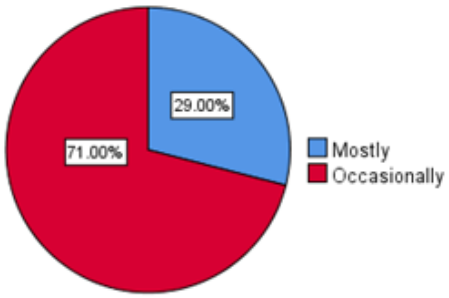

Figure 4.1.3. 6 ICT equipment in practical or project work

The graphical presentation of the respondent's use of ICT equipment for project and practical work at their college and classroom environment is shown in figure 4.1.3.6

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Mostly	89	44.5	44.5	44.5
	Occasionally	51	25.5	25.5	70.0
	Never	60	30.0	30.0	100.0
	Total	200	100.0	100.0	

Table 4.1.3. 7 Use of online resources for education

From the table 4.1.3.7, majority of respondents 89(44.5%) mostly use online resources like video, tutorials, eBooks to enhance their knowledge and skills, 60(30%) never use, and 51(25.5%) occasionally use online resources for their academic activities.

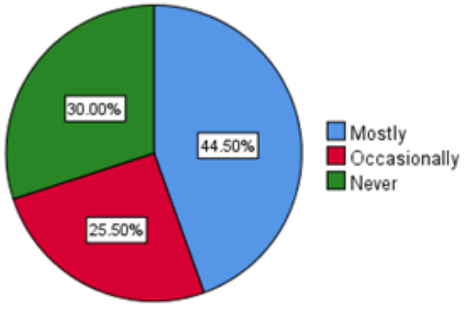

Figure 4.1.3. 7 Use of online resources for education

The graphical presentation of the respondent's online resources used for their academic activities at college and classroom environment is shown in figure 4.1.3.7

4.1.4 Uses frequency of electronic devices and application software

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Daily	200	100.0	100.0	100.0

Table 4.1.4. 1 Uses frequency of desktop or laptop

As shown in table 4.1.4.1, 200(100%) respondents says they use Desktop or Laptop computer daily for their academic activities.

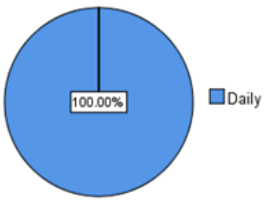

Figure 4.1.4. 1 Uses frequency of desktop or laptop

The graphical presentation of the respondent's use of laptop or desktop computer for their academic activities are shown in figure 4.1.4.1

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Daily	200	100.0	100.0	100.0

Table 4.1.4. 2 Uses frequency of smart mobile

As shown in table 4.1.4.2, 200(100%) respondents says they use smart mobile daily for their academic activities.

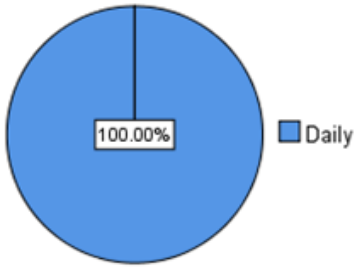

Figure 4.1.4. 2 Uses frequency of smart mobile

The graphical presentation of the respondent's daily use of smart mobile is shown in figure 4.1.4.2

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Never	27	13.5	13.5	13.5
	Daily	34	17.0	17.0	30.5
	Weekly	93	46.5	46.5	77.0
	Monthly	46	23.0	23.0	100.0
	Total	200	100.0	100.0	

Table 4.1.4. 3 Uses frequency of microsoft word

The uses frequency of Microsoft word by the respondent is shown in the table 4.1.4.3. Majority of 96(46.5%) of the respondents use Microsoft word weekly, 46(23%) monthly, 34(17%) daily, and only 27(13.5%) never use for their academic activities.

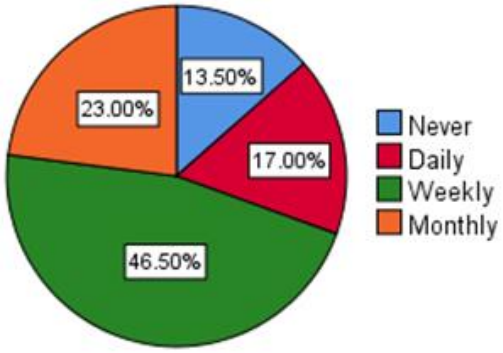

Figure 4.1.4. 3 Uses frequency of microsoft word

The graphical presentation of the respondent's use of Microsoft word is shown in figure 4.1.4.3

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Never	27	13.5	13.5	13.5
	Daily	32	16.0	16.0	29.5
	Weekly	72	36.0	36.0	65.5
	Monthly	69	34.5	34.5	100.0
	Total	200	100.0	100.0	

Table 4.1.4. 4 Uses frequency of microsoft excel

The uses frequency of Microsoft excel by the respondent is shown in the table 4.1.4.4. Majority of 72(36%) of the respondents use Microsoft excel weekly, 69(34%) monthly, 32(67%) daily, and only 27(13.5%) never use for their academic activities.

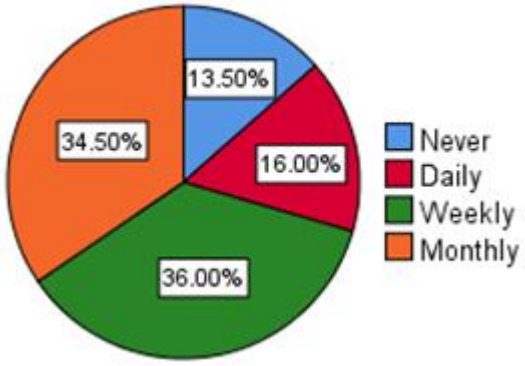

Figure 4.1.4. 4 Uses frequency of microsoft excel

The graphical presentation of the respondent's use of Microsoft excel is shown in figure 4.1.4.4

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Never	29	14.5	14.5	14.5
	Daily	29	14.5	14.5	29.0
	Weekly	54	27.0	27.0	56.0
	Monthly	88	44.0	44.0	100.0
	Total	200	100.0	100.0	

Table 4.1.4. 5 Uses frequency of microsoft powerpoint

The uses frequency of Microsoft PowerPoint by the respondent is shown in the table 4.1.4.5. Majority of 88(44%) of the respondents use Microsoft PowerPoint monthly, 54(27%) weekly, 29(14.5%) daily, and only 29(14.5%) never use for their academic activities.

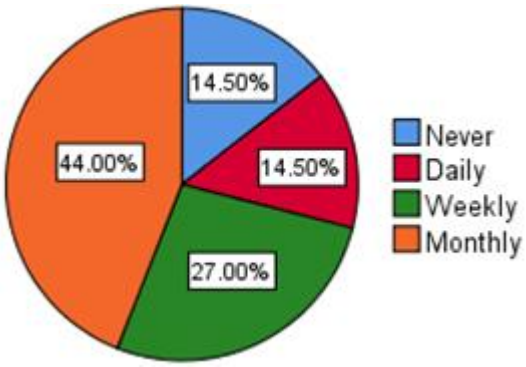

Figure 4.1.4. 5 Uses frequency of microsoft powerpoint

The graphical presentation of the respondent's use of Microsoft PowerPoint is shown in figure 4.1.4.5

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Never	45	22.5	22.5	22.5
	Daily	23	11.5	11.5	34.0

	Weekly	64	32.0	32.0	66.0
	Monthly	68	34.0	34.0	100.0
	Total	200	100.0	100.0	

Table 4.1.4. 6 Uses frequency of graphical software

The uses frequency of graphical software by the respondent is shown in the table 4.1.4.6. Majority of 68(34%) of the respondents use graphical software monthly, 64(32%) weekly, 23(11.5%) daily, and only 45(22.5%) never use for their academic activities.

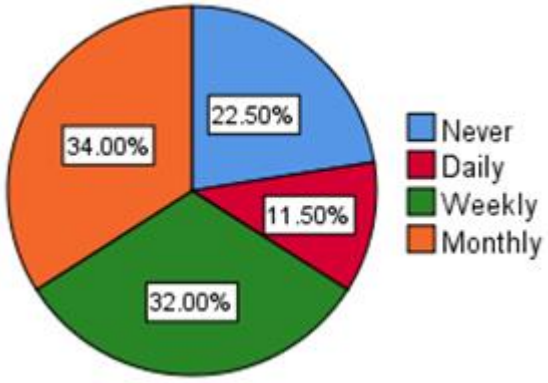

Figure 4.1.4. 6 Uses frequency of graphical software

The graphical presentation of the respondent's use of graphical software is shown in figure 4.1.4.6

4.1.5 Skills to Operate Electronic Devices and Application Software

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Fairly skilled	149	74.5	74.5	74.5
	Very skilled	51	25.5	25.5	100.0
	Total	200	100.0	100.0	

Table 4.1.5. 1 Skills to operate desktop or laptop computer

The operating skills of desktop and laptop computer by the respondents is shown in the table 4.1.5.1. From the table 149(74.5%) of the respondents are fairly skilled, and 51(25.5%) are very skilled to operate these electronic devices for their academic purpose.

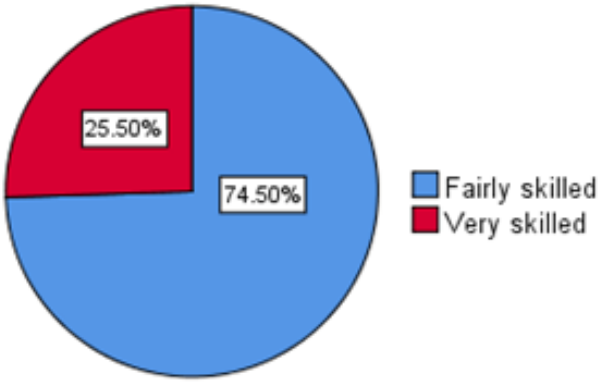

Figure 4.1.5. 1 Skills to operate desktop or laptop computer

The graphical presentation of the respondent's skills of desktop and laptop operation is shown in figure 4.1.5.1

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Fairly skilled	49	24.5	24.5	24.5
	Very skilled	149	74.5	74.5	99.0
	Expert	2	1.0	1.0	100.0
	Total	200	100.0	100.0	

Table 4.1.5. 2 Skills to operate smart mobile

The operating skills of smart mobile by the respondents is shown in the table 4.1.5.2. From the table 149(74.5%) of the respondents are very skilled, and 49(24.5%) are fairly skilled, and 2(1%) of the respondents are expert in operating smart mobile devices for their academic activities.

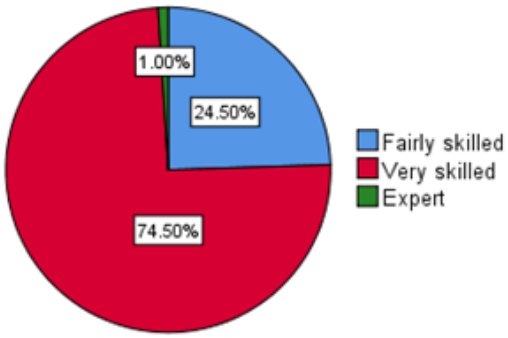

Figure 4.1.5. 2 Skills to operate smart mobile

The graphical presentation of the respondent's skills of smart mobile operation is shown in figure 4.1.5.2

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Not at all skilled	23	11.5	11.5	11.5
	Not very skilled	51	25.5	25.5	37.0
	Fairly skilled	83	41.5	41.5	78.5
	Very skilled	37	18.5	18.5	97.0
	Expert	6	3.0	3.0	100.0
	Total	200	100.0	100.0	

Table 4.1.5. 3 Skills to operate microsoft word

The operating skills of Microsoft word by the respondents is shown in the table 4.1.5.3. From the table 83(41.5%) of the respondents are fairly skilled, 51(25.5%) are not very skilled, 27(18.5%) are very skilled, 23(11.5%) are not at all skilled, and only 6(3%) of the respondents are expert in operating Microsoft word for their academic activities.

