Palestine Technical University Students' Perceptions on Educational Use of ICT Tools

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ABSTRACT

Technology is very important for todays' education. The main purpose of this study is to explore the students' perception of Palestine Technical University toward educational use of ICT tools. The selected sample was students for Palestine Technical University, Palestine. Quantitative method was applied on PTU students and questionnaire collected to conduct survey of 137 participants.

The study data was analyzed by quantitative method, questionnaire published and the sample collected randomly from all PTU faculties. The data were analyzed using frequencies; Anova test using Statistical Package for the Social Sciences. Finding showed that there is positive attitude toward using ICT tools; however the result showed that there are no significant differences according to academic year and gender while there are significant differences with regard to CGPA, faculties, having computer at home, having internet at home, using computer in classrooms per week.

Keywords: ICT tools, perceptions, technology, learning system.

ÖZ

Teknoloji, günümüzün eğitimi için çok önemlidir. Bu çalışmanın amacı, Filistin Teknik Üniversitesi öğrencilerinin, bilgi ve iletişim teknoloji araçlarının eğitimsel kullanımına yönelik algılarını araştırmaktır. Seçilen örnek katılımcılar Filistin Teknik Üniversitesi öğrencileriydi. Nicel yöntemler, PTU öğrencileri üzerinde uygulandı ve araştırmayı yürütmek için 137 katılımcıdan anket toplandı.

Çalışma verisi nicel yöntemle analiz edildi, anket yayımlandı ve örnekler tüm PTU fakülteleri tarafından rastgele toplandı. Veriler, sıklıkla kullanılarak analiz edildi; Sosyal bilimler için istatistiksel paket kullanılarak Anova test uygulandı. Bulgular gösterdi ki, bilgi ve iletişim teknoloji araçları kullanımına karşı pozitif bir yaklaşım vardır. Fakat sonuçlar yine açığa çıkardı ki akademik seneye göre ve cinsiyete göre farklılıklar yokken, ağırlıklı genel not ortalamasına, fakültelere, evde bilgisayar ve internet bulundurulmasına ve haftalık sınıf içinde bilgisayar kullanımına ilişkin ciddi farklılar vardır.

Anahtar kelimeler: Bilgi ve İletişim Teknoloji araçları, algılar, teknoloji, öğrenim sistemi

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INTRODUCTION

1.1 Background

ICT refers to Information and Communication Technologies in Education. ICT plays a vital role in today's education systems. ICT can be used to improve students learning by using internet, wireless networks, cell phones, and other communication tools. Information and Communication Technology also has an effect on our daily life today, from working to socializing, learning to playing.

Technology tools are new agent for change and innovation. ICT tools help students in becoming more active during the lessons and it eliminates passive learning. These tools can be useful in bringing the outside world into the school and in general it helps to change the idea and method of learning. In this thesis the new tools that can be used in education and also how teachers can use it effectively are studied.

School can be defined as place of learning that affects the lives of individuals and gives them the knowledge that they need. Knowledge is in a growing demand, the technology allows the learning by using technology. ICT in education was reasonable in such a manner as students can learn online like distance learning. Teacher and the students have a limited time to spend together but as a result of implementing technology in education system, students can enter to course materials uploaded by teachers, likewise when using internet, there is an enormous access to

data that can open user's eyes on some of advanced applications such as AutoCAD and Mathlab, and so forth. For instance, the engineering analysis and designing were simplified as students in engineering departments want to design with traditional tools by using white paper and pencil which needs to spend more time. Thus, student's assignments will submit at earlier time and more accuracy.

Digital age has actually switched the trends of communication among young people, accessing to data, network, and the way of education. Young generation is now the majority on the digital age and they have variety means to access this world such as smartphones, computers, and TV, Nowadays, ICT can improve student's learning styles and create more effective teaching methods for the lecturers. at present there is no doubt that technology extremely embedded in international culture, it is today an inextricably to enable technology obtainable for the students with the relevant and contemporary experiences that permit them to engage effectively in it, and prepare them to be eligible for life and enables the learners to be more lively in their learning experiences as well. Recently, some countries have started to integrate ICT into their education system and they were used it efficiently which facilitate the interactions between teachers and students, however in other states, educational institutions have just begun or are still far off applying ICT into their educational methods in efficient way. ICT has proved that it can achieve functional results in the education system which provides the both of lecturers and students extra chances to conform the learning and teaching to individual needs.

1.2 ICT Tools in Education

ICT tools can provide a wide range of aids to the personal-professional work of teachers. ICT tools also can lead to improve student learning and improve teaching

methods. ICT tools are devices and objects used in information and communications technologies. Examples are: E-Learning, Distance learning, Mobile learning, computers, cell phones and cell phone towers, televisions, video conferencing software, radios, laptops, DVDs, computer and network hardware and software, satellite systems, and the various services and applications associated with them.

Recently, several studies have found that possessing positive attitudes toward ICT would have high impact on the use of computer. In 1991, Woodrow stated that "awareness of student attitudes towards computers is a critical criterion in the evaluation of computer courses and the development of computer-based curricula". Toe (2008) indicated that students' positive attitudes toward computer technology have an explicit positive impact on their innovative use of ICT.

Although, there are many studies raised to study students' perceptions, they focused on a small number of students (Conole, et al, 2008; Tang & Austin, 2009; keller & Cernerud, 2002; McLachlan et al., 2010). Accordingly it seems worthwhile for conducting a new study including a considerable number of students who consider the different gender groups in technical university to identify perceptions and ICT usage is important to deal with the gap. Research findings from students' perceptions and ICT usage would have important implications for lecturers, administrators, faculties, students, and employers and may enhance educational delivery to students, students' learning experience in universities, and students' application of knowledge and skills in the real world of work. Therefore, we reason that it is necessary to investigate students' perceptions and ICT usage in education.

1.3. Purpose of the Study

The main idea of this thesis is to investigate the perception of Palestine Technical University students regarding the impact of using ICT tools for educational purposes. Quantitative research methodology will be used in this study. A survey selected random population by sending online questionnaires to Palestine Technical University students.

The author will focus on the influence of Information and Communication Technologies in Education. Teaching and learning using technological tools is the main idea of ICT in Education. It plays an important and favorable role in education. The author purpose is to provide more attention and concern on importance of using ICT tools in Education and its impact on students' perception. This paper will be listing ICT tools that use in education and its benefits on learning and teaching.

1.4 Research Questions

In this study the ICT tools that can be used in education and the perception of PTU students' and pedagogical use of ICT tools are discussed. The review attempts in answering the following questions:

1.4.1 What are the students' pedagogical uses of ICT tools in learning process in PTU?

1.4.2 What are the students' perceptions of ICT tools integration with learning and teaching?

1.4.2.1 Are there significant differences in the students' perception in terms of gender?

1.4.2.2 Are there significant differences in the students' perception in terms of academic year?

1.4.2.3 Are there significant differences in the students' perception in terms of CGPA?

1.4.2.4 Are there significant differences in the students' perception in terms of faculty?

1.4.2.5 Are there significant differences in the students' perception refer to having computer at their home?

1.3.2.6 Are there statistically significant differences in the students' perception refer to their having internet at home?

1.4.2.7 Are there statistically significant differences in the students' perception refer to their using computer in classroom lessons per week?

1.5 Assumptions

Questionnaire was used in this study, and so the author assumed that the collected data provided from students has answered truthfully and objectively.

Palestine Technical University is using a little feature and technologies with their students.

There are no statistically significant differences in the students' perception towered using ICT tools for educational purposes with gender and academic year variables.

1.6 Significance of the Study

The significance of this study will help to explore students' perception when they are using ICT tools for educational purposes in learning environment, it can give a clear picture of the integration of technologies in learning process, and importance of adding new ICT tools for students. The research provides information about the factors which impacts on the perception of university students toward educational use of ICT tools inside campus and outside campus.

1.7 Definition of Terms

Information and communication technology: Information and communication Technology is the combination of technological tools and resources used to communicate, disseminate, store and manage information. The technological tools include internet, computer, television, radio, hardware, software, Telephone etc.

Distance learning: Distance education is way of learning far away from the school where students do not learn in face-to-face with the instructor. This makes school work easier for students because students can work on their own, at any time and place.

Social networking: Social network is the use of internet-based programs to make connection with classmates, friends, and families' etc. users can communicate freely without stress. Social networking can be seen as an environment where the users are allowed to be part of a visual community. Users can share information between themselves, send messages to each other directly. Examples of social networks are Facebook, Twitter, and LinkedIn etc.

M-Learning: using mobile devices in learning process in order to facilitate learning also improve learning environment and outcomes.

Interactive White Board: An area on a display screen that multiple users can write or draw on. Whiteboards are a principal component of teleconferencing applications because they enable visual as well as audio communication.

21st Century Skills: 21st century can be defined as the information age that includes technological tools in learning and teaching mediums.

Chapter 2

LITERATURE REVIEW

Information and communication technology is needed for today's educational systems. To make education effective, schools and universities should provide teaching new tools that can be used to advance learning process. The purpose of ICT tools is to help learner to learn fast and also to make learning better. Another advantage of using these tools is helping the instructors in their learning.

2.1 21st Century Skills

21st century can be defined as the information age that includes technological tools in learning and teaching mediums. 21st century skills and using technology in education have drafted frameworks and guidelines of what students need in their learning process to meet their goals and what are the technology tools that they need for their learning in future.

Ninlawana (2015) aimed in his study to explore factors which affect teachers' professional development in teaching innovation and educational technology in the 21st century under the Bureau of Special Education, Office of Basic Education. He used Multiple Regression Analysis and he found that there were positive correlations between teachers' professional development and classroom management in the 21st century, concerning creative and innovative skills, communication, information, and media awareness, and computer literacy and information technology.

2.2 Pedagogy Use of ICT

Koustourakis et al. (2008) in their study aimed to examine three things. First the ways used to structure the pedagogy necessary to boost distance learning delivery used by the Hellenic Open University (HOU); second the adoption of pedagogical and epistemological conceptual systems that HOU is using for the improving of its pedagogical practices; and third one is the function of information and communication technology (ICT), and the degree of ICTs incorporation into distance learning delivery at HOU. They used Qualitative content analysis and they found that refer to providing rigorous course contents, robust framing exists between HOU's various learning modules; with regard to pedagogical practices, there is a solid hierarchical relationship between HOU's academic staff and tutors. On the contrary, framing is weak between tutors and students; and in terms of ICT usage at HOU, in general, uses technology for administration, while conversely, and depending on the program of study, it currently has only limited use for student learning.

Investigating secondary school students' pedagogical use of information communication and technologies (ICT) was the purpose of Buabeng & Yidana (2014) study. They collected and analyzed the data using descriptive statistics, multivariate analysis of variance and multiple regression analysis. From the results, it was clearly visible that students' using ICT tools to support their learning was low they mostly use ICT to communicate with peers. Students' methods of assimilating knowledge were through teacher-centered teaching, even though they somewhat used ICT for collaborative and inquiry learning. Students in public schools perceived the use of ICT more valuable than students in private schools. Also, the study provided evidence that students in urban and rural schools differed in their attitudes in terms of

perceived value and cost of ICT use, but no differences in attitude in terms of expectancy of success were found to exist among students in all locations.

Usluel et al. (2008) study focused on Information and Communication Technologies (ICT) usage, which is the indicator of diffusion. A model composed of the variables which can explain ICT usage in Turkish higher education is established and tested within the study. The data had collected from 814 faculty's member inside Turkey. The research supposed that the perceived attributes of ICT and ICT facilities in the universities predict the ICT usage.

