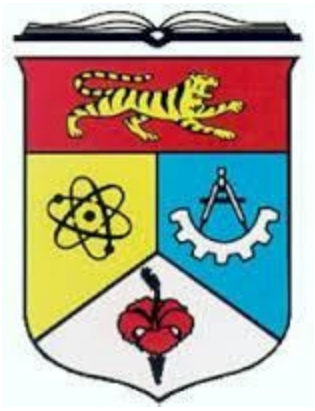

THE NATIONAL UNIVERSITY OF MALAYSIA

COMPUTER IN EDUCATION

GE1155

GROUP MEMBERS:

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Contents

1.0 INTRODUCTION

1.1 INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)

ICT is a term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems (http://searchcio.techtarget.com/). ICT is often perceived as a catalyst for change, change in teaching styles, changes in learning approaches and in access to information (Watson, 2005). It refers to technologies that provide access to information through telecommunications. Use of ICT has changed our conventional ways of learning and proposes the need to rethink education in terms of a more current context (White, 2010). As far as we know, ICT capability is fundamental to participation and engagement throughout the modern information society. ICT can be used to model situations and solve problems, as well as to find, develop, analyze and present information. ICT enables rapid access to ideas and experiences from a wide range of people, communities and cultures, and allows pupils to collaborate and exchange information on a wide scale (Crown, 2010).

1.2 THINKING SKILLS

Thinking skills are the mental processes that we apply when we seek to make sense of experience (www.brainboxx.co.uk). Thinking skills enable us to integrate each new experience into the schema that we are constructing of "how things are" (www.igi-global.com). It is apparent that better thinking will help us to learn more from our experience and to make better use of our intelligence.

It has always been the central aim of education to improve the quality of thinking because better thinking will not only enable us to become more successful at learning but will also equip us for life, enabling us to realize our own potential and to contribute to the development of society (www.brainboxx.co.uk).

Critical thinking means making reasoned judgments that are logical and well thought out. It is a way of thinking in which you don't simply accept all arguments and conclusions you are exposed to but rather have an attitude involving questioning such arguments and conclusions. It requires wanting to see what evidence is involved to support a particular argument or conclusion (www.study.com).

Additionally, according study.com, critical thinking can be divided into the following three core skills:

1. Curiosity is the desire to learn more information and seek evidence as well as being open to new ideas.
2. Skepticism involves having a healthy questioning attitude about new information that you are exposed to and not blindly believing everything everyone tells you.
3. Finally, humility is the ability to admit that your opinions and ideas are wrong when faced with new convincing evidence that states otherwise.

1.3 ICT IN EDUCATION

Education is the first and best key area for ICT applications. ICTs can help by providing alternative possibilities for education (Casal, 2007). The purpose of ICT in education is generally to familiarize students with the use and workings of computers, and related social and ethical issues. ICT has also enabled learning through multiple intelligences as ICT has introduced learning through simulation games; this enables active learning through all senses (Gateway, 2010). The use of different information communication technologies has become a norm for students in learning. Students can retrieve their required information within a short time only by using modern information communication technologies,. They can access electronic information like e-books, e-journals. They can also improve their learning by using different modern ICTs in form of wireless networks, internet, search engines, databases, websites and web 2.0 technologies.

When we talk about ICT in education, we are all aware by the fact that ICT in education is basically our society's efforts to teach its current and emerging citizens valuable knowledge and skills around computing and communications devices, software that operates them, applications that run on them and systems that are built with them. The government has introduced various initiatives to facilitate the greater adoption and diffusion of ICT. This is to improve capacities in every field of business, industry, education, and life in general. The Ministry of Education sees ICT as a means, not an end in itself. The Ministry believes that properly designed and implemented computing and communications have the potential to revolutionize education and improve learning as profoundly as information technology has transformed medicine, finance, manufacturing, and numerous other sectors of society (Foong-Mae Chan).

The concept of ICT in education, as seen by the Ministry of Education, includes system that enable information gathering, management, manipulation, access, and communication in various forms. The Ministry has formulated three main policies for ICT in education. Those policies are 1) ICT for all students, meaning that ICT is used as an enabler to reduce the digital gap between the schools. 2) ICT emphasizes the role and function of ICT in education as a teaching and learning tool, as part of a subject, and as a subject by itself. Apart from radio and television as a teaching and learning tool, this policy stresses the use of the computer for accessing information, communication, and as a productivity tool and 3) emphasizes using ICT to increase productivity, efficiency and effectiveness of the management system. ICT will be extensively used to automate and mechanize work processes such as the processing of official forms, timetable generation, management of information systems, lesson planning, financial management, and the maintenance of inventories.