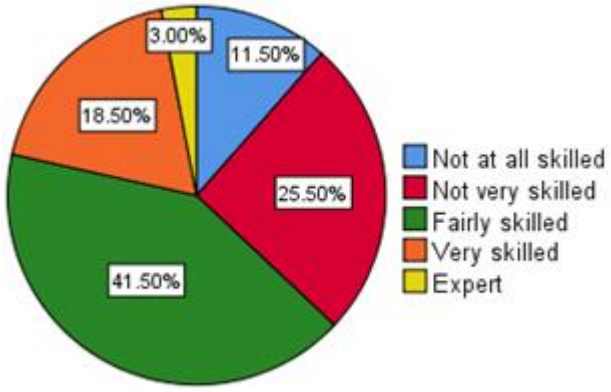

Figure 4.1.5. 3 Skills to operate microsoft word

The graphical presentation of the respondent's skills of Microsoft word operation is shown in figure 4.1.5.3

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Not at all skilled	24	12.0	12.0	12.0

	Not very skilled	54	27.0	27.0	39.0
	Fairly skilled	83	41.5	41.5	80.5
	Very skilled	33	16.5	16.5	97.0
	Expert	6	3.0	3.0	100.0
	Total	200	100.0	100.0	

Table 4.1.5. 4 Skills to operate microsoft excel

The operating skills of Microsoft excel by the respondents is shown in the table 4.1.5.4. From the table 83(41.5%) of the respondents are fairly skilled, 55(27%) are not very skilled, 33(16.5%) are very skilled, 24(12%) are not at all skilled, and only 6(3%) of the respondents are expert in operating Microsoft excel for their academic activities.

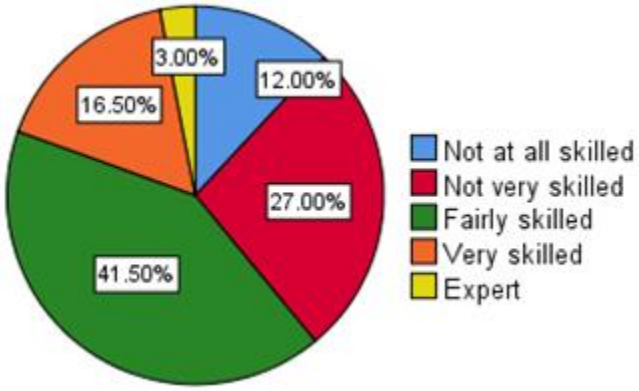

Figure 4.1.5. 4 Skills to operate microsoft excel

The graphical presentation of the respondent's skills of Microsoft excel operation is shown in figure 4.1.5.4

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Not at all skilled	14	7.0	7.0	7.0
	Not very skilled	55	27.5	27.5	34.5
	Fairly skilled	76	38.0	38.0	72.5
	Very skilled	47	23.5	23.5	96.0
	Expert	8	4.0	4.0	100.0
	Total	200	100.0	100.0	

Table 4.1.5. 5 Skills to operate microsoft powerpoint

The operating skills of Microsoft PowerPoint by the respondents is shown in the table 4.1.5.5. From the table 76(38%) of the respondents are fairly skilled, 55(27.5%) are not very skilled, 47(23.5%) are very skilled, 14(7%) are not at all skilled, and only 8(4%) of the respondents are expert in operating Microsoft PowerPoint for their academic activities.

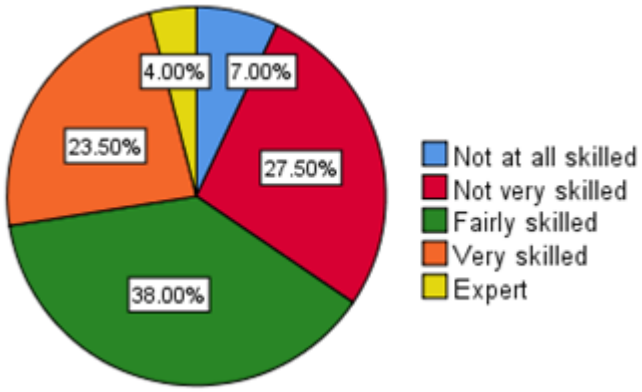

Figure 4.1.5. 5 Skills to operate microsoft powerpoint

The graphical presentation of the respondent's skills of Microsoft Power Point operation is shown in figure 4.1.5.5

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Not at all skilled	41	20.5	20.5	20.5
	Not very skilled	58	29.0	29.0	49.5
	Fairly skilled	81	40.5	40.5	90.0
	Very skilled	17	8.5	8.5	98.5
	Expert	3	1.5	1.5	100.0
	Total	200	100.0	100.0	

Table 4.1.5. 6 Skills to operate graphical software

The operating skills of graphical software by the respondents is shown in the table 4.1.5.6. From the table 81(40.5%) of the respondents are fairly skilled, 58(29%) are not very skilled, 41(20%) are not at all skilled, 17(8.5%) are very skilled, and only 3(1.5%) of the respondents are expert in operating Microsoft graphical software for their academic activities.

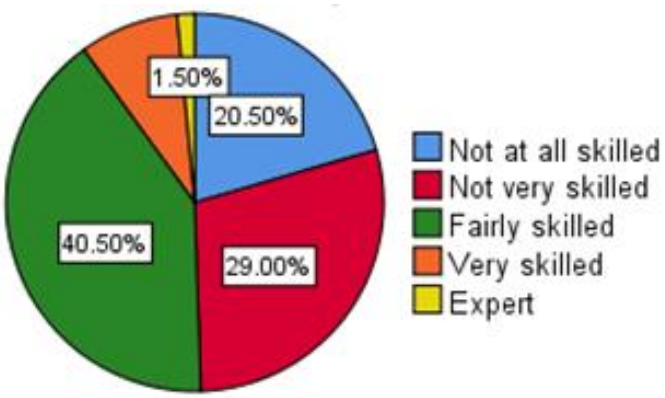

Figure 4.1.5. 6 Skills to operate graphical software

The graphical presentation of the respondent's skills of graphical software operation is shown in figure 4.1.5.6

4.1.6 Opinion of Respondents on the technological statement for Study Purpose

4.1.6.1 ICT and Concerned Devices are Most Important in Modern Learning

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Strongly Disagree	1	.5	.5	.5
	Disagree	6	3.0	3.0	3.5
	Neutral	6	3.0	3.0	6.5
	Agree	98	49.0	49.0	55.5
	Strongly Agree	89	44.5	44.5	100.0
	Total	200	100.0	100.0	

Table 4.1.6. 1 Opinion on ICT and concerned devices are important

Respondents opinion regarding the use of ICT and concern devices are important in modern learning are shown in table 4.1.6.1. From the table 98(49%) respondents are agree, 89(44.5%) are strongly agree, 6(3%) are in neutral position, 6(3%) are in disagree, and only 1(0.5%) are in strongly disagree.

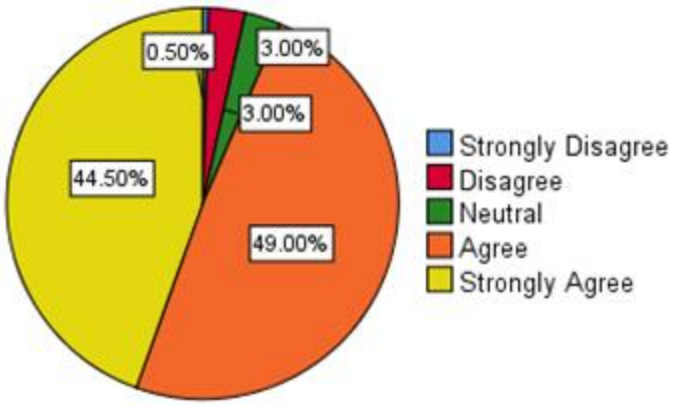

Figure 4.1.6. 1 Opinion on ICT and concerned devices are important

The graphical presentation of the respondent's opinion ICT are important in education is shown in figure 4.1.6.1

4.1.6.2 Regular use of ICT has Positively Changed the Way of Learning and Skills Improvements

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Strongly Disagree	2	1.0	1.0	1.0
	Disagree	1	.5	.5	1.5
	Neutral	13	6.5	6.5	8.0
	Agree	89	44.5	44.5	52.5
	Strongly Agree	95	47.5	47.5	100.0
	Total	200	100.0	100.0	

Table 4.1.6. 2 Opinion on regular use of ICT has positive change in learning

Respondents opinion regarding the regular use of ICT has positive changes on learning are shown in table 4.1.6.2. From the table 95(47.5%) respondents are strongly agree, 89(44.5%) are agree, 13(6.5%) are in neutral position, 2(1%) are in disagree, and only 1(0.5%) are in strongly disagree.

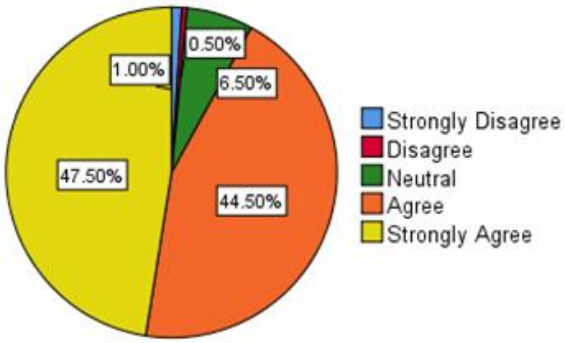

Figure 4.1.6. 2 Opinion on regular use of ICT has positive change in learning

The graphical presentation of the respondent's opinion on regular use of ICT positively changes the learning is shown in figure 4.1.6.2

4.1.6.3 Multimedia Based Learning System has Enhanced Your Learning Over Traditional Lecture Method.

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Disagree	3	1.5	1.5	1.5
	Neutral	9	4.5	4.5	6.0
	Agree	99	49.5	49.5	55.5
	Strongly Agree	89	44.5	44.5	100.0
	Total	200	100.0	100.0	

Table 4.1.6. 3 Opinion on multimedia based learning in learning

Respondents opinion regarding the regular use of ICT has positive changes on learning are shown in table 4.1.6.3. From the table 95(47.5%) respondents are strongly agree, 89(44.5%) are agree, 13(6.5%) are in neutral position, 2(1%) are in disagree, and only 1(0.5%) are in strongly disagree.

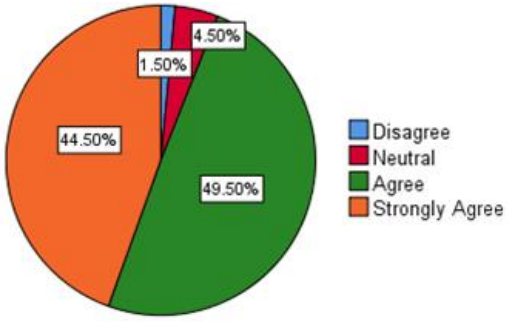

Figure 4.1.6. 3 Opinion on multimedia based learning in learning

The graphical presentation of the respondent's opinion on multimedia based learning is shown in figure 4.1.6.3

4.1.6.4 Regular use of ICT Highly Supports to Build up Creativity and Sharp Users' Knowledge.

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Strongly Disagree	1	.5	.5	.5
	Disagree	2	1.0	1.0	1.5
	Neutral	12	6.0	6.0	7.5
	Agree	104	52.0	52.0	59.5
	Strongly Agree	81	40.5	40.5	100.0
	Total	200	100.0	100.0	

Table 4.1.6. 4 Opinion regarding ICT support to build creativity

Respondents opinion regarding the regular use of ICT supports to build creativity are shown in table 4.1.6.4. From the table 104(52%) respondents are agree, 81(40.5%) are strongly agree, 12(6%) are in neutral position, 2(1%) are in disagree, and only 1(0.5%) are in strongly disagree.