Gulbahar & Guven (2008) survey was applied on 326 teachers who teach fourth and fifth grade at primary level to study the use of ICT tools in primary schools in the social studies subject area, by considering various variables which have an impact on the success of the implementation of the use of these tools. They mentioned that "although teachers are willing to use ICT resources and are aware of the existing potential, they are facing problems in relation to accessibility to ICT resources and lack of in-service training opportunities".

Lorncowicz et al. (2014) aimed in their study to explore using of computer and access to internet via students over their study periods. They used a questioner that was distributed in 2009-2012 on different groups of 320 to 405 students per year from two universities in eastern Poland. The result of their research indicated that over the period under study access of students to computers and internet was relatively at high level. In most of the years included, the results reveal that there are statically significant differences in internet access and computer ownership between students from urban and rural areas. From students' point views the results showed

that the application of ICT by teachers in the courses' delivery has not been changed significantly since 2009.

Skutil et al. (2013) study has implemented a particular research project concentrated on the possibilities to use modern information and communication technologies in junior primary school. The questionnaire applied on ICT teachers in young primary school and addressed the following topics; perception of the situation and teachers' attitudes to ICT, perception of barriers and the positive motivational factors, the didactic function of technology, the power side of work with ICT, and the role of teacher and group dynamics in a classroom.

2.3 Classroom Tools

The use of information and communication technology (ICT) in classrooms such as video technology, Interactive white board, CD-ROMs, and various computer attachments and software applications have caused many alterations in community. These alterations have not only been a technical nature but more widely of a structural nature. Many of the major institutions of our society have changed and the way we live our daily lives have been influenced. However, the effect on education may just begin to be felt as lecturers integrate this new technology into their teaching.

Kretschmann (2015) in his study examined the subjective theories of PE teachers about integrating ICT into PE. He aimed in his research to define what in-service and set PE teachers think about integrating ICTs into their respective PE classes. The teacher had positive impact about integrating ICT into classrooms.

2.3.1 Interactive Whiteboard

The interactive whiteboard can bring valuable benefits to the classroom since it provides an opportunity to include all learners within the lesson. The interactive whiteboard is a main instrument in the classroom as it alters the mode of instruction. Many studies have been carried out in different countries to investigate the effectiveness of the interactive whiteboard.

Bahadur & Oogarah (2013) in their research have used a feasibility study to determine teachers' and learners' perceptions of the potential gains and negativities of using interactive whiteboards in their teaching environments. A survey was carried out among teachers working in primary school to collect feedbacks on the interactive whiteboard. The main result showed that using the interactive whiteboard does not necessarily mean getting better results in learners' assessments. Yet learners showed better engagement and enjoyment during the lessons and that most teachers agreed that the interactive whiteboard was an effective tool as it benefited to all types of learners.

Isman et al. (2012) investigated the Saudi Secondary school Teachers' Attitudes towards using Interactive Whiteboard in the classrooms. The research used Interactive Whiteboard Attitude Survey, observation skill card usage. They found that there were appositive attitude towards using Interactive Whiteboard. However teachers need a professional advanced program to use Interactive Whiteboard effectively to help them in increasing their Teaching skills and the students learning.

"Interactive whiteboards (IWB) are regarded as one of the most revolutionary instructional technologies for various educational levels" Türel & Johnson (2012)

examined the actual usage and behaviors associated with promising IWB features in practical settings. The key objective of their research was to assess both teachers' perceptions and their use of IWBs. The results showed that teachers think IWBs can be used for various subject domains. Furthermore, teachers think that IWBs can be used to facilitate learning process and instruction under the following circumstances, collaboration between colleagues, get training about effective instructional strategies using IWB, and finally more frequent teacher use of IWBs to improve IWB competency.

Kaufman (2009) analyzed the level of interactive board usage and its correlation with the comfort levels of teacher before and after training. He suggested that teachers are using the boards as a teaching instrument in several ways as the board helps to construct a flexible learning environment. While faculty members possess varying levels of technology skills and use a variety of interactive features, overall, both teachers and students view the boards as an asset to the classroom. The author indicated that students are more likely to take notes and pay attention when the board is used as a presentation device and students often help teachers to use the boards when they get "stuck." The researcher also indicated that there is a need for a multiuser pen to be developed and provide with the interactive whiteboard so the board can facilitate more pair and group activities to increase board usage.

Balta & Duran (2015) have distributed surveys to 255 students and 23 teachers from three private schools. The results of their research indicated that interactive whiteboards are highly ranked by both students and teachers. Students generally prefer the usage of interactive whiteboards in math courses, and their attitudes differ across their genders and school levels. As students get elder, their positive attitudes

toward interactive whiteboard technology decline, and it has been concluded that there is no difference between students' and teachers' attitudes.

2.3.2 Mobile Learning

Availability and accessibility of mobile learning tools, simple using of it and the modernity of the generations of cell-phone, all of such characteristics have been led to increasing of holding mobile devices. The common of these phones in the hands of students enhance using it for instructional purposes.

Mobile applications often afford cross-curricular activities. This aspect was seen as a main advantage when engaging with teachers to bind the using of mobile with classroom activity. The moral obligation is critically important. This point came up at multiple points throughout the day and was viewed as becoming even more relevant as we move towards a world in which ubiquitous technology is ever present. Representation on mobile devices is an issue. Not only do characteristics of the technology, such as the small-screen size, need to be taken into account but there must also be an emphasis on the types of representations that can be used for constructing knowledge. For example, the 'poverty' of texting was brought up as a constraint for visual learners.

The main issue raised in using mobile for learning process is whether this technology contributes effectively in teaching and learning. This is one of debated issues among researchers today. Gaskell & Mills (2010) wondered whether we can learn from mobile devices. They concluded that the role of mobile technologies in education is growing rapidly especially in developed countries. For example using handheld technologies give a considerable opportunity to boost access to learning and allow

many institutions to develop administrative and learner support and learning opportunities in ways which will build on current methods.

According to Staines & lauchs (2013), smartphone devices offer many features for education compared with other devices such as netbooks or laptops due to different reasons; firstly, mobile devices' weight is lighter and it is more flexible than others in terms of digital reading or accessing of content. Secondly, their instant-on capability and quick browsing among mobile applications leads to precede learning activities with less lateness. Thirdly, tis devices have a touch screen interface which provides very high level of user interactivity. Fourthly, the number of mobiles is larger than other devices like laptops, as students can hold them outside or inside a room with no need to close and reopen the lids and save them in the carry case and can also use them to collect data or taking notes. Fifthly, developing of applications for mobile platforms is not expensive; therefore number of low cost or free apps is increasing where many of them are good for learning activities. Finally, mobile devices relatively have a long life of battery that makes them more appropriate for during the day.

M-learning can be defined as using mobile phone in learning system. Abu-Al-Aish & Love (2013) ascertains that M-learning will play an increasing important role in the development of teaching and learning methods for high education. However, implementing M-learning successfully in higher education will depend on the acceptance of this technology by users. The main goal of their paper is to investigate the factors which influencing the university students' intentions to accept m-learning. Based on the unified theory of acceptance and use of technology (UTAUT) Venkatesh et al. (2003) proposed a model to determine the factors that affect the

acceptance of m-learning in higher education and to check if prior experience of mobile devices has an impact on the acceptance of m-learning. A structural equation model was used to analyze the data collected from 174 participants. The results show that performance expectancy, influence of lecturers, effort expectancy, , quality of service, and personal innovativeness were all significant factors that affect behavioral intention to use m-learning. Moreover, Prior experience of mobile devices was proposed to moderate the effect of these constructs on behavioral intention.

2.3.3 Social Network

In recent times, numerous studies have conducted to see how to use social media such as Facebook and Twitter for educational purposes. For the time being, teachers have a tendency to involve ICT instrument like Twitter and Facebook as means for motivating and teaching students.

Facebook have a notable chance for using social networks to assist students for learning and sharing using technology in special way. A lot of researchers have examined Facebook using via students in different educational institutions in numerous countries. In Australia, Staines & Lauchs (2013) have sent online survey to university students to evaluate the benefits of using a university unit Facebook page; they found out that the page is very useful in achieving the most learning goals of the unit. Furthermore, students show that Facebook page has more advantages than the university's central learning management system. Another study conducted by Cain & Policastr (2011) indicated that Facebook provide an informal learning environment for offering new topics and qualify the students to interact with real life issues.

With reference to Twitter, researchers recently have placed emphasis on this topic; some results show that using Twitter in education can useful in educational process. Grace et al. (2013) examined the usefulness of Twitter in learning process for university students; they concluded that Twitter has a valuable consideration for students in self-report. Moreover, it can increase interconnection and collaboration among students in higher education. In another research done by Yakin and Tinmaz (2013), they focused on the use of Twitter as instructional instrument for university students; by applying survey over three time period; before, during, and after the course, the results indicated that using Twitter by the students for learning purposes have increased.

Meanwhile, some researchers have conducted a study on using both of Facebook and Twitter in education. A study done in UK by Smith & Lambert (2013) using narrative method found out that using Twitter and Facebook employed to develop communication and increase accessibility of university students to real-life practices and expertise. Another study did by Beltran & Belle (2013) concluded that university Students had better experience and engagement provided by online social network and students through student-teacher interaction and student-student interaction and improved their learning ability and increase their own experiences.

Chapter 3

METHODOLOGY

The objective of this study is to survey the perception of Palestine Technical University students with regard to the impact of using ICT tools in learning and teaching.

To understand the use of ICT tools in education, a quantitative methodology was used to investigate the research questions in the study. Research questions were formulated to explore the students' perception of using ICT tools in classrooms as follows:

1. What are students' pedagogical uses of ICT in learning in PTU?

1.2 What are students' perceptions of ICT tools integration into learning and teaching?

1.2.1 Are there significant differences in the students' perception refer to their gender?

1.2.2 Are there significant differences in the students' perception refer to their academic year?

1.2.3 Is there any significant difference in the students' perception refer to their CGPA?

1.2.4 Is there any significant difference in the students' perception refer to their faculty?

1.2.5 Is there any significant difference in the students' perception refer to having computer at their home?

1.2.6 Is there any significant difference in the students' perception refer to their having internet at home?

1.2.7 Is there any significant difference in the students' perception refer to their using computer in classroom lessons per week?

3.1 Research Methodology

This study has used Quantitative approach from random population. Quantitative method is looking for the estimation of the case by generating statistical information that can be interpreted statistically. Online-survey has distributed randomly to selected sample in Palestine Technical University. The main reason from employing online survey methodology is to facilitate gathering respondents' answers from sample of population in shorter time.

3.2 Reliability and Validity

The population of Palestine Technical University in March 2016 is about 6000; approximately male student's reaches to 3160 while the number of female is about 2840 students. It's important to know sample size (N) to ensure validity, accuracy, reliability & scientific & ethical integrity and generalize the result. The Significant competence of population study and satisfactory sample error are the main standards for the sample size. Based on literatures, $N \geq 50 + 8m$ (M = independent variable) for multiple correlation. The "M" in this study represents the number of independent variables. In this research, the number of M equals 10. Thus, the sample size (N) should be greater or equal 130, in our research we could collect 137 completed responses, this mean that the size of sample is sufficient to do the study and to apply an appropriate statistical analyses. In this study random sample is used to collect

information from PTU students. Many theoretical and empirical studies had proven the high reliability and accuracy of estimation when choosing the sample randomly. For instance, Ross (1978) claimed that random sample provides all of elements (students) in population. Gay (1987) stated that "Random sampling method is the utmost single way to acquire a descriptive sample. Although no method including random sampling that assures a representative sample, but the possibility of using random sample for this procedure is higher than any other method. Furthermore, Random sampling provides equal chance of implication so each unit in sample, each student has the probability of being selected into the sample".