According to the National Innovation Council (NIC) which introduced the National Innovation Model in 2007 (NIM), the plan is "to transform Malaysia from a resource-based to an innovation-based economy". Thus, it is also high time to review the implementation that are taking place at the school level (especially the secondary school) to discover whether the teaching of thinking skills is effectively carried out. One of the aims of schooling is to develop the students' thinking skills. The major issue of today's education is that "many studies have begun to reveal symptoms of decline in students' ability to think well, especially when schools begun to focus on the mastery of subject content rather than the processes of deriving the products" (Rosnani & Suhailah, 2003). Therefore, the correct and innovative ways of teaching thinking skills must be found. Given these circumstances, the aim of this paper is to highlight the relevant issues in developing thinking skills among the students and the efforts made in addressing these issues specifically in Malaysia.

This research came up with a problem statement that we thought is pretty crucial when we talk about the exposure the students have by using ICT nowadays. The students are more likely too depending on ICT in their daily life and we thought that ICT might harm their thinking skills in the future. The students nowadays will simply Google everything without bother to have a deep thought about the topic first. We are about to produce students that have a great thinking skills so that we will have a better leader to rule our country. Thus, this research is very important for us to identify whether the thought of the researchers have about this topic is really to be worried on.

2.0 LITERATURE REVIEW

Maharana, Biswal and Sahu (2009) explored the use of information and communication technology used by medical students. They found 77% of the respondents were of the opinion that ICT should be included in their syllabus. Nearly all respondents expressed their desire to have a computer lab in their college. One hundred respondents out of 128 opined that medical education is not effective without ICT based resources and services.

Saunders & Pincas (2004) examined the student's attitude towards information and communication technologies in teaching and learning in the UK. Forty-five per cent of respondents indicated that they would prefer to have more face-to-face lectures at university. The students surveyed firmly believe themselves that ICT has a significant role to play in supporting and enhancing their university learning experience. It was also suggested that they see the use of ICT as potentially going well beyond the use of the Internet to search for resources and the use of email to stay in touch with tutors and fellow students.

Luambano & Nawe (2004) investigated the internet use by students of the University of Dare es Salaam. Findings revealed that majority of the students were not use internet due to the inadequacy of computers with internet facilities, lack of skills in internet use and slow speed of computers. It was also revealed that most students who used the internet did not use it for academic purposes. It was suggested that more computers connected to the internet should be provided and training should also be given to the students on the use of internet.

Yee Mei Heong, Jailani Bin Md Yunos, Widad Bt. Othman, Razali Bin Hassan dan Tee Tze Kiong, (2010) investigated the implementation of thinking skills especially high order thinking skills through learning activities for producing the project idea for technical subjects.

3.0 RESEARCH OBJECTIVES

For the objectives of this research, the researchers are looking forward to;

a) Identify whether the students from various higher institutions are really depending on ICT in their daily life.
b) Identify the acknowledgement of the students towards the fact that ICT could harm their thinking skills.
c) Identify the students' thoughts about the advantages of ICT.

3.1 Research Questions

A. Demographic Factors
- Female / Male
- Rural / Suburban / Urban Area
- STPM / STAM / Diploma/ Foundation / Matriculation
- Faculty

B. 1. Which items would you prefer to carry to class?
2. How long do you surf the web daily?
3. How many electronic devices and gadgets you have at home?
4. Which social applications do you use the most?
5. Which place do you prefer to do your homework and assignments?
6. What is the problem you face when using ICT?
7. My favorite references is Google.Com.
8. I am afraid to answer my quiz without Google-ing for the information first.
9. I prefer to use textbook to do my revision.
10. I prefer to use online-website to do my revision.
11. I prefer to hand-type my assignments.