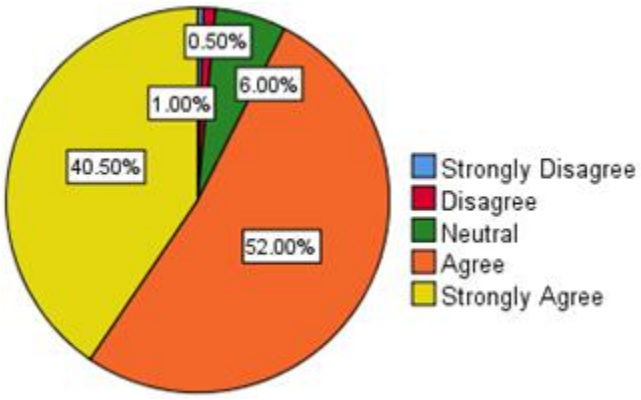

Figure 4.1.6. 4 Opinion regarding ICT support to build creativity

The graphical presentation of the respondent's opinion on regular use of ICT supports to build creativity is shown in figure 4.1.6.4

4.1.6.5 ICT Bring Revolutionary Changes in Learning Methodologies and Education System.

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Strongly Disagree	1	.5	.5	.5
	Disagree	5	2.5	2.5	3.0
	Neutral	10	5.0	5.0	8.0
	Agree	93	46.5	46.5	54.5
	Strongly Agree	91	45.5	45.5	100.0
	Total	200	100.0	100.0	

Table 4.1.6. 5 Opinion regarding ICT brings revolutionary changes in learning

Respondent's opinion regarding the ICT brings revolutionary changes in learning methodologies are shown in table 4.1.6.5. From the table 93(46.5%) respondents are agree, 91(45.5%) are strongly agree, 10(5%) are in neutral position, 5(2.5%) are in disagree, and only 1(0.5%) are in strongly disagree.

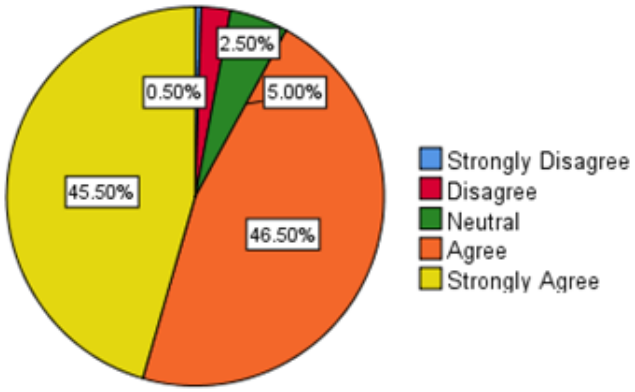

Figure 4.1.6. 5 Opinion regarding ICT brings revolutionary changes in learning

The graphical presentation of the respondent's opinion on regular use of ICT bring revolutionary changes in learning methodologies is shown in figure 4.1.6.5

4.1.7 Change on Learning Activities after using ICT

4.1.7.1 Solving Problems after using ICT

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Slightly Confident	99	49.5	49.5	49.5

	Very Much Confident	101	50.5	50.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 1 Solving problems after using ICT

Respondent's opinion on how confident to solve problems using ICT is shown in table 4.1.7.1. From the table 101(50.5%) respondents are very much confident on solving problem, and 99(49.5%) are slightly confident to solve problem.

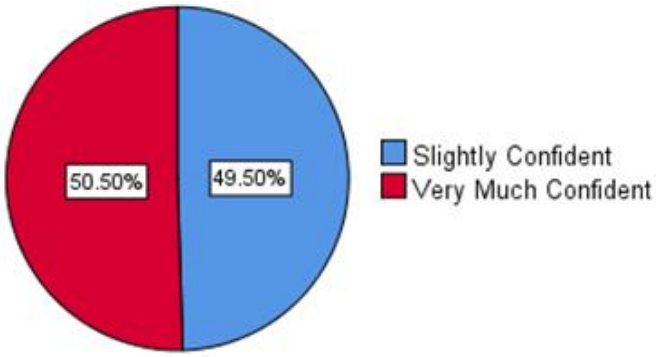

Figure 4.1.7. 1 Solving problems after using ICT

The graphical presentation of the respondent solve problems using ICT is shown in figure 4.1.7.1

4.1.7.2 Confident on Presentation after using ICT

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Slightly Confident	155	77.5	77.5	77.5
	Very Much Confident	45	22.5	22.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 2 Confident on presentation after using ICT

Respondent's opinion on how confident to presents things using ICT is shown in table 4.1.7.2. From the table 45(22.5%) respondents are very much confident, and 155(77.5%) are slightly confident.

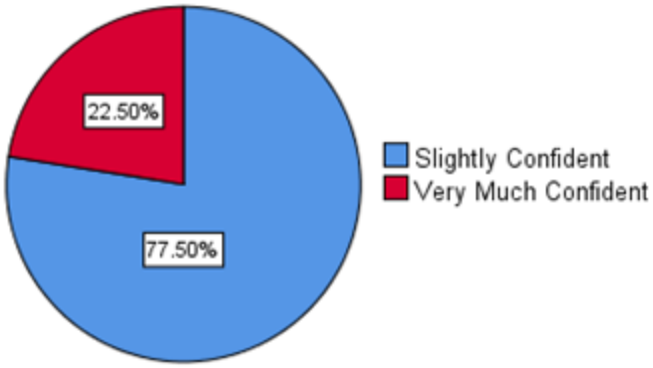

Figure 4.1.7. 2 Confident on presentation after using ICT

The graphical presentation of the respondent's confident on presentation using ICT is shown in figure 4.1.7.2

4.1.7.3 Confident on Sharing Ideas after using ICT

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Slightly Confident	25	12.5	12.5	12.5
	Very Much Confident	175	87.5	87.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 3 Confident on sharing ideas after using ICT

Respondent's opinion on how confident to share ideas using ICT is shown in table 4.1.7.3. From the table 175(87.5%) respondents are very much confident, and 25(12.5%) are slightly confident.

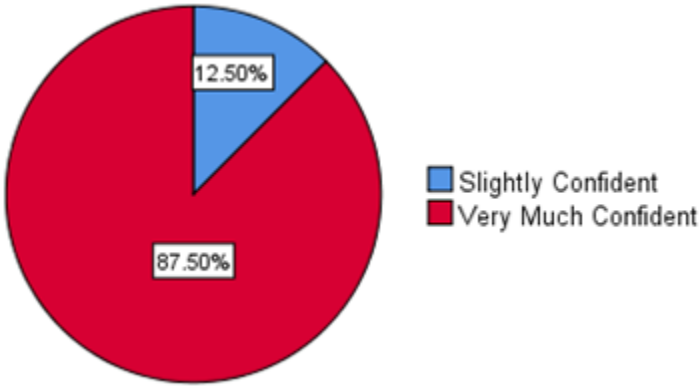

Figure 4.1.7. 3 Confident on sharing ideas after using ICT

The graphical presentation of the respondent's confident on sharing ideas using ICT is shown in figure 4.1.7.3

4.1.7.4 Communicate with Instructor After Using ICT

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Slightly Confident	139	69.5	69.5	69.5
	Very Much Confident	61	30.5	30.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 4 Communicate with instructor after using ICT

Respondent's opinion on how confident to communicate with course instructor after using ICT is shown in table 4.1.7.4. From the table 61(30.5%) respondents are very much confident, and 139(69.5%) are slightly confident.

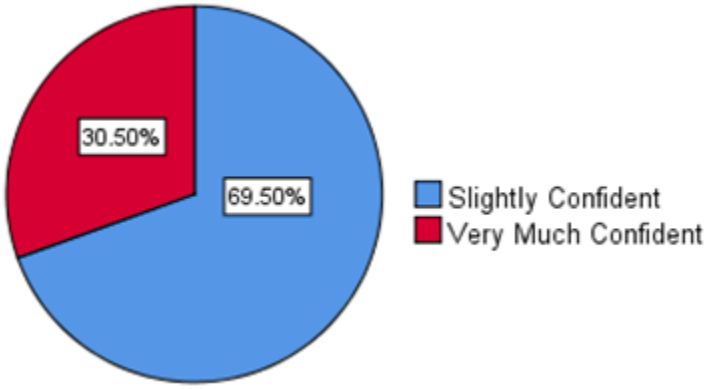

Figure 4.1.7. 4 Confident to communicate with instructor after using ICT

The graphical presentation of the respondent's confident to communicate with instructor using ICT is shown in figure 4.1.7.4

4.1.7.5 Learning Materials of Students Learning

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Printed Materials	54	27.0	27.0	27.0
	Online Materials	85	42.5	42.5	69.5
	Other	61	30.5	30.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 5 Learning materials of students learning

Respondents use learning materials for their study purpose which is sown in the table 4.1.7.5. From the table 85(42.5%) of the respondents use online materials like eBooks,

tutorials, and video tutorials, 54(27%) use printed materials like Books, Newspaper, articles etc. and rest of 61(30.5%) respondents use other types of materials like group discussion and other.

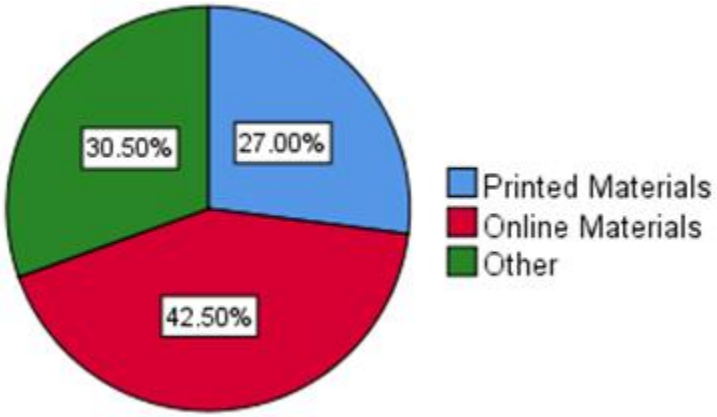

Figure 4.1.7. 5 Learning materials of students learning

The graphical presentation of the respondent's learning materials of students learning is shown in figure 4.1.7.5

4.1.7.6 Techniques to Solving Course and Non-Course Problems

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Internet Surfing	144	72.0	72.0	72.0
	Ask Friends	40	20.0	20.0	92.0
	Ask Instructor	16	8.0	8.0	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 6 Techniques to solve course and non-course problems

Respondent's techniques to solve problem is sown in the table 4.1.7.6. From the table majority of 144(72%) of the respondents solve problem by internet surfing, 40(20%) of the respondents ask their friends to solve problem, and only 16(8%) of the respondent ask course instructor.

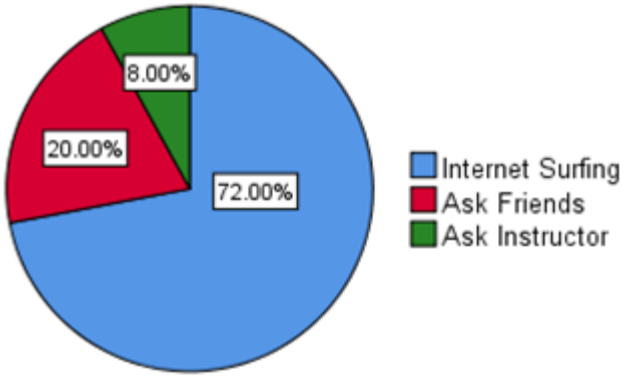

Figure 4.1.7. 6 Techniques to solve course and non-course problems

The graphical presentation of the respondent's techniques to solve course and non-course problem is shown in figure 4.1.7.6

4.1.7.7 Source of Learning Resources

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Hardcopy	31	15.5	15.5	15.5
	Softcopy	169	84.5	84.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 7 Source of learning resources

Respondent's source of learning resource is sown in the table 4.1.7.7. From the table majority of 169(85.5%) of the respondents use softcopy resources, and only 31(15.5%) of the respondents use hardcopy resource.

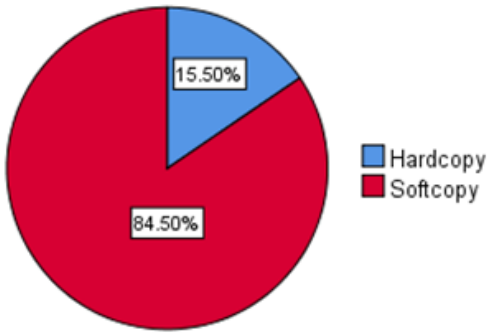

Figure 4.1.7. 7 Source of learning resources

The graphical presentation of the respondent's source of learning resources is shown in figure 4.1.7.7

4.1.7.8 Sharing of Learning Resources

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Physical Hardcopy	31	15.5	15.5	15.5
	Offline Applications	88	44.0	44.0	59.5
	Internet Application	81	40.5	40.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 8 Sharing of learning resources

Respondent's sharing techniques of learning resource is sown in the table 4.1.7.8. From the table majority of 88(44%) of the respondents share through offline application like mobile or desktop application, 81(40.5%) through internet like email internet, social media etc. and only 31(15.5%) share hardcopy resources.