3.3 Data Collection

Questionnaires were published online and the total numbers of questionnaires were collected 137. The questionnaires were translated to Arabic language in other to understand the questionnaires better. The researcher was heedful to keep away from complicated and lengthened questionnaire so the students supposed to feel comfortable and fill up the questioner in shorter time.

3.4 Method of Analysis

First stage of analysis has been started by coding each dependent and independent variables. Subsequently, the data have entered into Statistical Package for Social Sciences (SPSS) to run the analysis and come up with the findings, in our study we have used a descriptive statistics and Frequency tables to obtain the related results in connection with each of the research questions. The one-way analysis of variance (ANOVA) is applied to determine the relationship between dimensions of student engagement. Therefore, Crosstabs were found to see the relations between the significant items of survey and the question under consideration.

Chapter 4

FINDINGS

4.1 Frequency

Table 1: Faculty Frequencies

Faculty	Frequency	Percentage
Arts and Science	31	22.6
Engineering and Technology	60	43.8
Commerce and Business	23	16.8
Agricultural Science	19	13.9
Others	4	2.9
Total	137	100.00

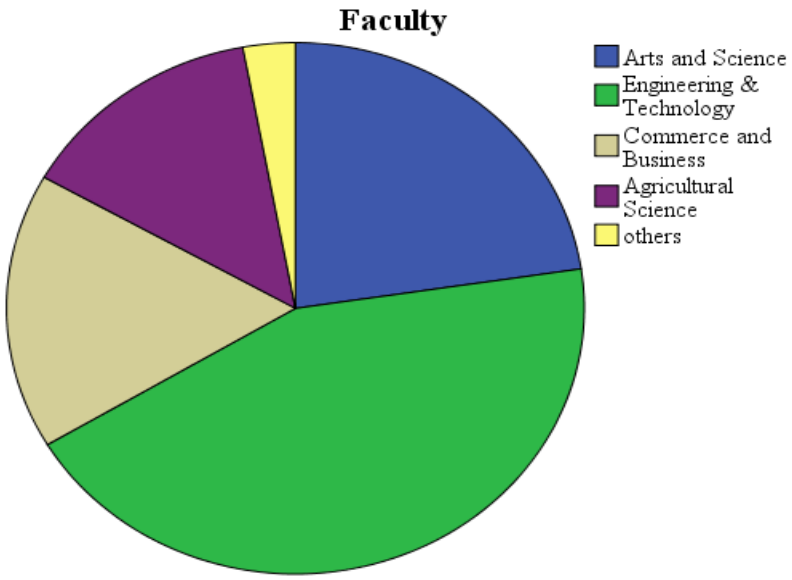

Figure 1: PTU faculties

In term of faculties, there were 31 students from Art and Science, 60 from Engineering and Technology, 23 from Commerce and Business, 19 from Agricultural Science, and the rest are from other faculties.

Table 2: Class Frequencies

Academic Year	Frequency	Percentage
First year	18	13.1
Second year	33	24.1
Third year	31	22.6
Fourth year	39	28.5
Fifth year	16	11.7
Total	137	100.00

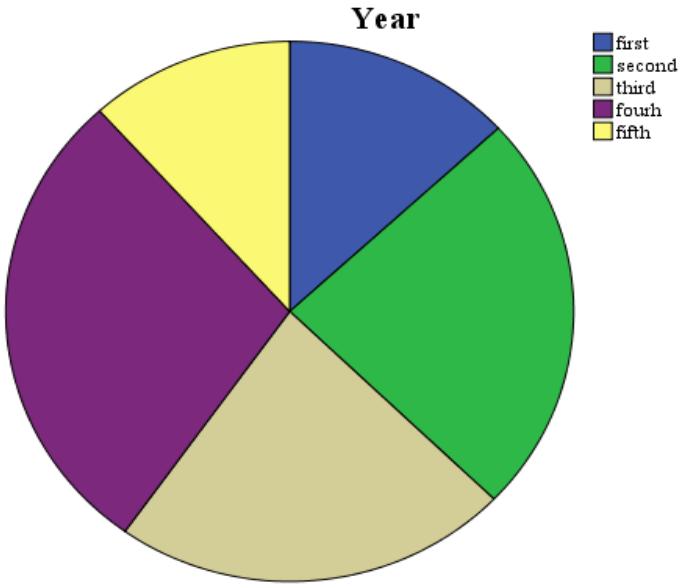

Figure 2: Academic year

The result shows that 13.1 percent of students are at first year, 24.1% in the second year, 22.6% in the third year, 28.5% forth year, 11.7% fifth year students who participated in the study.

Table 3: Male &Female Frequencies

Gender	**Frequency**	**Percentage**
Male	65	47.4%
Female	72	52.6%
Total	137	100.0%

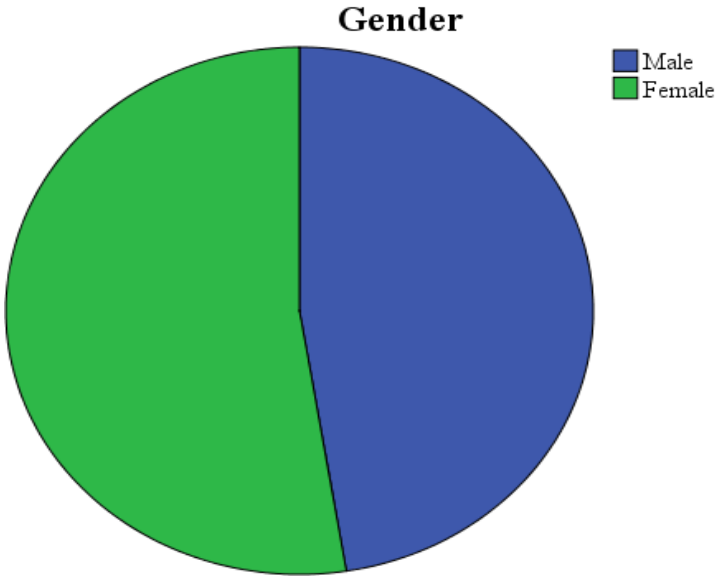

Figure 3: gender

There are 47.4% male and 52.6% female participated in the study.

Table 4: CGPA Frequencies

CGPA	Frequency	Percent
Less than 65	4	2.9%
66-71	40	29.2%
72-77	49	35.8%
78-83	22	16.1%
84-89	14	10.2%
more than 90	5	3.6%
0 "student of first year"	3	2.2%
Total	137	100.00%

There are 2.9% students with the CGPA less than 65, 29.2% with CGPA 66-71, 35.8% students with the CGPA within 72-77, 16.1% students within 78-83, 10.2% students with CGPA between 84 and 89, 3.6% students with CGPA more than 90, and the first year students the CGPA 0, 2.2%.

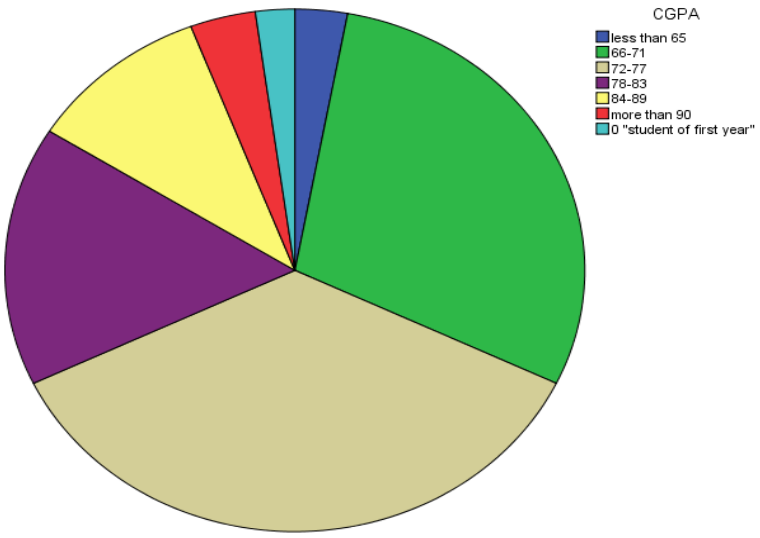

Figure 4: CGPA

Table 5: Means and Standard Deviations for the General Use of Computer

Statements	**Percentage**					**Mean**	**St. D**
	Daily	**2 or 3 times per week**	**Once per week**	**Once per month**	**Never**		
How often do you use the computer at home	79.6	13.9	4.4	1.5	0.7	1.299	0.69
How often do you use the computer at the university	19.7	36.5	15.3	14.6	13.9	2.664	1.32
How often do you use the computer at Other places (like Internet cafes, etc.?)	12.4	17.5	12.4	5.8	51.8	3.672	1.53
Overall						**2.545**	**1.18**

1.299 is the mean for using computer at home and standard deviation for it 0.690. For using computer at university the mean found is 2.664 while standard deviation 1.324. 3.672, 1.539 are the mean and standard deviation for using computer in other places respectively.

Table 6: Students' Pedagogical Use of ICT

Statements	**Percentage**	**Mean**	**St. D**
Do you need your computer for searching for information	Yes **96.4%** No **3.6%**	1.037	0.188
Do you need your computer for Preparing and making presentations	Yes **89.1%** No **10.9%**	1.110	0.313
Do you need your computer for communicating online with teachers	Yes **61.3%** No **38.7**	1.387	0.489
Do you need your computer for communicating online with other students	Yes **84.7%** No **15.3%**	1.153	0.362
Do you need your computer for	Yes **92.7%**	1.073	0.261

communicating online with friends	No **7.3%**		
Do you need your computer for communicating online with parents	Yes **81.0%** No **19.0%**	1.190	0.394
Overall	100.00%	1.158	0.335

As seen in Table 7, 96.4% of the respondents used computer for searching for information, 89.1% for preparing and making presentations, 61.3% for communicating online with teachers, 84.7% for communicating online with other students, 92.7% for communicating online with friends, and 81.0% for communicating online with parents. And the table show that the Mean for all statement is and standard deviation is (mean = 1.158, standard deviation = 0.335).

4.2 (Anova) Analysis of Independent Variable and All survey Items

Anova analysis was run for all independent variables and all questionnaire items to find the significant effect between various variables and to determine the relationship between dimensions of students' engagement.