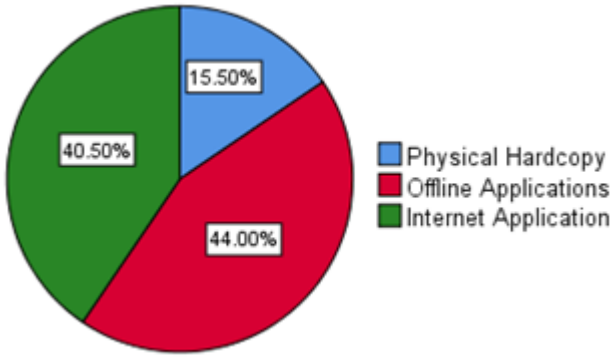

Figure 4.1.7. 8 Sharing of learning resources

The graphical presentation of the respondent's sharing of learning resources is shown in figure 4.1.7.8

4.1.7.9 Communicate with Instructor to Solve Problems

Variable		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Opinion	Face to Face	91	45.5	45.5	45.5
	Email and Internet	45	22.5	22.5	68.0
	I don't Communicate	64	32.0	32.0	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 9 Communicate with instructor to solve problem

Respondent's way of communicate to solve problem is sown in the table 4.1.7.9. From the table majority of 91(45.5%) of the respondents communicate face to face, 45(22.5%) communicate through email and internet, and 64(32%) do not communicate.

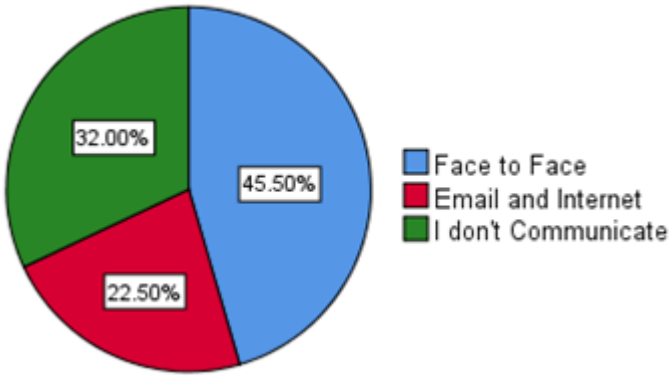

Figure 4.1.7. 9 Communicate with instructor to solve problem

The graphical presentation of the respondent's communicate with instructor to solve problem is shown in figure 4.1.7.9

4.1.7. 10 Opinion on Learning Using ICT is Interesting

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Agree	89	44.5	44.5	44.5
	Strongly Agree	111	55.5	55.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 10 Learning using ICT is interesting

Opinion of respondents on learning using ICT is interesting is sown in the table 4.1.7.10. From the table majority of 111(55.5%) of the respondents Strongly Agree, and 89(44.5%) Agree that they find learning ICT is interesting.

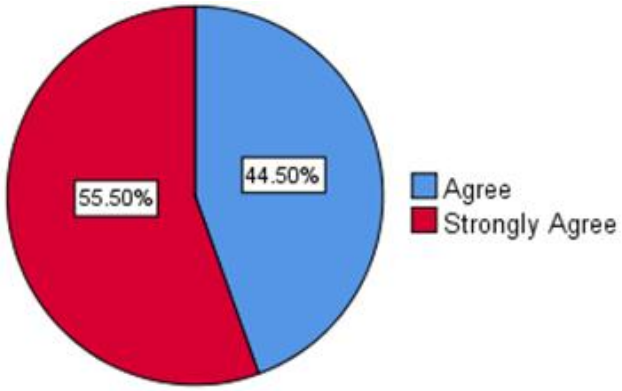

Figure 4.1.7. 10 Learning using ICT is interesting

The graphical presentation of the respondent's opinion on learning using ICT is interesting is shown in figure 4.1.7.10

4.1.7.11 Able to Get Additional Information to Update Knowledge Using ICT

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Agree	105	52.5	52.5	52.5
	Strongly Agree	95	47.5	47.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 11 Able to get additional information to update knowledge using ICT

Opinion of respondents that they are able to get additional information to sharp their knowledge using ICT is sown in the table 4.1.7.11. From the table majority of 105(52.5%) of the respondents Agree, and 95(47.5%) Strongly Agree.

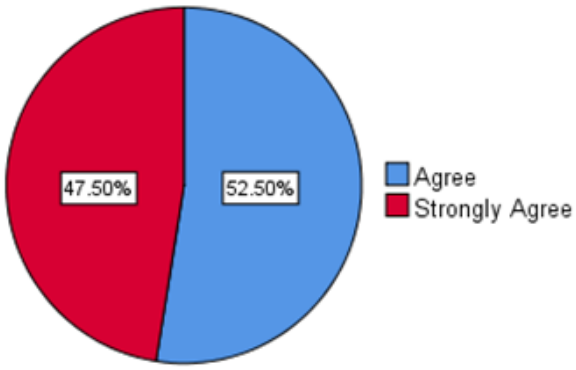

Figure 4.1.7. 11 Able to get additional information to update knowledge using ICT

The graphical presentation of the respondent's opinion to get additional information to sharp knowledge using ICT is shown in figure 4.1.7.11

4.1.7.12 Learning Faster Using ICT

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Neutral	9	4.5	4.5	4.5
	Agree	100	50.0	50.0	54.5
	Strongly Agree	91	45.5	45.5	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 12 Learning faster using ICT

Opinion of respondents that they learn faster using ICT is sown in the table 4.1.7.12. From the table majority of 100(50%) of the respondents Agree, and 91(45.5%) Strongly Agree, and only 9(4.5%) of the respondent in Neutral position.

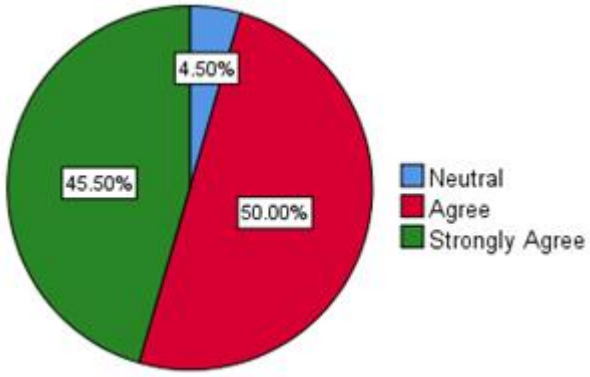

Figure 4.1.7. 12 Learning faster using ICT

The graphical presentation of the respondent's opinion on learning faster using ICT is shown in figure 4.1.7.12

4.1.7.13 ICT Improves Understanding in Learning Activities

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Agree	136	68.0	68.0	68.0
	Strongly Agree	64	32.0	32.0	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 13 ICT improves understanding in learning activities

Opinion of respondents that ICT improves understanding of learners is sown in the table 4.1.7.13. From the table majority of 136(68%) of the respondents Agree, and 64(32%) Strongly Agree.

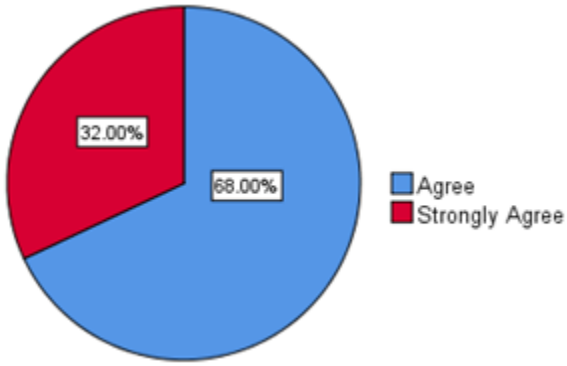

Figure 4.1.7. 13 ICT improves understanding in learning activities

The graphical presentation of the respondent's opinion on improves understanding using ICT is shown in figure 4.1.7.13

4.1.7.14 Academic Performance Consistency on Learning Behavior

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Somehow Improved	6	3.0	3.0	3.0
	Improved	180	90.0	90.0	93.0
	Very Much Improved	14	7.0	7.0	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 14 Academic performance consistency on learning behavior

Regarding the consistency of respondent's academic performance using ICT is sown in the table 4.1.7.14. From the table majority of 180(90%) of the respondents feel that they improve, 14(7%) of the respondents feel very much improved, and only 6(3%) of the respondents feel somehow improved their academic performance.

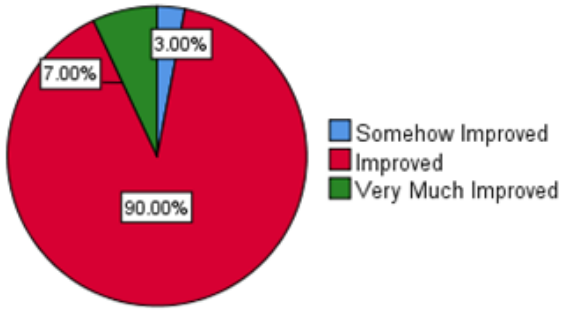

Figure 4.1.7. 14 Academic performance consistency on learning behavior

The graphical presentation of the respondent's opinion on academic performance consistency on learning behavior using ICT is shown in figure 4.1.7.14

4.1.7.15 Academic Performance Consistency on Learning Skills

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Somehow Improved	23	11.5	11.5	11.5
	Improved	163	81.5	81.5	93.0
	Very Much Improved	14	7.0	7.0	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 15 Academic performance consistency on learning skills

Regarding the consistency of respondent's learning skills using ICT is sown in the table 4.1.7.15. From the table majority of 163(81.5%) of the respondents feel that they improve their learning skills, 14(7%) of the respondents feel very much improved, and 23(11.5%) of the respondents feel somehow improved their learning skills.

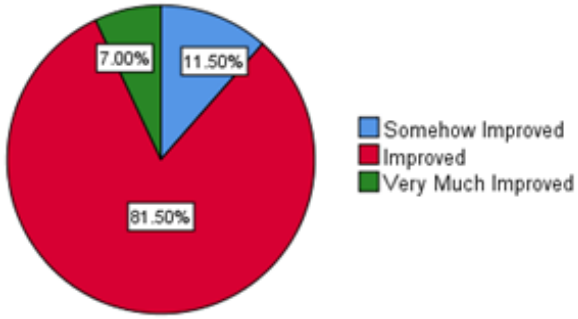

Figure 4.1.7. 15 Academic performance consistency on learning skills

The graphical presentation of the respondent's opinion on academic performance consistency on learning skills using ICT is shown in figure 4.1.7.15

4.1.7.16 Academic Performance Consistency on Results

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never Improved	6	3.0	3.0	3.0
	Neutral	24	12.0	12.0	15.0
	Somehow Improved	156	78.0	78.0	93.0
	Improved	14	7.0	7.0	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 16 Academic performance consistency on results

Regarding the consistency of respondent's academic result using ICT is sown in the table 4.1.7.16. From the table majority of 156(81.5%) of the respondents feel that they somehow improve their academic result, 24(12%) of the respondents in neutral position, 14(7%) of the respondents feel improved and only 6(3%) feel using ICT never improve their academic result.

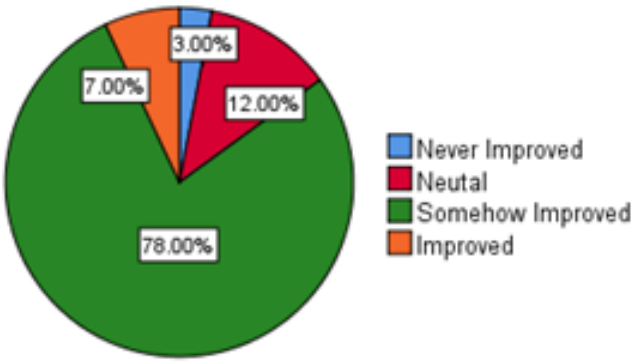

Figure 4.1.7. 16 Academic performance consistency on results

The graphical presentation of the respondent's opinion on academic performance consistency on result using ICT is shown in figure 4.1.7.17

4.1.7.17 Consistency on Overall Academic Performance

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Opinion	Neutral	6	3.0	3.0	3.0
	Somehow Improved	58	29.0	29.0	32.0
	Improved	122	61.0	61.0	93.0

	Very Much Improved	14	7.0	7.0	100.0
	Total	200	100.0	100.0	

Table 4.1.7. 17 Consistency on overall academic performance

Regarding the consistency on overall academic performance of respondent's using ICT is sown in the table 4.1.7.17. From the table majority of 122(61 %) of the respondents feel that they improve their overall academic performance, 58(29%) of the respondents feel somehow improved, 14(7%) of the respondents feel very much improved, and only 6(3%) in neutral position.

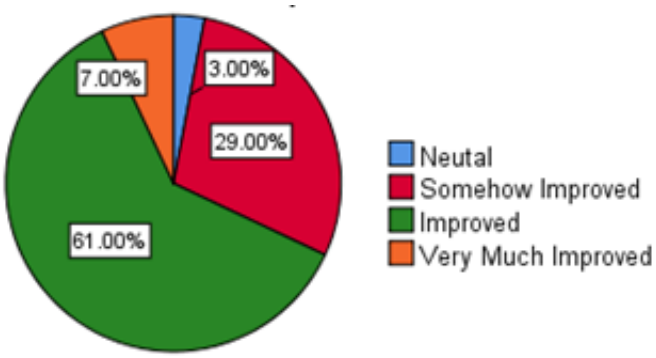

Figure 4.1.7. 17 Consistency on overall academic performance

The graphical presentation of the respondent's opinion on consistency on overall academic performance after ICT is shown in figure 4.1.7.17

4.2 Internal Consistency in Questionnaire

Cronbach's alpha test is used to check or measure the internal consistency among the questionnaire.

All the questions are grouped into the following seven sections as:

- Use and Availabilities of ICT
- Use Frequency of ICT
- Skills of ICT
- Learning through ICT
- Problem Solving Using ICT
- Improvement in Learning Activities using ICT
- Overall Academic Performance using ICT

4.2.1 Internal Consistency in the Use of ICT in College and Classroom

Use of ICT in college and classroom is very much important to undergraduate college students for their learning. In order to identify the effectiveness of ICT available in college and classroom, I have included three different questions as:

- How frequently you have been taught using technological equipment in your college?
- How frequently you use technological equipment for practical / project work activities?
- How often do you use online resources like video tutorials and eBooks to enhance your knowledge and skills?

To verify the internal consistency among the questions included in this section, Cronbach's Alpha test will be used to check the consistency. In order to calculate the value of Cronbach's Alpha IBM SPSS Software Version 25 has been used. The table 4.2.1.1 show the reliability statistics.

Reliability Statistics	
Cronbach's Alpha	N of Items
.820	3

Table 4.2.1. 1 Cronbach's alpha for ICT in college and classroom

The values of Cronbach's Alpha is greater than or equals to 0.8 and less than 0.9 ($0.9 > \alpha >= 0.8$) is considered as good consistency level. The calculated value of alpha is 0.820, so the internal consistency among the questions is good.

Using IBM SPSS Software Version 25 the Mean, Median, Mode, Standard Deviation and Variance will be calculated to understand the opinion of respondents.

Statistics

		How frequently you have been taught using technological equipment in your college?	How frequently you use technological equipment for practical / project work activities?	How often do you use online resources like video tutorials and eBooks to enhance your knowledge and skills?
N	Valid	200	200	200
	Missing	0	0	0
Mean		1.75	1.71	1.86
Median		2.00	2.00	2.00
Mode		2	2	1
Std. Deviation		.700	.455	.853
Variance		.490	.207	.728

Table 4.2.1. 2 Measure of central tendency for the questions ICT in college and classroom

The mean of all of the three questionnaire under ICT in college and classroom lies in the range 1.75 to 1.86. This shows that the average level of agreement on ICT in college are more towards agree. So it can conclude that ICT in college and classroom has greater effect on students learning activities.

4.2.2 Internal Consistency of Uses Frequency of Application Software

In order to identify the uses frequency of application software. I have included the following four questions:

How frequently do you use the following technologies for improving your knowledge and skills for learning activities?

- Word Processing Package
- Spreadsheets (Excel, Google Sheets, etc.)
- Presentation Software
- Graphics Software (Photoshop, Flash, etc.)

To verify the internal consistency among the questions included in this section, Cronbach's Alpha test will be used to check the consistency. In order to calculate the

value of Cronbach's Alpha IBM SPSS Software Version 25 has been used. The table 4.2.2.1 show the reliability statistics.

Reliability Statistics	
Cronbach's Alpha	N of Items
.707	4

Table 4.2.2. 1 Cronbach's alpha for uses frequency of ICT technology

The values of Cronbach's Alpha is greater than or equals to 0.7 and less than 0.8 (0.8> α >=0.7) is considered as acceptable consistency level. The calculated value of alpha is 0.707, so the internal consistency among the questions is acceptable.

Using IBM SPSS Software Version 25 the Mean, Median, Mode, Standard Deviation and Variance will be calculated to understand the opinion of respondents.

		Word Processing Package	Spreadsheets (Excel, Google Sheets, etc.)	Presentation Software	Graphics Software (Photoshop, Flash, etc.)
N	Valid	200	200	200	200
	Missing	0	0	0	0
Mean		2.79	2.92	3.01	2.78
Median		3.00	3.00	3.00	3.00
Mode		3	3	4	4
Std. Deviation		.949	1.021	1.082	1.145
Variance		.900	1.043	1.171	1.311

Table 4.2.2. 2 Measure of central tendency for the question uses frequency of ICT technology

The mean of all of the four questionnaire under ICT uses frequency lies in the range 2.78 to 3.01. This shows that the average level of agreement on uses frequency of ICT are more towards agree. So it can conclude that uses frequency ICT has greater effect on students learning activities.

4.2.3 Internal Consistency on Skills to Operate Application Software

In order to identify the uses frequency of application software. I have included the following six questions:

What is the technical skills level to use the following technologies to improving your knowledge and skills?

- Desktop and Laptop
- Smart Mobile
- Word Processing Package
- Spreadsheets (Excel, Google Sheets, etc.)
- Presentation Software
- Graphics Software (Photoshop, Flash, etc.)

To verify the internal consistency among the questions included in this section, Cronbach's Alpha test will be used to check the consistency. In order to calculate the value of Cronbach's Alpha IBM SPSS Software Version 25 has been used. The table 4.2.3.1 show the reliability statistics.

Reliability Statistics	
Cronbach's Alpha	N of Items
.741	6

Table 4.2.3. 1 Cronbach's alpha for ICT skills

The values of Cronbach's Alpha is greater than or equals to 0.7 and less than 0.8 ($0.8 > \alpha >= 0.7$) is considered as acceptable consistency level. The calculated value of alpha is 0.741, so the internal consistency among the questions is acceptable.

Using IBM SPSS Software Version 25 the Mean, Median, Mode, Standard Deviation and Variance will be calculated to understand the opinion of respondents.

Statistics

		Desktop / Laptop	Smart Mobile	Word Processing Software	Spreadsheets (Excel, Google Sheets, etc.)	Presentation Software	Graphics Software (Photoshop, Flash, etc.)
N	Valid	200	200	200	200	200	200
	Missing	0	0	0	0	0	0
Mean		3.26	3.77	2.76	2.72	2.90	2.42
Median		3.00	4.00	3.00	3.00	3.00	3.00
Mode		3	4	3	3	3	3
Std. Deviation		.437	.448	.983	.979	.972	.958
Variance		.191	.201	.967	.959	.945	.917

Table 4.2.3. 2 Measure of central tendency for the questions ICT skills

The mean of all of the six questionnaire under ICT skills lies in the range 2.42 to 3.77. This shows that the average level of agreement on ICT skills are more towards strongly agree. So it can conclude that ICT skills has greater effect on students learning activities.

4.2.4 Internal Consistency on Learning through ICT

In order to identify the uses learning through ICT. I have included the following five questions:

- Information technology and concerned devices are most important in modern days for education
- Regular use of information technology has positively changed the way of learning and skills improvement
- Learning through multimedia system has enhanced your understanding level of the subject matter than the traditional lecture method.
- Regular use of information technology highly supports to build up creativity and sharp users' knowledge.
- Computer, internet, and mobile technology bring revolutionary changes in learning methodologies and education system

To verify the internal consistency among the questions included in this section, Cronbach's Alpha test will be used to check the consistency. In order to calculate the value of Cronbach's Alpha IBM SPSS Software Version 25 has been used. The table 4.2.4.1 show the reliability statistics.

Reliability Statistics	
Cronbach's Alpha	N of Items
.709	5

Table 4.2.4. 1 Cronbach's alpha for the learning through ICT

The values of Cronbach's Alpha is greater than or equals to 0.7 and less than 0.8 ($0.8 > \alpha >= 0.7$) is considered as acceptable consistency level. The calculated value of alpha is 0.709, so the internal consistency among the questions is acceptable.

Using IBM SPSS Software Version 25 the Mean, Median, Mode, Standard Deviation and Variance will be calculated to understand the opinion of respondents.

Statistics						
		Information technology and concerned devices are most important in modern days for education	Regular use of information technology has positively changed the way of learning and skills improvement.	Learning through multimedia system has enhanced your understanding level of the subject matter than the traditional lecture method.	Regular use of information technology highly supports to build up creativity and sharp users' knowledge.	Computer, internet, and mobile technology bring revolutionary changes in learning methodologies and education system.
N	Valid	200	200	200	200	200
	Missing	0	0	0	0	0

Mean	4.34	4.37	4.37	4.31	4.34
Median	4.00	4.00	4.00	4.00	4.00
Mode	4	5	4	4	4
Std. Deviation	.726	.718	.644	.675	.733
Variance	.527	.516	.415	.456	.537

Table 4.2.4. 2 Measure of central tendency for the questions learning through ICT

The mean of all of the five questionnaire under Learning through ICT lies in the range 4.31 to 4.37. This shows that the majority level of agreement learning through ICT are more towards strongly agree. So it can conclude that Learning through ICT has greater effect on students learning activities.

4.2.5 Internal Consistency Change in Learning Method after Using ICT

It is very important to know the current learning techniques of students in undergraduate college. To know this I have made different section regarding the use of ICT by the students.

4.2.5.1 Confident on ICT Enabled Learning

In order to identify the confident on learning in ICT enabling learning. I have included the following four questions:

How do you find the confident on the following activities using ICT?

- Solving Problems
- Presentation Things
- Sharing Ideas
- Communicate with Instructors

To verify the internal consistency among the questions included in this section, Cronbach's Alpha test will be used to check the consistency. In order to calculate the value of Cronbach's Alpha IBM SPSS Software Version 25 has been used. The table 4.2.5.1.1 show the reliability statistics.

Reliability Statistics	
Cronbach's Alpha	N of Items

.702	4

Table 4.2.5.1. 1 Cronbach's alpha on confident ICT enabled learning

The values of Cronbach's Alpha is greater than or equals to 0.7 and less than 0.8 (0.8> α >=0.7) is considered as acceptable consistency level. The calculated value of alpha is 0.702, so the internal consistency among the questions is acceptable.

Using IBM SPSS Software Version 25 the Mean, Median, Mode, Standard Deviation and Variance will be calculated to understand the opinion of respondents.

Statistics					
		Solving Problems	Presentation	Sharing Ideas	Communicate with instructors
N	Valid	200	200	200	200
	Missing	0	0	0	0
Mean		2.54	2.26	2.90	2.35
Median		3.00	2.00	3.00	2.00
Mode		2	2	3	2
Std. Deviation		.584	.470	.353	.565
Variance		.340	.221	.125	.319

Table 4.2.5.1. 2 Measure of central tendency for the questions confident on ICT enabled learning

The mean of all of the four questionnaire confident on ICT enabled learning lies in the range 2.26 to 2.90. This shows that the average level of agreement on confident using ICT learning are more towards agree. So it can conclude that confident on ICT enabled learning has greater effect on students learning activities.

4.2.5.2 ICT Enabled Learning Methodology

In order to identify the uses ICT enabled learning methodology, I have included the following five questions:

- What is the sources of your learning material?
- How do you solve your course and non-course Problem?
- Which is the common source of learning resources?