Table 7: Anova Analysis of all Independent variables with All Questionnaire Items

Statements	**Faculty**	**Academic year**	**CGPA**	**Gender**
Is there a computer at home?	**Sig**	**Sig**	**Sig**	**Sig**
	.927	.446	.250	.365
Do you have Internet at home?	.868	.495	.941	.294
How long do you use the computer in your classroom lessons per week?	.844	.972	.107	.868
While at the university, how long do you use the computer apart from your classroom lessons, e.g. in library or computer room?	.835	.200	**.000**	.342
How often do you use the computer at home	.853	.614	.887	.545
How often do you use the computer at the university	**.012**	.598	**.034**	.717
How often do you use the computer at Other places (like Internet cafes, etc.)	**.017**	.100	.083	.064
Do you need your computer for searching for info	.095	.836	.181	.570

Do you need your computer for Preparing and making presentations	**.013**	.809	.820	.544
Do you need your computer for Communicating online with teachers	.619	.053	.200	.766
Do you need your computer for Communicating online with other students	.609	.738	.837	.986
Do you need your computer for Communicating online with friends	.849	.195	.443	.140
Do you need your computer for Communicating online with parents	.406	.227	.172	.471
Is there an ICT Room at your department?	**.003**	.143	.657	.236
Is there a computer in your classrooms?	**.006**	.177	.753	.281
How capable are you in using computers?	.757	.480	.715	.733
Which is your preferred way of using computers: working by yourself or working with a friend?	.205	.736	.432	.271
Have you used/are you using ICT tools in your work/with your classes?	.968	.285	.378	.591
Do you have any special training in ICT tools given to you by your university?	.578	.303	.280	.535
Are you registered to any courses which use ICT tools?	.068	.074	.179	.411
Is there a computer lab at your university?	.366	.446	.060	.918
Is there a computer lab at your department?	**.004**	.180	.274	.202
Are there any assistant teams to teach you how to use these tools?	.845	.293	.341	.165
How many times a week does you need a computer for Chat on line	.921	.970	.850	.138
How many times a week does you need a computer for Use e-mail	.941	.726	.179	.342
How many times a week does you need a computer for Browse the Internet for your work at the university	.734	.347	.477	.669
How many times a week does you need a computer for Download, upload or browse material from the university's website	.644	.400	.861	.338
How many times a week does you need a computer for Doing your homework using university computer	.136	.369	.208	.827
How many times a week does you need a computer for Doing group work and communicating with other student in	.546	.928	.909	.493

other universities				
ICT tools creates a nice atmosphere in the classroom	.611	.735	.624	.765
ICT tools facilitates my relationships with the group socially	.992	.957	.362	.434
ICT tools helps explaining my problems to the teachers	.748	.225	.495	.284
ICT assists me in asking others questions	.126	.380	.255	.363
ICT tools aids me in expressing my emotions freely	**.040**	.060	.297	.138
ICT tools makes the teacher pay more attention to us	.240	.389	.981	.489
ICT tools guides the teacher in the working methodology	.651	.184	.902	.310
ICT tools help me to do better in educational attainment	.128	.186	.779	.293
ICT tools assist me in evaluating my progress in researches better	.274	.658	.425	.165
ICT tools facilitates the presentation of content	.964	.446	.479	.821
I prefer it better when teachers use ICT tools in the classrooms	.890	.993	.186	.340
ICT improve student performance	.921	.625	.720	.516
ICT tools helps to integrate knowledge from various sources	**.039**	.585	.783	.087
ICT tools help me to obtain the knowledge that I need in my university	**.001**	.524	.702	.817
With ICT tools I do my academic homework faster and better	.109	.068	.544	.615
With ICT tools I develop my academic skills	.858	.749	.736	.531
With ICT tools I can exchange ideas with my colleagues	.971	.142	.417	.676
With ICT tools I can do my self-assessment	.763	.142	.656	.675
With ICT tools I can diagnose my mistakes in learning	.128	.902	.911	.257
With ICT tools I receive assistance from the teacher	.094	.387	.109	.300
ICT lets me exchange ideas with my teacher	**.020**	.666	.555	.314
Not enough computers	.739	.650	.537	.702
Not enough Internet- connected computers	.867	.173	.058	.162
Not enough interactive whiteboards	.523	.986	.500	.408
Outdated School computers and/or Broken ones	.237	.153	.216	.423
Teachers are not qualified to use ICT	.895	.695	.621	.247

tools				
Difficult in integrating ICT tools use into the curriculum	.482	.260	.248	.674
Having no pedagogical models on how to use ICT tools for learning	.850	.156	.821	.229
University schedule (fixed lessons time, etc.) i.e. not enough time	.231	.077	.619	.745
the inadequacy of computers / materials content in the university	.105	.642	.563	.468
Pressure of exam and test based curriculum	.995	.068	.380	.615
Presence of teachers not in favor of ICT tools usage at the university	.199	.462	.393	.253
The uncertainty of how beneficial of ICT tools is in teaching	.434	.662	.201	.152
Not having usage of ICT tools in teaching and learning as an objective	.653	.388	.484	.552

4.2.1 Anova Analysis of Faculty

Table 8 illustrates Anova analysis of faculty with all questionnaire items and the analysis shows that there are ten significant questions, namely: How often do you use the computer at the university, How often do you use the computer at Other places (like Internet cafes, etc.), Do you need your computer for Preparing and making presentations, Is there an ICT Room at your department?, Is there a computer in your classrooms?, Is there a computer lab at your department?, ICT tools aids me in expressing my emotions freely, ICT tools helps to integrate knowledge from various sources, ICT tools help me to obtain the knowledge that I need in my university, ICT lets me exchange ideas with my teacher.

Table 8: Anova Analysis of Faculty with survey items

Statements	df	Mean Square	F	Sig.
How often do you use the computer at the university	4	5.503	3.354	.012
	132	1.640		
	136			
How often do you use the computer at Other places (like Internet cafes, etc.)	4	6.990	3.136	.017
	132	2.229		
	136			
Do you need your computer for Preparing and making presentations	4	.304	3.308	.013
	132	.092		
	136			
Is there an ICT Room at your department?	4	.522	4.204	.003
	132	.124		
	136			
Is there a computer in your classrooms?	4	.750	3.788	.006
	132	.198		
	136			
Is there a computer lab at your department?	4	.387	4.064	.004
	132	.095		
	136			
ICT tools aids me in expressing my emotions freely	4	2.846	2.579	.040
	132	1.104		
	136			
ICT tools helps to integrate knowledge from various sources	4	1.618	2.603	.039
	132	.622		
	136			
ICT tools help me to obtain the knowledge that I need in my university	4	2.244	4.829	.001
	132	.465		
	136			
ICT lets me exchange ideas with my teacher	4	2.450	3.017	.020
	132	.812		
	136			

4.2.1.1 Crosstabulations of Faculty

Crosstabulations was made to all significant questions for faculty variables to see the relations between the significant items of survey and the question under consideration.

Table 9: The Faculty and Students Answers on Using Computer at the University

	How often do you use the computer at the university					Total
Faculty	**Daily**	**2 or 3 times a week**	**Once a week**	**Once a month**	**Never**	
Arts and Science	4	13	3	7	4	31
	12.9%	41.9%	9.7%	22.6%	12.9%	100.0 %
Engineering and Technology	7	19	14	10	10	60
	11.7%	31.7%	23.3%	16.7%	16.7%	100.0 %
Commerce and Business	4	15	1	0	3	23
	17.4%	65.2%	4.3%	.0%	13.0%	100.0 %
Agricultural Science	8	3	3	3	2	19
	42.1%	15.8%	15.8%	15.8%	10.5%	100.0 %
Others	4	0	0	0	0	4
	100.0%	.0%	.0%	.0%	.0%	100.0 %
Total	27	50	21	20	19	137
	19.7%	36.5%	15.3%	14.6%	13.9%	100.0 %

Table 9 shows that 31 students from Arts and Science, 4 (12.9%) students use the computer at the university every day while 13 use it 2 or 3 times a week with percentage 41.9%, 3 (9.7%) once a week, 7 (22.6%) once a month, and 4 (12.9%) answered that they never used computer at the university. 60 students participated in this survey from Engineering and Technology and their answers were; 7 (11.7%) use computer every day, 19 (31.7%) 2 or 3 times, 14 (23.3%) once a week, 10 (16.7%) once a month, and 10 (16.7%) never used it. 23 students from the faculty of Commerce and Business, they answers was ; 4 students with percentage 17.4% was daily use of computer at the university, 15 (65.2%) 2 or 3 times, 1 (4.3%) once a week, 3 (13%) never used it, and no one used it once a month. 19 students from Agricultural Science 42.1% of them use computer every day. From other faculties 4 students answered that they used it every day in university.

Table 10: The Faculty and Students Answers on Using Computer at Other Places (Like Internet Cafes, etc.)

	How Often Do You Use the Computer at Other Places (Like Internet Cafes, etc?)					
Faculty	**Daily**	**2 or 3 times a week**	**Once a week**	**Once a month**	**Never**	**Total**
Arts and Science	4	7	2	0	18	31
	12.9%	22.6%	6.5%	.0%	58.1%	100.0 %
Engineering & Technology	5	10	4	3	38	60
	8.3%	16.7%	6.7%	5.0%	63.3%	100.0 %
Commerce and Business	2	5	7	2	7	23
	8.7%	21.7%	30.4%	8.7%	30.4%	100.0 %
Agricultural Science	3	2	3	3	8	19
	15.8%	10.5%	15.8%	15.8%	42.1%	100.0 %
Others	3	0	1	0	0	4
	75.0%	.0%	25.0%	.0%	.0%	100.0 %
Total	17	24	17	8	71	137
	12.4%	17.5%	12.4%	5.8%	51.8%	100.0 %

31 from Arts and Science participated in this survey and their answers were; 4 students with percentage 12.9% said that they use computer in other places like internet cafe every day, 7 with percentage 22.6% used computer in internet cafe 2 or 3 times a week, 2 (6.5%) use it once a week, and 18 students (58.1%) never used other places. Due to Engineering & Technology faculty 60 students answer was as follows; 5 (8.3%) daily use of computer in other places like internet cafe, 10 (16.7%) 2 or 3 times, 4 (6.7%) once a week, 3 (5.0%) once a month, and 38 (63.3%) never used it. 23 of students were participated in this survey from Commerce and Business; 2 (8.7%) of them answered were daily use, 5 (21.7%) 2 or 3 times a week, 7 (30.4%)

once a week, 2 (8.7%) once a month, 7 (30.4%) never used it. 19 Agricultural Science faculty; 3 (15.8%) of the students used it every day, 2 (10.5%) 2 or 3 times a week, 3 students (15.8%) once a week and 3 once a month, while never using it students answers was 8 with percentage (42.1%). According to other faculties students respondents were 4 three (75.0%) of them used computer in other places and the other one use it once a week.

Table 11: The Faculty and Students Answers on Using Computer for Preparing and Making Presentations

	Do you need your computer for Preparing and Making Presentations			**Total**
		yes	**No**	
Faculty	Arts and Science	29	2	31
		93.5%	6.5%	100.0%
	Engineering & Technology	54	6	60
		90.0%	10.0%	100.0%
	Commerce and Business	16	7	23
		69.6%	30.4%	100.0%
	Agricultural Science	19	0	19
		100.0%	.0%	100.0%
	others	4	0	4
		100.0%	.0%	100.0%
Total		122	15	137
		89.1%	10.9%	100.0%

Table 11 illustrates students' uses of computer for preparing and making presentation with regard to department; In Arts and Science 93.5% of students use computer to prepare presentations and 6.5% don't use computer for this purpose. 54 (90.0%) students in Engineering and Technology use computer to make presentation while 6 (10.0%) said no. Commerce and business faculty 16 (69.6%) of students said yes and 7 (30.4%) said no. All students answer on the questionnaire in Agricultural Science and in other faculties use computer to make and prepare presentation.

Table 12: The Faculty and Students Answers on Having a Computer Lab at Their Department

		Is there a computer lab at your department?		Total
		Yes	**No**	
Faculty	Arts and Science	29	2	31
		93.5%	6.5%	100.0%
	Engineering & Technology	55	5	60
		91.7%	8.3%	100.0%
	Commerce and Business	22	1	23
		95.7%	4.3%	100.0%
	Agricultural Science	12	7	19
		63.2%	36.8%	100.0%
	Others	3	1	4
		75.0%	25.0%	100.0%
Total		121	16	137
		88.3%	11.7%	100.0%

In Arts and Science 29 of 31 (93.5%) answered that they have a computer lap in their department and 2 (6.5%) of students answered that there is no computer lap in there is no computer lap in their department. 55 (91.7%) students from Engineering and Technology faculty said that they have computer but 5 (8.3%) don't have. One student from Commerce and Business said no and 22 (95%) students have a computer lap. In Agricultural Science 12 (63.2%) said yes while 7 (36.8%) said no. Three of the four students from other faculties have a computer lap and one doesn't have.