- How do you share learning resources?
- How do you communicate with your course instructor to solve problem?

Using IBM SPSS Software Version 25 the Mean, Median, Mode, Standard Deviation and Variance will be calculated to understand the opinion of respondents.

Statistics						
		What is the sources of your learning material?	How do you solve your course and non-course Problem?	Which is the common source of learning resources?	How do you share learning resources ?	How do you communicate with your course instructor to solve problem?
N	Valid	200	200	200	200	200
	Missing	0	0	0	0	0
Mean		2.04	2.36	1.85	2.25	2.41
Median		2.00	2.00	2.00	2.00	3.00
Mode		2	2	2	2	1
Std. Deviation		.759	.626	.363	.707	1.342
Variance		.577	.392	.132	.500	1.801

Table 4.2.5.2. 1 Measure of central tendency for the question ICT enabled learning methodology

The mean of all of the five questionnaire under ICT enabled learning methodology lies in the range 1.85 to 2.41. This shows that the average level of agreement on ICT enabled learning methodology has greater effect on students learning activities.

4.2.5.3 Improvement in Learning Activities using ICT

In order to identify the improvement in learning activities using ICT. I have included the following four questions:

- I find learning using ICT is interesting
- I am able to get additional information and update my knowledge using ICT
- I am able to learn faster using ICT
- Using ICT improves my understanding in learning activities

To verify the internal consistency among the questions included in this section, Cronbach's Alpha test will be used to check the consistency. In order to calculate the

value of Cronbach's Alpha IBM SPSS Software Version 25 has been used. The table 4.2.5.3.1 show the reliability statistics.

Reliability Statistics	
Cronbach's Alpha	N of Items
.806	4

Table 4.2.5.3. 1 Cronbach's alpha for improvement in learning activities using ICT

The values of Cronbach's Alpha is greater than or equals to 0.8 and less than 0.9 ($0.9 > \alpha >= 0.8$) is considered as good consistency level. The calculated value of alpha is 0.806, so the internal consistency among the questions is good.

Using IBM SPSS Software Version 25 the Mean, Median, Mode, Standard Deviation and Variance will be calculated to understand the opinion of respondents.

Statistics					
		I find learning using ICT is interesting	I am able to get additional information and update my knowledge using ICT	I am able to learn faster using ICT	Using ICT improves my understanding in learning activities
N	Valid	200	200	200	200
	Missing	0	0	0	0
Mean		4.56	4.48	4.41	4.32
Median		5.00	4.00	4.00	4.00
Mode		5	4	4	4
Std. Deviation		.498	.501	.578	.468
Variance		.248	.251	.334	.219

Table 4.2.5.3. 2 Measure of central tendency for the questions improvement in learning activities using ICT

The mean of all of the four questionnaire improvement in learning activities using ICT lies in the range 4.32 to 4.56. This shows that the average level of agreement to improvement in learning activities using ICT are more towards strongly agree. So it can conclude that improvement in learning activities using ICT has greater effect on students learning activities.

4.2.5.4 Academic Performance using ICT

In order to identify the academic performance using ICT. I have included the following four questions:

What is your academic performance consistency over the last 2 academic years?

- Learning Behavior
- Learning Skills
- Academic Result
- Overall Academic Performance

To verify the internal consistency among the questions included in this section, Cronbach's Alpha test will be used to check the consistency. In order to calculate the value of Cronbach's Alpha IBM SPSS Software Version 25 has been used. The table 4.2.5.4.1 show the reliability statistics.

Reliability Statistics	
Cronbach's Alpha	N of Items
.704	4

Table 4.2.5.4. 1 Cronbach's alpha for academic performance using ICT

The values of Cronbach's Alpha is greater than or equals to 0.7 and less than 0.8 ($0.8 > \alpha >= 0.7$) is considered as acceptable consistency level. The calculated value of alpha is 0.704, so the internal consistency among the questions is acceptable.

Using IBM SPSS Software Version 25 the Mean, Median, Mode, Standard Deviation and Variance will be calculated to understand the opinion of respondents.

Statistics					
		Learning Behavior	Learning Skills	Academic Result	Overall Academic Performance
N	Valid	200	200	200	200
	Missing	0	0	0	0
Mean		4.04	3.96	2.89	3.72
Median		4.00	4.00	3.00	4.00
Mode		4	4	3	4

Std. Deviation	.314	.429	.547	.635
Variance	.099	.184	.299	.404

Table 4.2.5.4. 2 Measure of central tendency for the questions academic performance using ICT

The mean of all of the four questionnaire on academic performance using ICT lies in the range 2.89 to 4.04. This shows that the average level of agreement on academic performance using ICT are more towards agree. So it can conclude that academic performance using ICT has greater effect on students learning activities.

4.3 Correlation Analysis

A Pearson correlation was used to determine the relationships among the variables, between the scales and overall satisfaction. Table 3.9.1 shows the values of Pearson correlation coefficient and the relationship.

Correlations

		Use and Availability of ICT	Use Frequency of ICT	Skills of ICT	Learning through ICT	Problem Solving Using ICT	Improvement using ICT in Learning Activities	Overall Academic Performance using ICT
Use and Availability of ICT	Pearson Correlation	1	-.134	-.384**	-.092	-.025	-.109	-.074
	Sig. (2-tailed)		.058	.000	.197	.724	.124	.300
	N	200	200	200	200	200	200	200
Use Frequency of ICT	Pearson Correlation	-.134	1	.122	.071	-.083	-.080	-.161*
	Sig. (2-tailed)	.058		.086	.316	.243	.260	.022
	N	200	200	200	200	200	200	200
Skills of ICT	Pearson Correlation	-.384**	.122	1	.085	-.005	.049	.109
	Sig. (2-tailed)	.000	.086		.232	.943	.494	.125

	N	200	200	200	200	200	200	200
Learning through ICT	Pearson Correlation	-.092	.071	.085	1	-.028	.058	.026
	Sig. (2-tailed)	.197	.316	.232		.697	.412	.717
	N	200	200	200	200	200	200	200
Problem Solving Using ICT	Pearson Correlation	-.025	-.083	-.005	-.028	1	.063	.300**
	Sig. (2-tailed)	.724	.243	.943	.697		.377	.000
	N	200	200	200	200	200	200	200
Improvement in Learning Activities using ICT	Pearson Correlation	-.109	-.080	.049	.058	.063	1	.267**
	Sig. (2-tailed)	.124	.260	.494	.412	.377		.000
	N	200	200	200	200	200	200	200
Overall Academic Performance using ICT	Pearson Correlation	-.074	-.161*	.109	.026	.300**	.267**	1
	Sig. (2-tailed)	.300	.022	.125	.717	.000	.000	
	N	200	200	200	200	200	200	200
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Table 4.3. 1 Pearson's correlation analysis among different variables

Based on the above correlation in table 4.3.1, the p-value (sig.) of the correlation between independent variables (Learning through ICT, Skills of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Overall Academic Performance using ICT) and the dependent variable (Use and Availability of ICT) is less than 0.01. This reflects that there is positive relationship between independent and dependent variables.

The positive value of correlation coefficient indicates that the relationships between each independent variable and dependent variable are positively related and indicates a positive association that increase in one variable increases the value of other variable.

Among all the independents variables, the strength of association between independent variable Learning through ICT, Skills of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Overall Academic Performance using ICT and the dependent variable Use and Availability of ICT are the weakest (r=0.410), and the correlation coefficient is highly significant (*p*= 0.000). This shows that there have a positive and weak relationship with Use and Availability of ICT.

The strength of association between Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Skills of ICT and Use Frequency of ICT are also weak (r=0.251), and the correlation coefficient is significant (*p*= 0.048). This shows that there have a positive and moderate relationship with Use Frequency of ICT.

4.4 Multiple Regression Analysis

4.4.1 R Square

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.410[a]	.168	.142	.29302
a. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Skills of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT				

Table 4.4. 1 R square

From the Table 4.4.1, R-Square is 0.168, this shows that 16.8% of the variances in Use and Availability of ICT is explained by Overall Academic Performance using ICT, Learning through ICT, Skills of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT and 83.2% of the variances in Use and Availability of ICT is explained by other factors.

4.4.2 Test of Significance

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.354	6	.559	6.510	.000[b]
	Residual	16.571	193	.086		
	Total	19.925	199			
a. Dependent Variable: Use and Availability of ICT						
b. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Skills of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT						

Table 4.4.2. 1 Test of significance

Table 4.4.2.1, ANOVA[a] shows that the F-ratio value is 6.510 with 0.000[b] significance level. This shows that there is significant difference between dependent variable and independent variable. Thus, the overall model is significant and the fitness of model is high.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.764	.371		7.460	.000
	Use Frequency of ICT	-.061	.042	-.099	-1.464	.145
	Skills of ICT	-.208	.038	-.362	-5.402	.000
	Learning through ICT	-.032	.044	-.049	-.738	.461
	Problem Solving Using ICT	-.022	.060	-.026	-.373	.710
	Improvement in Learning Activities using ICT	-.070	.053	-.090	-1.325	.187

	Overall Academic Performance using ICT	-.015	.063	-.017	-.237	.813
a. Dependent Variable: Use and Availability of ICT						

Table 4.4.2. 2 Standardize coefficients

4.4.3 R Square

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.251[a]	.063	.034	.50284
a. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Skills of ICT				

Table 4.4.3 R square

From the Table 4.4.3, R-Square is 0.063, this shows that 6.3% of the variances in Use Frequency of ICT is explained by Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Skills of ICT and 93.7% of the variances in Use Frequency of ICT is explained by other factors.

4.4.4 Test of Significance

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.284	6	.547	2.165	.048[b]
	Residual	48.799	193	.253		
	Total	52.083	199			
a. Dependent Variable: Use Frequency of ICT						
b. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Skills of ICT						

Table 4.4.4. 1 Test of significance

Table 4.4.4.1, ANOVA[a] shows that the F-ratio value is 2.165 with 0.048[b] significance level. This shows that there is no significant difference between dependent variable and independent variable.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.541	.675		5.243	.000
	Use and Availability of ICT	-.180	.123	-.111	-1.464	.145
	Skills of ICT	.087	.070	.094	1.233	.219
	Learning through ICT	.064	.075	.060	.849	.397
	Problem Solving Using ICT	-.047	.103	-.033	-.453	.651
	Improvement in Learning Activities using ICT	-.071	.091	-.056	-.776	.438
	Overall Academic Performance using ICT	-.221	.108	-.156	-2.054	.041
a. Dependent Variable: Use Frequency of ICT						

Table 4.4.4. 2 Standardize coefficients

4.4.5 R Square

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.406[a]	.165	.139	.51166
a. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT				

Table 4.4.5. 1 R square

From the Table 4.4.5.1, R-Square is 0.165, this shows that 16.5% of the variances in Skills of ICT is explained by Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT and 83.5% of the variances in Skills of ICT is explained by other factors.

4.4.6 Test of Significance

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9.958	6	1.660	6.339	.000[b]
	Residual	50.527	193	.262		
	Total	60.485	199			
a. Dependent Variable: Skills of ICT						
b. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT						

Table 4.4.6. 1 Test of significance

Table 4.4.6.1, ANOVA[a] shows that the F-ratio value is 6.339 with 0.000[b] significance level. This shows that there is significant difference between dependent variable and independent variable. Thus, the overall model is significant and the fitness of model is high.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.042	.701		4.339	.000
	Use and Availability of ICT	-.633	.117	-.363	-5.402	.000

	Use Frequency of ICT	.090	.073	.083	1.233	.219
	Learning through ICT	.049	.077	.043	.642	.522
	Problem Solving Using ICT	-.058	.105	-.038	-.552	.582
	Improvement in Learning Activities using ICT	-.018	.093	-.014	-.197	.844
	Overall Academic Performance using ICT	.167	.110	.109	1.515	.131
a. Dependent Variable: Skills of ICT						

Table 4.4.6. 2 Standardize coefficients

4.4.7 Square

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.136[a]	.018	-.012	.47891
a. Predictors: (Constant), Overall Academic Performance using ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Skills of ICT				

Table 4.4.7. 1 R square

From the Table 4.4.7.1, R-Square is 0.018, this shows that 1.8% of the variances in Learning through ICT is explained by Overall Academic Performance using ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Skills of ICT and 98.2% of the variances in Learning through ICT is explained by other factors.

4.4.8 Test of Significance

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.832	6	.139	.605	.726[b]
	Residual	44.265	193	.229		
	Total	45.097	199			
a. Dependent Variable: Learning through ICT						
b. Predictors: (Constant), Overall Academic Performance using ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Skills of ICT						

Table 4.4.8. 1 Test of significance

Table 4.4.8.1, ANOVA[a] shows that the F-ratio value is 0.605 with 0.726[b] significance level. This shows that there is no significant difference between dependent variable and independent variable.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.930	.627		6.272	.000
	Use and Availability of ICT	-.087	.117	-.058	-.738	.461
	Use Frequency of ICT	.058	.068	.062	.849	.397
	Skills of ICT	.043	.067	.050	.642	.522
	Problem Solving Using ICT	-.044	.098	-.034	-.450	.653
	Improvement in Learning Activities using ICT	.059	.087	.051	.680	.497

	Overall Academic Performance using ICT	.030	.104	.023	.290	.772
a. Dependent Variable: Learning through ICT						

Table 4.4.8. 2 Standardize coefficients

4.4.9 R Square

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.307[a]	.094	.066	.35215
a. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Skills of ICT				

Table 4.4.9. 1 R square

From the Table 4.4.9.1, R-Square is 0.094, this shows that 9.4% of the variances in Problem Solving Using ICT is explained by Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Skills of ICT and 91.6% of the variances in Problem Solving Using ICT is explained by other factors.

4.4.10 Test of Significance

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.488	6	.415	3.344	.004[b]
	Residual	23.934	193	.124		
	Total	26.422	199			
a. Dependent Variable: Problem Solving Using ICT						

b. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Improvement in Learning Activities using ICT, Skills of ICT

Table 4.4.10. 1 Test of significance

Table 4.4.10.1, ANOVA[a] shows that the F-ratio value is 3.344 with 0.004[b] significance level. This shows that there is significant difference between dependent variable and independent variable. Thus, the overall model is significant and the fitness of model is high.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.761	.489		3.598	.000
	Use and Availability of ICT	-.032	.086	-.028	-.373	.710
	Use Frequency of ICT	-.023	.050	-.032	-.453	.651
	Skills of ICT	-.027	.050	-.041	-.552	.582
	Learning through ICT	-.024	.053	-.031	-.450	.653
	Improvement in Learning Activities using ICT	-.018	.064	-.020	-.278	.781
	Overall Academic Performance using ICT	.306	.073	.303	4.189	.000
a. Dependent Variable: Problem Solving Using ICT						

Table 4.4.10. 2 Standardize coefficients

4.4.11 R Square

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.291[a]	.085	.056	.39580
a. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Problem Solving Using ICT, Skills of ICT				

Table 4.4.11. 1 R square

From the Table 4.4.11.1, R-Square is 0.085, this shows that 8.5% of the variances in Improvement in Learning Activities using ICT is explained by Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Problem Solving Using ICT, Skills of ICT and 91.5% of the variances in Improvement in Learning Activities using ICT is explained by other factors

4.4.12 Test of Significance

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.794	6	.466	2.973	.008[b]
	Residual	30.236	193	.157		
	Total	33.030	199			
a. Dependent Variable: Improvement in Learning Activities using ICT						
b. Predictors: (Constant), Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Use Frequency of ICT, Problem Solving Using ICT, Skills of ICT						

Table 4.4.12. 1 Test of significance

Table 4.4.12.1, ANOVA[a] shows that the F-ratio value is 2.973 with 0.008[b] significance level. This shows that there is significant difference between dependent variable and independent variable. Thus, the overall model is significant and the fitness of model is high.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.592	.506		7.100	.000
	Use and Availability of ICT	-.128	.097	-.100	-1.325	.187
	Use Frequency of ICT	-.044	.057	-.055	-.776	.438
	Skills of ICT	-.011	.056	-.015	-.197	.844
	Learning through ICT	.040	.059	.047	.680	.497
	Problem Solving Using ICT	-.023	.081	-.020	-.278	.781
	Overall Academic Performance using ICT	.290	.083	.257	3.484	.001
a. Dependent Variable: Improvement in Learning Activities using ICT						

Table 4.4.12. 2 Standardize coefficients

4.4.13 R Square

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.424[a]	.179	.154	.33241
a. Predictors: (Constant), Improvement in Learning Activities using ICT, Skills of ICT, Problem Solving Using ICT, Learning through ICT, Use Frequency of ICT, Use and Availability of ICT				

Table 4.4.13. 1 R square

From the Table 4.4.13.1, R-Square is 0.179, this shows that 17.9% of the variances in Overall Academic Performance using ICT is explained by Improvement in Learning Activities using ICT, Skills of ICT, Problem Solving Using ICT, Learning through ICT, Use Frequency of ICT, Use and Availability of ICT and 82.1% of the variances in Overall Academic Performance using ICT is explained by other factors

4.4.14 Test of Significance

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.662	6	.777	7.031	.000[b]
	Residual	21.326	193	.110		
	Total	25.987	199			
a. Dependent Variable: Overall Academic Performance using ICT						
b. Predictors: (Constant), Improvement in Learning Activities using ICT, Skills of ICT, Problem Solving Using ICT, Learning through ICT, Use Frequency of ICT, Use and Availability of ICT						

Table 4.4.14. 1 Test of significance

Table 4.4.14.1, ANOVA[a] shows that the F-ratio value is 7.031 with 0.000[b] significance level. This shows that there is significant difference between dependent variable and independent variable. Thus, the overall model is significant and the fitness of model is high.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.065	.453		4.556	.000
	Use and Availability of ICT	-.019	.082	-.017	-.237	.813
	Use Frequency of ICT	-.097	.047	-.137	-2.054	.041
	Skills of ICT	.070	.046	.107	1.515	.131
	Learning through ICT	.014	.050	.019	.290	.772
	Problem Solving Using ICT	.273	.065	.275	4.189	.000

	Improvement in Learning Activities using ICT	.204	.059	.230	3.484	.001
a. Dependent Variable: Overall Academic Performance using ICT						

Table 4.4.14. 2 Standardize coefficients

4.5 Regression Equation

Based on the Table 4.4.2.2, the multiple regression equation for the study is: Use and Availability of ICT = 2.764 + (-0.208) Skills of ICT

Based on the Table 4.4.4.2, the multiple regression equation for the study is: Use Frequency of ICT = 3.541

Based on the Table 4.4.6.2, the multiple regression equation for the study is: Skills of ICT = 3.042 + (-0.633) Use and Availability of ICT

Based on the Table 4.4.8.2, the multiple regression equation for the study is: Learning through ICT = 3.930

Based on the Table 4.4.10.2, the multiple regression equation for the study is: Problem Solving Using ICT = 1.761 + 0.306 Overall Academic Performance using ICT

Based on the Table 4.4.12.2, the multiple regression equation for the study is: Improvement in Learning Activities using ICT = 3.592 + 0.290 Overall Academic Performance using ICT

Based on the Table 4.4.14.2, the multiple regression equation for the study is: Overall Academic Performance using ICT = 2.065 + 0.273 Problem Solving Using ICT + 0.204 Improvement in Learning Activities using ICT

4.6 Hypothesis Results

H_1: Use and availabilities of ICT is significantly relate to the effectiveness on learning activities of undergraduate students

From Table 4.4.2.1, the significant value of Use and Availability of ICT is equals to 0.000^b, which is less than 0.01. Therefore H_1 is accepted. This conclude that the Use and availabilities of ICT is significantly relate to the effectiveness on learning activities of undergraduate students.

H_2: Use Frequency of ICT is significantly relate to the effectiveness on learning activities of undergraduate students

From Table 4.4.4.1, the significant value of the Use Frequency of ICT is equals to 0.048^b, which is greater than 0.01. Therefore H_2 is rejected. This conclude that the Use Frequency of ICT is not significantly relate to the effectiveness on learning activities of undergraduate students.

H_3: Skills of ICT is significantly relate to the effectiveness on learning activities of undergraduate students

From Table 4.4.6.1, the significant value to the Skills of ICT is equals to 0.000^b, which is less than 0.01. Therefore H_3 is accepted. This conclude that the Skills of ICT is significantly relate to the effectiveness on learning activities of undergraduate students.

H_4: Learning through ICT is significantly relate to the effectiveness on learning activities of undergraduate students

From Table 4.4.8.1, the significant value of Learning through ICT is equals to 0.726^b, which is greater than 0.01. Therefore H_4 is rejected. This conclude that Learning through ICT is not significantly relate to the effectiveness on learning activities of undergraduate students

H_5: Problem Solving Using ICT is significantly relate to the effectiveness on learning activities of undergraduate students

From Table 4.4.10.1, the significant value of Problem Solving Using ICT is equals to 0.004^{b}, which is less than 0.01. Therefore H_0 is supported. This conclude that Problem Solving Using ICT is significantly relate to the effectiveness on learning activities of undergraduate students.

H_6: Improvement in Learning Activities using ICT is significantly relate to the effectiveness on learning activities of undergraduate students

From Table 4.4.12.1, the significant value of Improvement in Learning Activities using ICT is equals to 0.008^{b}, which is less than 0.01. Therefore H_6 is supported. This conclude that Improvement in Learning Activities using ICT is significantly relate to the effectiveness on learning activities of undergraduate students.

H_7: Overall Academic Performance using ICT is significantly relate to the effectiveness on learning activities of undergraduate students.

From Table 4.4.14.1, the significant value of Overall Academic Performance using ICT is equals to 0.000^{b}, which is less than 0.01. Therefore H_0 is supported. This conclude that Overall Academic Performance using ICT is significantly relate to the effectiveness on learning activities of undergraduate students.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter concludes the overall result found in this study. The research result and the relationship between dependent and independent variable also concluded, finally descriptive analysis, reliability analysis, and testing of hypothesis, summary, conclusions and recommendations presented.

5.2 Summary of Statistical Analysis

This section describes the statistical analysis as summary from the result produced after the analysis of the data collected from the respondents.

5.2.1 Descriptive Analysis

In this research, the opinion of 200 respondents was taken through different sections of questionnaire. This research cover 128(64%) male, and 72(36%) female. Majority of the respondents 164(82%) belongs to the age between 21 to 25 years old. Majority of 62(31%) of the respondents from NAST college and 96(28%) from the faculty of science and technology. Regarding the use of electronic devices 140(70%) of the respondents use laptop and smart phone. All the respondents have internet availability, and 89(44.5%) of the respondent access both mobile data and Wi-Fi as their internet source. The daily use of internet between 3 to 5hrs, 98(49%) active and only 6(3%) of the respondent use internet between 3 to 5hrs for education purpose. Majority of 120(60%) of the respondent access below 1hrs for education purpose. All the respondents have free internet connection in their college and 181(90%) respondents have multimedia lanced classroom and only 82(40%) have e-Library facility at their college. Regarding the use of ICT in college and classroom 90(45%) of the respondents occasionally 80(40%) mostly use, 142(71%) of the respondents occasionally use ICT equipment in their project and practical work. Majority of 89(44.5%) of the respondents use online resources for their learning. All respondents access laptop/desktop and smart mobile daily. Majority of 94(46.5), 72(36%) of the respondents access word and excel weekly, 88(44%), 68(34%) of the respondents access power point and graphical software monthly.

Regarding the skills of accessing ICT, 149(74.5%) are fairly skilled, 149(74.5%) are very skilled to operate laptop/desktop and smart mobile devices. To access software 83(41.5%), 83(41.5%), 76(38%), 81(40.5%) are fairly skilled in Microsoft word, excel, power point and graphical software.

The mean of all of the three questionnaire under ICT in college and classroom lies in the range 1.75 to 1.86. This shows that the average level of agreement on ICT in college are more towards agree. So it can conclude that ICT in college and classroom has greater effect on students learning activities.

The mean of all of the four questionnaire under ICT uses frequency lies in the range 2.78 to 3.01. This shows that the average level of agreement on uses frequency of ICT are more towards agree. So it can conclude that uses frequency ICT has greater effect on students learning activities.