Table 13: The Faculty and Students Answers if ICT tools aid them in expressing their emotions freely

	ICT tools aids me in expressing my emotions freely					**Total**
Faculty	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**	
Arts and Science	8	15	6	1	1	31
	25.8%	48.4%	19.4%	3.2%	3.2%	100.0%
Engineering & Technology	19	24	12	3	2	60
	31.7%	40.0%	20.0%	5.0%	3.3%	100.0%
Commerce and Business	3	11	5	1	3	23
	13.0%	47.8%	21.7%	4.3%	13.0%	100.0%
Agricultural Science	5	5	5	3	1	19
	26.3%	26.3%	26.3%	15.8%	5.3%	100.0%
Others	4	0	0	0	0	4
	100.0%	.0%	.0%	.0%	.0%	100.0%

23 (74.2%) of participants from Art and Science agreed the item “ICT tools aids me in expressing my emotions freely” and 2 (6.4%) disagreed, 43 (71.7%) of students from Engineering and technology faculty also agreed while 5 (8.3%) disagreed, 14 (60.8%) of students who are studying in Commerce and Business agreed that ICT tools aids them in expressing their emotions freely whilst 4 (17.3%) disagreed, 10 (52.6%) of Agricultural Science students also agreed item whilst 4 (21.1%), 4 (100%) of the participants in this study who are studying in other faculties agreed while no one disagreed.

Table 14: The Faculty and Students Answers on ICT Tools Help to Integrate Knowledge from Various Sources

	ICT tools help to integrate knowledge from various sources					**Total**
Faculty	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**	
Arts and Science	17	12	2	0	0	31
	54.8%	38.7%	6.5%	.0%	.0%	100 %

Engineering & Technology	22	34	4	0	0	60
	36.7%	56.7%	6.7%	.0%	.0%	100.0 %
Commerce and Business	8	8	4	1	2	23
	34.8%	34.8%	17.4%	4.3%	8.7%	100.0 %
Agricultural Science	9	9	0	1	0	19
	47.4%	47.4%	.0%	5.3%	.0%	100.0 %
Others	2	1	0	1	0	4
	50.0%	25.0%	.0%	25.0%	.0%	100.0 %

31 of the sample from faculty of Arts and Science; 29 (93.5%) of the students agreed that ICT tools help them to integrate knowledge from various sources, zero students disagreed whilst two students selected the answer neutral. 60 of the study sample from the faculty of Engineering and Technology; 56 (93.4%) participants agreed the item wile 0 students disagreed it whereas, 4 (6.7%) students undecided. 23 of the participants in this survey studying Commerce and Business their answers on the item as follows : 16 students agreed, 3 students disagreed the item, and 4 students neutral. In Agricultural faculty 18 (94.8%) agreed whilst one student disagreed. 4 students from other faculties answers was as follows; three agreed and one disagreed.

Table 15: The Faculty and Students Answers on ICT tools help them to obtain the knowledge that we need in their university

	ICT tools help me to obtain the knowledge that we need in my university				
Faculty	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Total**
Arts and Science	14	17	0	0	31
	45.2%	54.8%	.0%	.0%	100.0 %
Engineering & Technology	23	34	3	0	60
	38.3%	56.7%	5.0%	.0%	100.0 %

Commerce and Business	6	9	5	3	23
	26.1%	39.1%	21.7%	13.0%	100.0 %
Agricultural Science	10	7	1	1	19
	52.6%	36.8%	5.3%	5.3%	100.0 %
Others	4	0	0	0	4
	100.0%	.0%	.0%	.0%	100.0 %

Table 15 indicates that all 31 of the participants in Arts and Science agreed that ICT tools help students to obtain the knowledge that they need in their university similarly other students' faculty 4 students agreed that while 57 (95%) of participants in this study in Engineering and Technology agreed while 5% disagreed, 15 (56.2%) of Commerce and Business students agreed the item while 3 disagreed and 5 were neutral. One students from Agricultural Science with percentage 5.3% disagreed the same as neutral answer and 17 (89.4%) agreed.

Table 16: The Faculty and Students Answers on ICT Tools Let Students Exchange Ideas with Their Teacher

	ICT tools lets me exchange ideas with my teacher					
Faculty	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**	**Total**
Arts and Science	10	11	6	3	1	31
	32.3%	35.5%	19.4%	9.7%	3.2%	100.0%
Engineering & Technology	14	32	12	2	0	60
	23.3%	53.3%	20.0%	3.3%	.0%	100.0%
Commerce and Business	6	11	2	2	2	23
	26.1%	47.8%	8.7%	8.7%	8.7%	100.0%
Agricultural Science	8	11	0	0	0	19
	42.1%	57.9%	.0%	.0%	.0%	100.0%
Others	4	0	0	0	0	4
	100.0%	.0%	.0%	.0%	.0%	100.0%

21 (67.8%) of participants from Arts and Science agreed the item “ICT tools lets me exchange ideas with my teacher”, 46 (76.6%) of students from Engineering faculty also agreed, 17 (73.9%) of students who are studying in Commerce and Business agreed that ICT tools let them exchange ideas with their teachers, all participants which from Agricultural Science and other faculties also agreed the item.

4.2.2 Anova Analysis of CGPA

Table 17 illustrates Anova analysis of CGPA with all questionnaire items and the result shows that there are two significant questions, namely: While at the university, how long do you use the computer apart from your classroom lessons, e.g. in library or computer room?, How often do you use the computer at the university.

Table 17: Anova Analysis of CGPA with Questionnaire Items

Statements	df	Mean Square	F	Sig.
While at the university, how long do you use the computer apart from your classroom lessons, e.g. in library or computer room?	6	12.716	5.656	.000
	130	2.248		
	136			
How often do you use the computer at the university	6	3.902	2.358	.034
	130	1.655		
	136			

4.2.2.1 Crosstabulations of CGPA

Crosstabulations was made to all significant questions for CGPA variable to see the relations between the significant items of survey and the question under consideration.

Table 18: CGPA and Students Answers on Using Computer at the University as a part of Classroom lessons.

CGPA	While at the university, how long do you use the computer apart from your classroom lessons, e.g. in library or computer room?						Total
	I never use the computer at the university outside classroom lessons	About half an hour per week	About an hour per week	About two hours per week	About three hours per week	About four or more hours per week	
less than 65	2	1	0	1	0	0	4
	50.0%	25.0%	.0%	25.0%	.0%	.0%	100.0 %
66-71	25	8	3	3	0	1	40
	62.5%	20.0%	7.5%	7.5%	.0%	2.5%	100.0 %
72-77	24	7	6	8	1	3	49
	49.0%	14.3%	12.2%	16.3%	2.0%	6.1%	100.0 %
78-83	3	3	4	3	2	7	22
	13.6%	13.6%	18.2%	13.6%	9.1%	31.8%	100.0 %
84-89	8	1	2	1	2	0	14
	57.1%	7.1%	14.3%	7.1%	14.3%	.0%	100.0 %
more than 90	1	1	2	0	0	1	5
	20.0%	20.0%	40.0%	.0%	.0%	20.0%	100.0 %
0 "student of first year"	3	0	0	0	0	0	3
	100.0%	.0%	.0%	.0%	.0%	.0%	100.0 %

2 (50%) students of the CGPA within less than 65 never used computer at the university outside classrooms and 50 % used it as a part of classroom lessons. 25

(62.5%) students of CGPA within 66-71 never used it moreover, 15 (37.5%) used it, 8 of them used it half an hour, 3 answered both an hour per week and two hours.

25 (50.9%) students who their CGPA within 72 to 77 used it outside classrooms whilst 24 (49.0%) of the students in the same CGPA class never used it. 3(13.6%) students of the CGPA from 78 to 83 said that they never used computer at the university outside classrooms whilst 19 (86.3%) said that they used it.

14 of participating students with CGPA from 84-89; 6 (42.8%) of them was used computer outside university, the other 8 students one of them used it half an hour per week, another two used it about an hour, and the other one used it four or more hours per week. Students' answers on the item "While at the university, how long do you use the computer apart from your classroom lessons, e.g. in library or computer room" with CGPA more than 90 was as follows; 1 (20.0%) never used it in the university outside the classroom lessons, 1 (20.0%) used it half an hour per week, 2 (40.0%) about an hour per week, 1 (20.0%) four or more hours. All participating students from first year with CGPA zero said that they never used the computer at the university outside classroom lessons.

Table 19: CGPA and Students Answers on how often do you use the computer at the university

	How often do you use the computer at the university					**Total**
	Daily	**2 or 3 times a week**	**Once a week**	**Once a month**	**Never**	
less than 65	0	2	0	1	1	4
	.0%	50.0%	.0%	25.0%	25.0%	100.0%
66-71	9	13	6	6	6	40
	22.5%	32.5%	15.0%	15.0%	15.0%	100.0%
72-77	3	21	5	11	9	49
	6.1%	42.9%	10.2%	22.4%	18.4%	100.0%

78-83	8	8	6	0	0	22
	36.4%	36.4%	27.3%	.0%	.0%	100.0%
84-89	3	5	2	2	2	14
	21.4%	35.7%	14.3%	14.3%	14.3%	100.0%
more than 90	2	1	2	0	0	5
	40.0%	20.0%	40.0%	.0%	.0%	100.0%
0 "student of first year"	2	0	0	0	1	3
	66.7%	.0%	.0%	.0%	33.3%	100.0%

When analyzed: two students within percentage 40.0% of the CGPA more than 90 said they use the computer in at the university every day while 1 (20.0%) said they used it 2 to 3 times a week and 2 (40.0%) used it once a week. 14 students participate within CGPA 84-89 and the answer was as follows; 3 (21.4%) used computer at the university every day, 5 (35.7%) two or three times a week, 2 (14.2%) once a week, 2 (14.2%) once a month, 2 (14.2%) never used it. 22 student of CGPA from 78 to 83 answered the item “How often do you use the computer at the university” and there answer was; 8 (36.4%) used it every day, also 8 used it 2 or 3 times a week, and 6 (27.3%) used it once a week. 3 (6.1%) students who CGPA 72-77 are using computer at university every day whilst 21 (42.9%) students use it 2 or 3 times a week. 40 students who CGPA in category 66-71 answered on the questionnaire as follows; 9 (22.5%) daily use, 13 (32.5%) 2 or 3 times a time, 6 (15.0%) once a week, 6 (15.0%) once a month, 6 (15.0%) never used it. With regard to CGPA less than 65, students answered were; 2 (50.0%) 2 or 3 times a week, 1 (25.0%) once a month, 1 (23.0%) never.

4.2.3 Anova Analysis of Having Computer at Home

Table 20 illustrates Anova analysis of having computer at home with all questionnaire items and the result shows that there is one significant question; have you used/are you using ICT tools in your work/with your classes?

Table 20: Anova Analysis of Having Computer at Home

Statement	df	Mean Square	F	Sig.
Have you used/are you using ICT tools in your work/with your classes?	1	.837	4.051	.046
	135	.207		
	136			

4.2.3.1 Crosstabulations of Having Computer at Home

Crosstabulations was made to all significant questions for having computer at home variable to see the relations between the significant items of survey and the question under consideration.

Table 21: Students Answers of Having Computer at Home with the Item

		Have you used/are you using ICT tools in your work/with your classes?		Total
		yes	No	
Is there a computer at home?	yes	95	38	133
		71.4%	28.6%	100.0%
	No	1	3	4
		25.0%	75.0%	100.0%
Total		96	41	137
		70.1%	29.9%	100.0%

95 (71.4%) of students who have computer at home said that they used ICT tools in their classroom lessons while 38 (28.6%) said no.

4.2.4 Anova Analysis of having Internet at Home

Table 22 shows Anova analysis of having internet at home with all questionnaire items and the result shows that there are seven significant questions; How many times a week does you need a computer for Chat on line, ICT tools aids me in expressing my emotions freely, ICT tools guides the teacher in the working methodology, ICT tools help me to do better in educational attainment, ICT tools facilitates the presentation of content, I prefer it better when teachers use ICT tools in the classrooms, With ICT tools I do my academic homework faster and better.

Table 22: Anova Analysis of having Internet at Home with Questionnaire Items

Statements	df	Mean - Square	F	Sig.
How many times a week does you need a computer for Chat on line	1	2.574	5.759	.018
	135	.447		
	136			
ICT tools aids me in expressing my emotions freely	1	7.955	7.203	.008
	135	1.105		
	136			
ICT tools guides the teacher in the working methodology	1	3.826	4.928	.028
	135	.776		
	136			
ICT tools help me to do better in educational attainment	1	4.000	5.243	.024
	135	.763		
	136			
ICT tools facilitates the presentation of content	1	5.225	9.252	.003
	135	.565		
	136			
I prefer it better when teachers use ICT tools in the classrooms	1	4.702	7.402	.007
	135	.635		
	136			
With ICT tools I do my academic homework faster and better	1	4.702	6.493	.012
	135	.724		
	136			

4.2.4.1 Crosstabulations of Having Internet at Home

Crosstabulations was made to all significant questions for having internet at home variable to see the relations between the significant items of survey and the question under consideration.

Table 23: Students Answers of Having Internet at Home with the Item

		Do you have Internet at home?		Total
		Yes	No	
How many times a week does you need a computer for Chat on line	Never	97	0	97
		71.3%	.0%	70.8%
	1 or 2 Times a month	25	0	25
		18.4%	.0%	18.2%
	1 or 2 Times a week	14	1	15
		10.3%	100.0%	10.9%
Total		136	1	137
		100.0%	100.0%	100.0%

136 from 137 of students have Internet in their home, 71.3% of them said that they never need a computer for Chat on line, 10.3% need computer 1 or 2 times a week, while 18.4% need it 1 or 2 times a month.

Table 24: Students Answers of Having Internet at Home with the Item.

		Do you have Internet at home?		Total
		Yes	No	
ICT tools aids me in expressing my emotions freely	Strongly agree	39	0	39
		28.7%	.0%	28.5%
	Agree	55	0	55
		40.4%	.0%	40.1%
	Neutral	28	0	28
		20.6%	.0%	20.4%
	Disagree	8	0	8
		5.9%	.0%	5.8%
	Strongly disagree	6	1	7
		4.4%	100.0%	5.1%
Total		136	1	137
		100.0%	100.0%	100.0%

94 (68.6%) of students whose have internet in their home agreed that ICT tools aids them in expressing their emotions freely. On the other hand 14 (10.9%) disagreed and 28 (20.4%) were neutral.

Table 25: Students Answers on Having Internet at Home with the Item.

		Do you have Internet at home?		**Total**
		Yes	No	
ICT tools guides the teacher in the working methodology	Strongly agree	37	0	37
		27.2%	.0%	27.0%
	Agree	68	0	68
		50.0%	.0%	49.6%
	Neutral	22	0	22
		16.2%	.0%	16.1%
	Disagree	7	1	8
		5.1%	100.0%	5.8%
	Strongly disagree	2	0	2
		1.5%	.0%	1.5%
Total		136	1	137
		100.0%	100.0%	100.0

136 of respondents have Internet at home they answers as follows; 77.2% of students agreed on the item “ICT tools make the teacher pay more attention to us”, 16.2% neutral, 6.6% disagreed.

Table 26: Students Answers on Having Internet at Home with the Item

		Do you have Internet at home?		Total
		Yes	No	
ICT tools help me to do better in educational attainment	Strongly agree	39	0	39
		28.7%	.0%	28.5%
	Agree	70	0	70
		51.5%	.0%	51.1%
	Neutral	18	0	18
		13.2%	.0%	13.1%
	Disagree	7	1	8
		5.1%	100.0%	5.8%
	Strongly disagree	2	0	2
		1.5%	.0%	1.5%
Total		136	1	137
		100.0%	100.0%	100.0%

109 (80.2%) of students agreed that ICT tools help students to do better in educational attainment while 7 (6.6%) disagreed and 18 (13.2%) were neutral.

Table 27: Students Answers on Having Internet at Home with the Item

		Do you have Internet at home?		Total
		Yes	No	
ICT tools facilitate the presentation of content	Strongly agree	60	0	60
		44.1%	.0%	43.8%
	Agree	60	0	60
		44.1%	.0%	43.8%
	Neutral	12	0	12
		8.8%	.0%	8.8%
	Disagree	4	1	5
		2.9%	100.0%	3.6%
Total		136	1	137
		100.0%	100.0%	100.0%

88.2% of students' respondents agreed on the item "ICT tools facilitate the presentation of content", 8.8% answers were neutral, and 2.9% disagreed.

Table 28: Students Answers on Having Internet at Home with the Item

		Do you have Internet at home?		Total
		Yes	No	
I prefer it better when teachers use ICT tools in the classrooms	Strongly agree	52	0	52
		38.2%	.0%	38.0%
	Agree	61	0	61
		44.9%	.0%	44.5%
	Neutral	18	0	18
		13.2%	.0%	13.1%
	Disagree	5	1	6
		3.7%	100.0%	4.4%
Total		136	1	137
		100.0%	100.0%	100.0%

113 (83.1%) of students who have internet at their home prefer to use ICT tools in classroom lessons by teachers nevertheless 5 (3.7%) disagreed, 18 (13.2%) neutral.

Table 29: Students Answers on Having Internet at Home with the Item

		Do you have Internet at home?		Total
		Yes	No	
With ICT tools I do my academic homework faster and faster	Strongly agree	55	0	55
		40.4%	.0%	40.1%
	Agree	57	0	57
		41.9%	.0%	41.6%
	Neutral	18	0	18
		13.2%	.0%	13.1%
	Disagree	5	1	6
		3.7%	100.0%	4.4%
	Strongly disagree	1	0	1
		.7%	.0%	.7%
Total		136	1	137
		100.0%	100.0%	100.0%

112 (82.3%) students agreed that With ICT tools students do their academic homework faster and faster, 6 (4.4%) disagreed while 18 (13.2%) were neutral.

4.2.5 Anova Analysis of Using Computer in Classroom Lessons per Week

Table 30 shows Anova analysis of using computer in classroom lessons per week with all questionnaire items and the result shows that there are ten significant questions; How often do you use the computer at the university, Is there a computer in your classrooms?, Are there any assistant teams to teach you how to use these tools?, ICT tools helps explaining my problems to the teachers, ICT tools makes the teacher pay more attention to us, ICT tools guides the teacher in the working methodology, ICT improve student performance, ICT tools help me to obtain the knowledge that we need in my university, With ICT tools I can do my self-assessment, With ICT tools I can diagnose my mistakes in learning.

Table 30: Anova Analysis of Using Computer in Classroom Lessons per Week with Questionnaire Items

Statements	df	Mean Square	F	Sig.
How often do you use the computer at the university	2	8.364	5.052	.008
	134	1.655		
	136			
Is there a computer in your classrooms?	2	1.636	8.482	.000
	134	.193		
	136			
Are there any assistant teams to teach you how to use these tools?	2	1.176	5.007	.008
	134	.235		
	136			
ICT tools helps explaining my problems to the teachers	2	3.725	4.269	.016
	134	.873		
	136			
ICT tools makes the teacher pay more attention to us	2	5.390	5.006	.008
	134	1.077		
	136			
ICT tools guides the teacher in the working methodology	2	3.247	4.260	.016
	134	.762		
	136			
ICT improve student performance	2	3.449	5.320	.006
	134	.648		
	136			
ICT tools help me to obtain the knowledge that we need in my university	2	2.709	5.593	.005
	134	.484		
	136			
With ICT tools I can do my self-assessment	2	2.612	3.553	.031
	134	.735		
	136			
With ICT tools I can diagnose my mistakes in learning	2	4.028	6.575	.002
	134	.613		
	136			

4.2.5.1: Crosstabulations of Using Computer in Classroom Lessons per Week

Crosstabulations was made to all significant questions for using computer in classroom lessons per week variable to see the relations between the significant items of survey and the question under consideration.

Table 31: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		How long do you use the computer in your classroom lessons per week?			
		0 – 30 minutes a week	31 – 60 minutes a week	more than 60 minutes a week	Total
How often do you use the computer at the university	Daily	13	4	10	27
		17.3%	19.0%	24.4%	19.7%
	2 or 3 times a week	22	8	20	50
		29.3%	38.1%	48.8%	36.5%
	Once a week	10	4	7	21
		13.3%	19.0%	17.1%	15.3%
	Once a month	15	3	2	20
		20.0%	14.3%	4.9%	14.6%
	Never	15	2	2	19
		20.0%	9.5%	4.9%	13.9%
Total		75	21	41	137
		100.0%	100.0%	100.0%	100.0%

75 students said they spend 0-30 minutes time a week to study during classroom lessons, 13 (17.3%) of them said that they use it every day, 22 (29.3%) said they used it 2 to 3 times a week, 10 (13.3%) used it once a week, 15 (20%) once a month, and 15 (20%) said they never used it. 21 students said they spend 31-60 minutes using computer to study in classrooms, 4 (19%) said they used computer at university daily, 8 (38.1) used it 2 or 3 times a week, 4 (19%) used it once a week, 3 (14.3%) once a month, 2 (9.5%) never used computer at university. 41 said they use computer in classroom lessons per week more than 60 minutes, 24.4% of them used computer at university every day, 48.8% use it 2 or 3 times a week, 17.1% one a week, 4.9% once a month, while 4.9% never spend time to use computer at university.

Table 32: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		Is there a computer in your classrooms?		Total
		Yes	No	
How long do you use the computer in your classroom lessons per week?	0 – 30 minutes a week	14	61	75
		18.7%	81.3%	100.0%
	31 – 60 minutes a week	13	8	21
		61.9%	38.1%	100.0%
	more than 60 minutes a week	15	26	41
		36.6%	63.4%	100.0%
Total		42	95	137
		30.7%	69.3%	100.0%

75 students are using computer 0_30 minutes per week, 14 (18.7%) of them said that they have computer in their classrooms while 61 (81.3%) don't have. 61% of students have a computer in their classroom lesson and they use it in their classroom 31_60 minutes per week and the other 38.1% don't have. 15 (36.6%) of students who use computer at classroom lessons per week they answered that they have computer in their classrooms while 26 (63.4%) don't have.

Table 33: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		Are there any assistant teams to teach you how to use these tools?		Total
		Yes	No	
How long do you use the computer in your classroom lessons per week?	0 – 30 minutes a week	36	39	75
		48.0%	52.0%	100.0%
	31 – 60 minutes a week	18	3	21
		85.7%	14.3%	100.0%
	more than 60 minutes a week	22	19	41
		53.7%	46.3%	100.0%
Total		76	61	137
		55.5%	44.5%	100.0%

75 students said they use computer 0-30 minutes a week in classroom, 36 said that they have assistant teams to teach them how to use ICT tools while 39 said they do don't have. In 31-60 minutes a week, 18 (85.7%) said yes they have assistant teams to help them whilst 3 (14.3%) said no. 22 (53.7%) students said they spend more than 60 minutes a week using computer in classroom and also they have assistant teams to teach them how to use ICT tools and 19 (46.3%) don't have.

Table 34: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		How long do you use the computer in your classroom lessons per week?			Total
		0 – 30 minutes a week	31 – 60 minutes a week	more than 60 minutes a week	
ICT tools helps explaining my problems to the teachers	Strongly agree	12	6	21	39
		16.0%	28.6%	51.2%	28.5%
	Agree	35	8	11	54
		46.7%	38.1%	26.8%	39.4%
	Neutral	19	6	6	31
		25.3%	28.6%	14.6%	22.6%
	Disagree	9	1	2	12
		12.0%	4.8%	4.9%	8.8%
	Strongly disagree	0	0	1	1
		.0%	.0%	2.4%	.7%
Total		75	21	41	137
		100.0%	100.0%	100.0%	100.0

93 (67.9%) of students in total agreed that ICT tools helps them in explaining their problems to their teachers while 13 (9.5%) disagreed and 31 (22.6%) are neutral about It.