The mean of all of the six questionnaire under ICT skills lies in the range 2.42 to 3.77. This shows that the average level of agreement on ICT skills are more towards strongly agree. So it can conclude that ICT skills has greater effect on students learning activities.

The mean of all of the five questionnaire under Learning through ICT lies in the range 4.31 to 4.37. This shows that the majority level of agreement learning through ICT are more towards strongly agree. So it can conclude that Learning through ICT has greater effect on students learning activities.

The mean of all of the four questionnaire confident on ICT enabled learning lies in the range 2.26 to 2.90. This shows that the average level of agreement on confident using ICT learning are more towards agree. So it can conclude that confident on ICT enabled learning has greater effect on students learning activities.

The mean of all of the five questionnaire under ICT enabled learning methodology lies in the range 1.85 to 2.41. This shows that the average level of agreement on ICT enabled learning methodology has greater effect on students learning activities.

The mean of all of the four questionnaire improvement in learning activities using ICT lies in the range 4.32 to 4.56. This shows that the average level of agreement to

improvement in learning activities using ICT are more towards strongly agree. So it can conclude that improvement in learning activities using ICT has greater effect on students learning activities.

The mean of all of the four questionnaire on academic performance using ICT lies in the range 2.89 to 4.04. This shows that the average level of agreement on academic performance using ICT are more towards agree. So it can conclude that academic performance using ICT has greater effect on students learning activities.

The result from the statistical analysis shows that among the seven hypothesis, H1, H3, H5, H6 and H7 were accepted and H2 and H4 was rejected. This indicates that use and availabilities of ICT, skills of ICT, problem solving using ICT, improvement in learning activities using ICT and overall academic performance using ICT were significant predictors to the use of ICT and its effectiveness on learning activities of undergraduate students.

5.2.2 Reliability Analysis

Cronbach's alpha is a measure used to assess the reliability or internal consistency of set of questions or test items. The scale measurements of the seven constructs are being measured based on reliability test using Cronbach's alpha. Among all the construct, use and availabilities of ICT has the highest Cronbach's alpha (0.820) and problem solving ICT has lowest (0.702). The internal reliability test shows that the measurement scale of use and availabilities of ICT, use frequency of ICT, skills of ICT, Learning through ICT, problem solving using ICT, improvement in learning activities using ICT, and overall academic performance using ICT, as the Cronbach's alpha were above 0.70 which indicates good consistency.

5.2.3 Inferential Analysis

5.2.3.1 Pearson Correlation

The correlation between independent variables (Learning through ICT, Skills of ICT, Use Frequency of ICT, improvement in Learning Activities using ICT, Problem Solving Using ICT, and Overall Academic Performance using ICT) and the dependent variable

(Use and Availability of ICT) is less than 0.01. This reflects that there is positive relationship between independent and dependent variables.

Among all the independents variables, the strength of association between Improvement in Learning Activities using ICT, Skills of ICT, Problem Solving Using ICT, Learning through ICT, Use Frequency of ICT, Use and Availability of ICT and Overall Academic Performance using ICT are strong (r=0.424), and the correlation coefficient is significant (*p*=0.000). This shows that there is a positive relationship with Improvement in Learning Activities using ICT. The association between Overall Academic Performance using ICT, Learning through ICT, Use and Availability of ICT, Improvement in Learning Activities using ICT, Problem Solving Using ICT, Skills of ICT and Use Frequency of ICT is weak (r=0.251), and the correlation coefficient is significant (*p*=0.048). This shows that there is a less positive relationship with Use Frequency of ICT.

5.2.3.2 Multiple Regression Analysis

Multiple regression between independent variable () and dependent variable () has R-Square values of 0.168, which shows that 16.8% of the variance in use of ICT and its effectiveness on learning activities of undergraduate students can be explained by independent variables. The result shows that problem solving using ICT (B=0.303) has the strongest impact on use of ICT and its effectiveness on learning activities of undergraduate students, whereas use and availabilities of ICT (B=-0.017) has the weakest impact.

5.2.4 Hypothesis Testing Results

In this research, the researcher has designed seven hypothesis, from the respondents opinion, after analyzing the data using IBM SPSS Version 25, five hypothesis are accepted and two hypothesis are rejected as shown in the table

S. No.	Hypothesis	Result	Remarks
H_1	Use and availabilities of ICT is significantly relate to the effectiveness on learning activities of undergraduate students	B =-0.017 P = 0.000	Supported

		<0.01	
H_2	Use Frequency of ICT is significantly relate to the effectiveness on learning activities of undergraduate students	B =-0.156 P=0.048 >0.01	Not Supported
H_3	Skills of ICT is significantly relate to the effectiveness on learning activities of undergraduate students	B =0.109 P =0.000 <0.01	Supported
H_4	Learning through ICT is significantly relate to the effectiveness on learning activities of undergraduate students	B =0.023 P =0.726 >0.01	Not Supported
H_5	Problem Solving Using ICT is significantly relate to the effectiveness on learning activities of undergraduate students	B =0.303 P =0.004 <0.01	Supported
H_6	Improvement in Learning Activities using ICT is significantly relate to the effectiveness on learning activities of undergraduate students	B =0.257 P =0.008 <0.01	Supported
H_7	Overall Academic Performance using ICT is significantly relate to the effectiveness on learning activities of undergraduate students	B =0.230 P =0.000 <0.01	Supported

Table 5.2.4. 1 Hypothesis testing results

5.3 Conclusions

The use of ICT is increasing day by day in this 21st century by the students for their learning, entertainment, project work, and problem solving. This research shows the opinion of the respondents (68% of the respondents) says using ICT their overall academic improvements. Therefore, it is strongly encourage that ICT enabled education make changes on the ways they learn. The availability and use of ICT in college and classroom, uses frequency of ICT, skills of ICT, Learning through ICT, problem solving using ICT, Improvements in learning activities using ICT, and to improve overall academic performance, it is essential to all the learners and researchers.

5.4 Recommendations

The recommendation for future researcher is to broaden the research area. This study is focused the Dhangadhi sub-metropolitan city with five undergraduate college having 200 sample size. Different geographical area, semester, and age of the respondents should also be taken into consideration when drawn the sample.

ANNEX

Research Questionnaire

Research Questionnaire on **Access to ICT and Its Effectiveness on Learning Activities of Undergraduate Students**

Dear Respondents,

I would like to thank you for giving your valuable time to complete this technological survey on learning activities by undergraduate students in Dhangadhi. The primary goal of this research is to find the use of ICT and its effectiveness on learning activities of undergraduate students. And secondary goal is to complete Master's Degree of Computer Information System (MCIS). Please feel free to answer honestly. This research has included general and technical questions, estimated time to complete is 15-20 minutes. Again, thank you very much!

Researcher

Mr. Sunil Bahadur Bist

NCIT- MCIS- 14460030

Section A: - Personal Information for the Survey

1. What is your gender?

   ☐ Male ☐ Female ☐Other

2. Select your age group?

   ☐ 16 – 20 ☐ 21 – 25 ☐ Above 26

3. Write your name of college

   _____

4. What is your faculty of your study?

   ☐ Science and Technology ☐ Management ☐ Humanities ☐ Other

5. What is your current year / semester?

   ☐ Junior (First and Second Year) ☐ Second (Third and Fourth Year)

Section B: - Use of Electronic Devices, and Internet Technology (Tick your choice)

1. Which of the following electronic devices you have?

   ☐ Desktop ☐ Laptop ☐ Smart Phone ☐ None

2. Do you have internet access availability?

   ☐ Yes ☐ No

3. What is your common internet access source?

   ☐ Wi-Fi ☐ Mobile Data ☐ Other

4. How many hours in a day you access internet?

   ☐ Below 1hrs ☐ 1-3hrs ☐ 3-5hrs ☐ 5-7hrs ☐ More than 7hrs

5. How many hours in a day you access internet for education purpose?

   ☐ Below 1hrs ☐ 1-3hrs ☐ 3-5hrs ☐ 5-7hrs ☐ More than 7hrs

Section C: - Use and Availability of Information Technology in College and Classroom (Encircle your choice)

I. Availability of ICT in your college and classroom

Circle your best choice	**Yes**	**No**
1. Do you have IT friendly environment in your college premise?	1	2
2. Do you have free access on Internet facilities in your college premise?	1	2
3. Does your college have multimedia lanced access room?	1	2
4. Does your college have a well-equipped e-Library?	1	2

II. Use of ICT in college and classroom

	Mostly	**Occasionally**	**Never**
5. How frequently you have been taught using technological equipment in your college?	1	2	3
6. How frequently you use technological equipment for practical / project work activities?	1	2	3
7. How often do you use online resources like video tutorials and eBooks to enhance your knowledge and skills?	1	2	3

Section D: - Uses Frequency of Electronic Devices and Application Software (Encircle your choice)

How frequently do you use the following technologies for improving your knowledge and skills for learning activities?

	Never	**Daily**	**Weekly**	**Monthly**	**Yearly**
1. Desktop and Laptop	1	2	3	4	5
2. Smart Phone	1	2	3	4	5
3. Word Processing Package	1	2	3	4	5
4. Spreadsheets (Excel, Google Sheets, etc.)	1	2	3	4	5
5. Presentation Software	1	2	3	4	5
6. Graphics Software (Photoshop, Flash, etc.)	1	2	3	4	5

Section E: - Skills to Operate Electronic Devices and Application Software (Encircle your choice)

What is the technical skills level to use the following technologies to improving your knowledge and skills?

	Not at all skilled	**Not very skilled**	**Fairly skilled**	**Very skilled**	**Expert**
1. Desktop / Laptop	1	2	3	4	5
2. Smart Phone	1	2	3	4	5
3. Word Processing Software	1	2	3	4	5
4. Spreadsheets (Excel, Google Sheets, etc.)	1	2	3	4	5
5. Presentation Software	1	2	3	4	5
6. Graphics Software (Photoshop, Flash, etc.)	1	2	3	4	5

Section F: Support the Following Technological Statement (Encircle your choice)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Information technology and concerned devices are most important in modern days for education.	1	2	3	4	5
2. Regular use of information technology has positively changed the way of learning and skills improvement.	1	2	3	4	5
3. Learning through multimedia system has enhanced your understanding level of the subject matter than the traditional lecture method.	1	2	3	4	5
4. Regular use of information technology highly supports to build up creativity and sharp users' knowledge.	1	2	3	4	5
5. Computer, internet, and mobile technology bring revolutionary changes in learning methodologies and education system.	1	2	3	4	5

Section G: Change in Learning Method after Using ICT (Encircle your choice)

1. How do you find the confident on the following activities using ICT

	Not Confident	Slightly Confident	Very Much Confident
1.1. Solving Problems	1	2	3
1.2. Presentation	1	2	3
1.3. Sharing Ideas	1	2	3
1.4. Communicate with instructors	1	2	3

2. What is the sources of your learning material?

   ☐ Printed Materials ☐ Online Materials (e-books, videos, and soon) ☐ other

3. How do you solve your course and non-course Problem?

   ☐ Visit Library for Resources ☐ Internet Surfing ☐ Ask Friends ☐ Ask Instructor ☐ Other

4. Which is the common source of learning resources?

   ☐ Hardcopy (Like Books, Notes) ☐ Softcopy (Like video, audio, eBooks, learning apps etc.)

5. How do you share learning resources?

   ☐ Physical Hardcopy ☐ Offline Applications ☐ Internet Application ☐ I don't share

6. How do you communicate with your course instructor to solve problem?

   ☐ Face to Face ☐ Telephone ☐ Email and Internet ☐ I don't Communicate

7. Support the following statement to improve your learning activities

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
7.1. I find learning using ICT is interesting	1	2	3	4	5
7.2. I am able to get additional information and update my knowledge using ICT	1	2	3	4	5
7.3. I am able to learn faster using ICT	1	2	3	4	5
7.4. Using ICT improves my understanding in learning activities	1	2	3	4	5

8. What is your academic performance consistency over the last 2 academic years?

	Never Improved	**Neutral**	**Somehow Improved**	**Improved**	**Very much Improved**
8.1.Learning Behavior	1	2	3	4	5
8.2.Learning Skills	1	2	3	4	5
8.3.Academic Result	1	2	3	4	5
8.4.Overall Performance	1	2	3	4	5

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