Table 35: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		How long do you use the computer in your classroom lessons per week?			Total
		0 – 30 minutes a week	31 – 60 minutes a week	more than 60 minutes a week	
ICT tools makes the teacher pay more attention to us	Strongly agree	16	6	22	44
		21.3%	28.6%	53.7%	32.1%
	Agree	25	9	10	44
		33.3%	42.9%	24.4%	32.1%
	Neutral	20	6	4	30
		26.7%	28.6%	9.8%	21.9%
	Disagree	13	0	4	17
		17.3%	.0%	9.8%	12.4%
	Strongly disagree	1	0	1	2
		1.3%	.0%	2.4%	1.5%
Total		75	21	41	137
		100.0%	100.0%	100.0%	100.0%

41 (54.6%) of students who use computer 0_30 minutes per week in classrooms agreed that ICT tools makes the teacher pay more attention to them while 14 (18.6%) disagreed and 20 (26.7%) were neutral. 71.5% used it 31_60 minutes agreed on the item and 28.6% were neutral. Students who use computer more than 60 minutes per week answers were as follows; 32 (78.1%), 5 (12.2%) disagreed, 30 (21.9%) neutral.

Table 36: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		How long do you use the computer			Total
		0 – 30	31 – 60	more than	
ICT tools guides the teacher in the working methodology	Strongly agree	12	4	21	37
		16.0%	19.0%	51.2%	27.0%
	Agree	41	13	14	68
		54.7%	61.9%	34.1%	49.6%
	Neutral	16	3	3	22
		21.3%	14.3%	7.3%	16.1%
	Disagree	5	1	2	8
		6.7%	4.8%	4.9%	5.8%
	Strongly disagree	1	0	1	2
		1.3%	.0%	2.4%	1.5%
Total		75	21	41	137
		100.0%	100.0%	100.0%	100.0

105 of respondents agreed on the item “ICT tools guides the teacher in the working methodology”; 53 of them use computer 0_30 minutes in classroom lessons per week, 17 use it 31_60 minutes, and 35 use computer more than 60 minutes. While 10 disagreed and 22 neutral.

Table 37: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		How long do you use the computer in your classroom lessons per week?			Total
		0 – 30 minutes a week	31 – 60 minutes a week	more than 60 minutes a	
ICT improve student performance	Strongly agree	18	7	22	47
		24.0%	33.3%	53.7%	34.3%
	Agree	38	10	15	63
		50.7%	47.6%	36.6%	46.0%
	Neutral	13	4	3	20
		17.3%	19.0%	7.3%	14.6%
	Disagree	6	0	1	7
		8.0%	.0%	2.4%	5.1%
Total		75	21	41	137
		100.0%	100.0%	100.0%	100.0

Table 37 shows perception of student toward using ICT to improve student performance with using computer in classroom per week and the result show that 56 (74.7%) of students who use computer 0_30 minutes agreed on the item, 13 (17.3%) were neutral, and 6 (8%) disagreed. In the period 31_60 minutes 17 (80.9%) of students agreed while no one disagreed and 4 (19%) neutral. And students who use computer more than 60 minutes 37 (90.3%) agreed, 3 (7.3%) neutral, 1 (2.4%) disagreed.

Table 38: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		How long do you use the computer in your classroom lessons per week?			Total
		0 – 30 minutes a week	31 – 60 minutes a week	more than 60 minutes a week	
ICT tools help me to obtain the knowledge that we need in my university	Strongly agree	20	8	29	57
		26.7%	38.1%	70.7%	41.6%
	Agree	48	11	8	67
		64.0%	52.4%	19.5%	48.9%
	Neutral	4	2	3	9
		5.3%	9.5%	7.3%	6.6%
	Disagree	3	0	1	4
		4.0%	.0%	2.4%	2.9%
Total		75	21	41	137
		100.0%	100.0%	100.0%	100.0%

90.5% of answers agreed that ICT tools help students to obtain their knowledge that they need in their university, 6.6% neutral and 2.9% disagreed.

Table 39: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		How long do you use the computer in your classroom lessons per week?			Total
		0 – 30 minutes a week	31 – 60 minutes a week	more than 60 minutes a week	
With ICT tools I can do my self-assessment	Strongly agree	16	4	20	40
		21.3%	19.0%	48.8%	29.2%
	Agree	37	8	14	59
		49.3%	38.1%	34.1%	43.1%
	Neutral	19	8	4	31
		25.3%	38.1%	9.8%	22.6%
	Disagree	2	1	3	6
		2.7%	4.8%	7.3%	4.4%
	Strongly disagree	1	0	0	1
		1.3%	.0%	.0%	.7%
Total		75	21	41	137
		100.0%	100.0%	100.0%	100.0%

The answer on the item "With ICT tools students can do their self-assessment" was as follows; 0_30 minutes: 70.6% agreed, 25.3% neutral, 4% disagree. 31_60 minutes: 57.1% agreed, 38.1% neutral, 4.8% disagreed. More than 60 minutes: 82.9% agreed, 9.8% neutral, 7.3% disagreed.

Table 40: Students Answers on Using Computer in Classroom Lessons per Week with the Item

		How long do you use the computer in your classroom lessons per week?			Total
		0 – 30 minutes a week	31 – 60 minutes a week	more than 60 minutes a week	
With ICT tools I can diagnose my mistakes in learning	Strongly agree	18	6	25	49
		24.0%	28.6%	61.0%	35.8%
	Agree	38	10	12	60
		50.7%	47.6%	29.3%	43.8%
	Neutral	17	3	3	23
		22.7%	14.3%	7.3%	16.8%
	Disagree	2	2	1	5
		2.7%	9.5%	2.4%	3.6%
Total		75	21	41	137
		100.0%	100.0%	100.0%	100.0%

56 students who use computer 0_30 minutes a week agree that with ICT tools students can diagnose their mistakes in learning while 16 students of using computer 31_60 minutes agree about it. Furthermore, 37 students of using it more than 60 minutes also agreed. 23 were neutral with ICT tools students can diagnose their mistakes in learning while 5 disagreed.

Chapter 5

CONCLUSION

The current study performed to investigate the students' perception of Palestine Technical University students regarding the impact of using ICT tools for educational purposes. The data acquired by distributing a survey provided the researcher with an overall insight on the topic, finding and discussion will be present in this chapter from students' perception and in this chapter the author will present the answer of research question and sub-question. Questionnaire was distributed and collected for this purpose; moreover the end of the chapter will determine the students' perception for using ICT tools for educational purposes.

5.1 Summary of Findings

The main purpose of the research was to investigate and analyze the perception of students of Palestine Technical University towards educational use of ICT tools. The study analyzed students' perception with regard to gender, faculty, academic year, CGPA, existence of computer at home, existence of internet at home, using computer in classroom lessons per week. The study conducted to university students and the number of participants 137 respondents, qualitative research methodology was used to gather and analyze the data. The questionnaire which was published have two sections, the first section include information about students; gender, academic year, faculty, CGPA, having computer at home, having internet at home, using of computer in classroom lessons per week.

In the research, it was found out that ICT tools play very important role in today education. It is widely believed that the use of ICT in education enable students to do their school work rapidly, making the school work more flexible for both the instructors and the students. There are so many ways Information and communication Technology is used in education. For example, when asked the students their perception of how they use ICT tools in their academic task, some said it helps to create a pleasant atmosphere in the classrooms. This basically means the use of ICT cause better communication in classrooms, students no longer need to go to class with big text books and writing much notes in classrooms instead they study in class with computer whereby the lectures are presented on a projector screen, lectures are carried out using ICT tools. Also it was found that using ICT in institution (like Palestine Technical University) makes students to do their academic homework faster and better. This relate with how they use ICT tools outside the classrooms or at home.

5.2 Discussions

The following section shedding the light on the answers of research questions and sub-question that mentioned in first chapter.

5.2.1. What are students' pedagogical uses of ICT in learning in PTU?

The previous chapters explained the importance of ICT in today's education. The pedagogical uses of ICT in learning help students in their academic work and make learning more flexible and dynamic. There are many uses of information and communication technology in learning and teaching. For example, in questionnaires when students answers on how they use ICT tools their schools they answer that ICT tools help them in searching for information, preparing and making presentations, communicating online with teachers, students, friends, and parents. This means that

ICT tools improve communication in learning system and this make the level of performance better and communication lets them exchange ideas with teachers. Students with ICT tool dent need to go to university with big books and notebooks, they carry their laptops or iPod's or mobiles and learn through it, this will create a nice atmosphere in classrooms. Also the research found that ICT tools in Palestine Technical University help their students in making academic work faster and better and help them in develop their academic skills. ICT tools helps students in integrating knowledge from various sources, and this help them in doing homework faster and better and develop their academic skills.

In conclusion, the study found that students used computer for Preparing and making presentations, searching information, communicating online with other students, communicating online with teachers, communicating online with friends, and chatting online with their parents. Moreover, this study found that student' uses of ICT tools to support their learning was high.

5.2.2 What are students' perceptions of ICT tools integration into learning and teaching?

With respect to this question, this research showed that the majority of PTU students' attitudes and performance toward educational use of ICT tools was positive. This positively attitudes because of availability of ICT tools in most of faculties in Palestine Technical University, and also students have assistant teams in most of faculties to help students using those tools.

5.2.2.1 Are there statistically significant differences in the students' perception refer to their gender?

When the author investigate students' perception toward using ICT tools for educational purposes with regard to the gender, the result shows that no stationary

significant differences between males students and females, because there is no differences between males and females in education and equal opportunities of learning for both of them.

5.2.2.2 Are there statistically significant differences in the students' perception refer to their academic year?

Students' perception toward educational use of ICT tools explored in chapter 4 in relation to their academic year, the findings found that there are no significant differences between students in different levels, may be because ICT tools help students in their learning in all levels and also the availability of ICT tools for all students in PTU.

5.2.2.3 Are there statistically significant differences in the students' perception refer to their CGPA?

With respect to CGPA, the relation between CGPA and students' perceptions of educational use of ICT tools found positive, the finding shows that students who have high CGPA use has positive attitude toward using computer at university inside classroom and outside it. And also the result showed positive attitude for use ICT tools outside classroom lesson like library, computer room, or ICT room. There is no difference in the responses between students with regard to CGPA.

5.2.2.4 Are there statistically significant differences in the students' perception refer to their faculty?

The result shows that there is a significant difference in students' perception while they use ICT tools in education. The differences between courses and faculties caused these significant differences. Moreover, students in most of faculties agreed that using ICT help students in integrating knowledge from various sources, and help

them in obtaining the knowledge that they need in their university, ICT lets students exchange ideas with their teachers, and aids hem in expressing their emotions freely.

Students in most faculties need computer for preparing and making presentations while few students in those faculties didn't need computer for this purpose. Students answers on having a computer lap in your department was positively significant and few departments in Arts and Science, Engineering & Technology, Commerce and Business, Agricultural Science faculties didn't have a computer lap.

5.2.2.5 Are there statistically significant differences in the students' perception refer to having computer at their home?

When students' perception toward ICT tools usage in education investigated with relation to having computer at home, the result shows that most of have computer their home and they use ICT tools in their classroom lessons.

5.2.2.6 Are there statistically significant differences in the students' perception refer to their having internet at home?

When the students' perception toward educational use of ICT tools were examined in relation of having internet at home and finding founds that there are significant differences with answering this question. Most of student said that they have internet at home and only one didn't have. Most of students who have internet never use it for chatting online, and also most of them agreed on the items that ICT tools; aids students in expressing my emotions freely, guides the teacher in the working methodology, help students to do better in educational attainment, facilitates the presentation of content, doing their academic homework faster and better, and they prefer when teachers use ICT tools in the classrooms.

5.2.2.7 Are there statistically significant differences in the students' perception refer to their using computer in classroom lessons per week?

When students asked about their perceptions of using ICT tools for educational purposes with regard to using computer in classroom lessons per week, their answers were significant in these items; most of students agreed that: ICT tools help them in explaining their problems to teachers, ICT tools make the teacher pay more attention to the students, ICT tools guides the teacher in the working methodology, ICT improve student performance, ICT tools help students to obtain the knowledge that they need in my university, with ICT tools they can do their self-assessment, with ICT tools they can diagnose their mistakes in learning.

Nearly half of students who use computer at classroom per week said that they have assistant teams teach them how to use ICT tools and the other half don't have.

5.3 Conclusions

In conclusion, technology is very important for students in schools and universities. The new trend in todays' learning is to see students' perception of using ICT to integrate it to higher education, those ICT tools will improve learning environment and enhance learning outcomes. Enhancing learning outcomes will help students and teachers in communication like using discussion board, social networks, chatting online, etc. Furthermore, they can use new generation of technologies such as laptops, smart board, smart phone, material relying on internet and the widely use of open recourse platform such as LMS, MOOC, Moodle, blackboard for learning.

The current study exposed the perception of Palestine Technical University students toward using ICT tools. The research detects the factors that influence on students

perception while using ICT for education. The results showed that faculty, CGPA, gender, academic year, having computer at home, having internet at home, and using computer in classrooms per week and the effect while they use ICT tool.

5.4 Recommendations for Future Studies

In following many educators on information and communication technology, they have suggested that students' academic performance while using ICT tools found high and students' perception were positive. From findings we hope to shield the light on importance of adding new tools for students. We suggest for future studies to make more research about using ICT tools in classrooms and to apply using it on students and monitor their performance. They can also make researches more specific, compare between ICT tools and see which of them is more useful.

REFERENCES

Abu-Al-Aish, A., & Love, S. (2013). Factors Influencing Students' Acceptance of M-Learning: An Investigation in Higher Education. *The international review of research in open and distance learning*, 82-107.

Bahadur, G. K., & Oogarah, D. (2013). Interactive whiteboard for primary schools in Mauritius: An effective tool or just another trend? *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 19-35.

Balta, N., & Duran, M. (2015). Attitudes of Students and Teachers towards the Use of Interactive Whiteboards in Elementary and Secondary School Classrooms. *TOJET: The Turkish Online Journal of Educational Technology*, 15-23.

Beltran, M., & Belle , S. B. (2013). The Use of Internet-Based Social Media as a Tool in Enhancing Student's Learning Experiences in Biological Sciences. *Higher Learning Research Communications*, 68-80.

Buabeng-Andoh, C., & Yidana, I. (2014). An investigation of secondary school students' attitudes toward pedagogical use of ICT in learning in Ghana. *Interactive Technology and Smart Education*, 302-314.

Campbell Jr. , C., & Kresyman, S. (2015). Aligning Business and Education: 21st Century Skill Preparation. *e-Journal of Business Education & Scholarship of Teaching*, 13-27.

Cain, J., & Policastr, A. (2011). Instructional Design and Assessment Using Facebook as an Informal Learning Environment. *American Journal of Pharmaceutical Education*, 1-8.

Campbell Jr, C., & Kresyman, S. (2015). Aligning Business and Education:21st century skills preperation. *e-Journal of Business Education & Scholarship of Teaching*, 13-27.

Carpenter, J., & Krutka, D. (2014). How and Why Educators Use Twitter: A Survey of the Field. *Research on Technology in Education*, 414–434.

Conole, G., de laat, M., Dillon, T., & Darby, J. (2008). Disruptive technologies', 'pedagogical innovation': What's new? Findings from an indepth. *Computers & Education*, 511-524.

Curcher, M. (2011). A case study examining the implementation of social networking technologies to enhance student learning in a second language. *Education, Business and Society:*, 80-90.

De Angeli, A., & Kyriakoullis, L. (2006). Globalisation vs. localisation in e-commerce:Cultural-aware interaction design.

Erlin, Fitria, T. A., & Susandri. (2015). Using Social Networks: Facebook Usage at the Riau College students. *Procedia Computer Science*, 559-566.

Gaskell, & Mills. (2010). Can we really learn from mobile handheld devices? . *Social Justice*.

Grace Lin, M.-F., Hoffman, E., & Borengasser, C. (2013). Is Social Media Too Social for Class? A Case Study of Twitter Use. *TechTrends*, 39-45.

Gulbahar, Y., & Guven, I. (2008). A Survey on ICT Usage and the Perceptions of Social Studies Teachers in Turkey. *Educational Technology & Society*, 37-51.

Isman, A., Abanmy, F. A., Hussein, H. B., & Al Saadany, M. A. (2012). Saudi Secondary School Teachers Attitudes' Towards Using Interactive Whiteboard in Classrooms. *TOJET: The Turkish Online Journal of Educational Technology*, 286-296.

Kaufman, D. S. (2009). How Does the Use of Interactive Whiteboards Affect Teaching and Learning? *Distance Learning*, 23-33.

Keller, C., & Cernerud, L. (2002). Students' Perceptions of E-learning in University Education. *Journal of Educational Media*, 55-67.

Koustourakis, G., Panagiotakopoulos, C., & Vergidis, D. (2008). A Contribution to the Hellenic Open University: Evaluation of the pedagogical practices and the use of ICT on distance education. *International Review of Research in Open and Distance Learning*.

Kretschmann, R. (2015). Physical Education Teachers' Subjective Theories About Integrating Information and Communication Technology (ICT) Into Physical Education. *The Turkish Online Journal of Educational Technology*, 68-96.

Lorncowicz, E., Kocira, S., Uziak, J., & Tarasinska, J. (2014). Application of ICT by Students at Selected Universities in Poland. *The Turkish Online Journal of Educational Technology*, 1-11.

Ninlawana, G. (2015). Factors which Affect Teachers' Professional Development in Teaching Innovation and Educational Technology in the 21st Century under the Bureau of Special Education, Office of the Basic Education Commission. *Procedia - Social and Behavioral Sciences*, 1732 – 1735.

Selwyn, N. (1999). Students' attitudes towards computers in sixteen to nineteen education. *Education and Information Technologies*, 129-141.

Skutil, M., Maněnová, M., & Čermáková, L. (2013). ICT as a Didactic Tool and Its Use in the Educational Process. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 285-288.

Smith, T., & Lambert, R. (2013). A systematic review investigating the use of Twitter and Facebook in university-based healthcare education. *Health Education*, 347-366.

Staines, Z., & Lauchs, M. (2013). The use of Facebook in tertiary education Case study of a unit-related Facebook page in a university justice class. *Interactive Technology and Smart education*, 285-296.

Tang, & Austin. (2009). Students' perceptions of teaching technologies, application of technologies and academic performance. *Computers & Education*, 1241–1255.

Tinmaz, H., & Yakin, I. (2013). Using Twitter as an Instructional Tool: a Case Study in Higher. *The Turkish Online Journal of Educational Technology*, 210-218.

Türel, Y. K., & Johnson, T. E. (2012). Teachers' Belief and Use of Interactive Whiteboards for Teaching and Learning. *Educational Technology & Society*, 381–394.

Usluel, Y. K., Aşkar, P., & Baş, T. (2008). A Structural Equation Model for ICT Usage in Higher Education. *Educational Technology & Society,*, 262-273.

Woodrow. (1991). A comparison of four computer attitude scales. *Journal of Educational Computing Research*, 165-187.

Yaman, M., & Yaman, Ç. (2014). The Use of Social Network Sites by Prospective Physical. *The Turkish Online Journal of Educational Technology*, 223-231.

APPENDIX

APPENDIX A: Survey questionnaire

1) Faculty	
2) Year	
3) Gender	a) Male b) Female
4)CGPA	

Computer use at Home

7) Is there a computer at home? a) Yes b) No

8) Do you have Internet at home? a) Yes b) No

9) How long do you use the computer in your classroom lessons per week?

a) 0 – 30 minutes a week b) 31 – 60 minutes a week

c) more than 60 minutes a week

10) While at the university, how long do you use the computer apart from your classroom lessons, e.g. in library or computer room? (Pick one)

a) I never use the computer at the university outside classroom lessons

b) About half an hour per week

c) About an hour per week

d) About two hours per week

e) About three hours per week

f) About four or more hours per week

General use of Computers

11) How often do you use the computer in the following?

	Daily	2 or 3 times a week	Once a week	Once a month	Never
At home					
At the university (computer lab or library)					
Other (like Internet cafes, etc.)					

12) Do you need your computer for the following? **Yes** **No**

Searching for information		
Preparing and making presentations		
Communicating online with teachers		
Communicating online with other students		
Communicating online with friends		
Communicating online with parents		

Computer usage at University

13) Is there an ICT Room at your department? A) Yes b) No

14) Is there a computer in your classrooms? a) Yes b) No

15) How capable are you in using computers?

a) Very Comfortable b) Comfortable c) Uncomfortable

16) Which is your preferred way of using computers: working by yourself or working with a friend?

a) By myself b) working with a friend

17) ICT tools & Availability of Help In Education Yes No

Have you used/are you using ICT tools in your work/with your classes?		
Do you have any special training in ICT tools given to you by your university?		
Are you registered to any courses which use ICT tools?		
Is there a computer lab at your university?		
Is there a computer lab at your department?		
Are there any assistant teams to teach you how to use these tools?		

18) How many times a week does you need a computer for the activities below at your University?

	Never	1 or 2 Times a month	1 or 2 Times a week	Every day
Chat on line				
Use e-mail				
Browse the Internet for your work at the university				
Download, upload or browse material from the university's website				
Doing your homework using university computer				
Doing group work and communicating with other students Using university computers				

19) Academic work and the perception of the use of ICT tools

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
ICT tools creates a nice atmosphere in the classroom					
ICT tools facilitates my relationships with the group socially					
ICT tools helps explaining my problems to the teachers					
ICT assists me in asking others questions					

ICT tools aids me in expressing my emotions freely					
ICT tools makes the teacher pay more attention to us					
ICT tools guides the teacher in the working methodology					
ICT tools assists me in evaluating my progress in the subject better					
ICT tools facilitates the presentation of content					
I prefer it better when teachers use ICT tools in the subjects					
ICT tools helps to integrate knowledge from various sources					
ICT tools helps me to obtain the knowledge that we need in my university					
With ICT tools I do my academic homework faster					
With ICT tools I do my academic homework better					
With ICT tools I develop my skills					
With ICT tools I can exchange ideas with my colleagues					
With ICT tools I can do my self-assessment					
ICT tools enables me to follow the course					
With ICT tools I can diagnose my mistakes in learning					
With ICT tools I receive assistance from the teacher					
ICT lets me exchange ideas with my teacher					

20) Capability of Providing ICT tools in learning system

	A lot	Some	A little	Not at all
Not enough computers				
Not enough Internet- connected computers				
Not enough Internet bandwidth or speed				
Not enough interactive whiteboards				
Outdated School computers and/or Broken ones				
Teachers are not qualified to use ICT tools				
Difficult in integrating ICT tools use into the curriculum				
Having no pedagogical models on how to use ICT tools for learning				
University schedule (fixed lessons time, etc.)				
University space organization (classroom size and furniture, etc.				
Pressure of exam and test based curriculum				
Presence of teachers not in favor of ICT tools usage at the university				
The uncertainty of how beneficial of ICT tools is in teaching				
Not having usage of ICT tools in teaching and learning as an objective				