12. ICT helps me to do my assignments.

13. I prefer to use ICT because it is interactive.

14. I think ICT should have been taught from the very young age.

15. I think ICT could harm my thinking skills.

16. By using ICT, we can enhance our understanding towards certain topics.

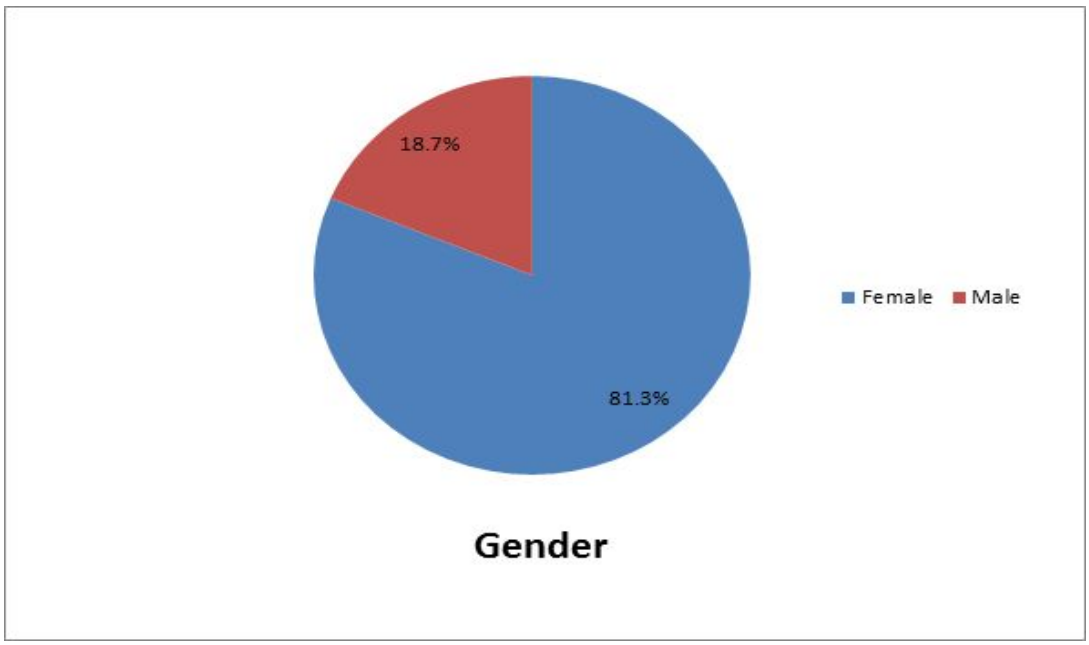
4.0 METHODOLOGY

A system of broad principles or rules from specific methods or procedures may be derived to interpret or to solve problems within the scope of a particular discipline. Unlike an algorithm, a methodology is not a formula but a set of practices. In simple, methodology is a set of methods, rules, or ideas that are important in a science or art; a particular procedure or set of procedures (Merriam Webster). In this research, the source of data and information are gathered by doing an online questionnaire conducted among higher education students from various faculties. Other sources for acquiring information and data are sources such as journals, books, research papers, and so on. This section will explain in details on the samples which are our respondents, data collecting, and data analyzing methods.

4.1 SAMPLE

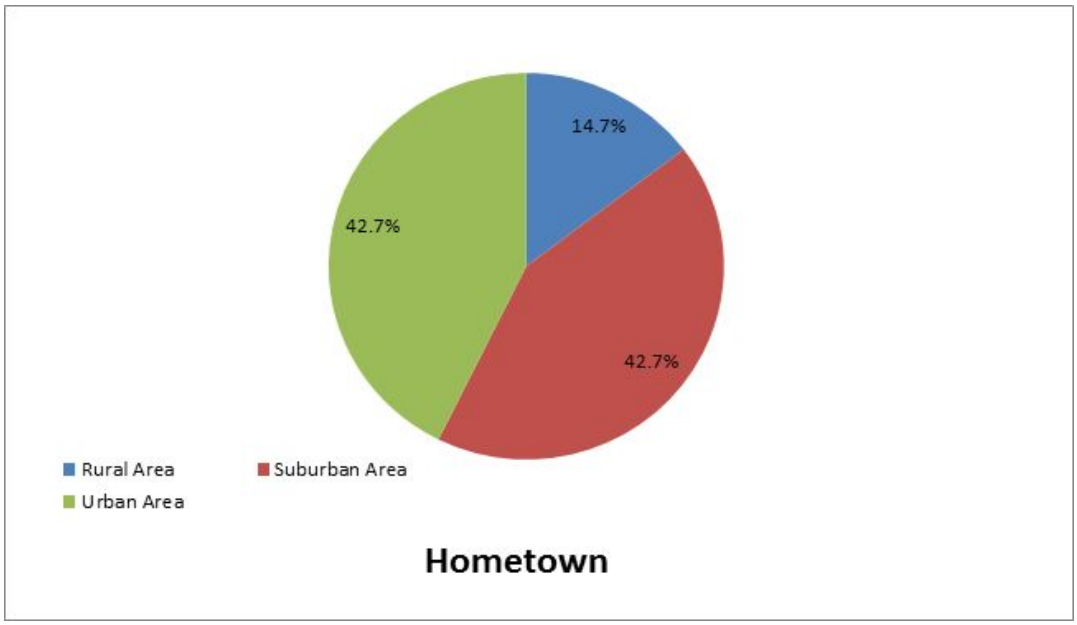
This particular research was conducted by doing an online questionnaire that has been answered by various higher institutions students from various faculties and different education backgrounds. There are 75 higher institutions students that the researchers managed to gather in six days. The institutions involved are The National University of Malaysia (UKM) itself, Management and Science University (MSU), Universiti Sultan Zainal Abidin (UNISZA), Universiti Sains Malaysia (USM), and International Islamic University of Malaysia (IIUM). In addition, the students come from Faculty of Education, Faculty of Social Science and Humanities, Faculty of Information Science and Technologies, Faculty of Science and Technology, Faculty of Law, Faculty of Engineering and Built Environment, and Faculty of Economy Management. Furthermore, the respondents involved came from various education backgrounds such as matriculation, Malaysian Higher

Education Certificate (STPM), Malaysian Higher Islamic Certificate (STAM), diploma, and foundation program.



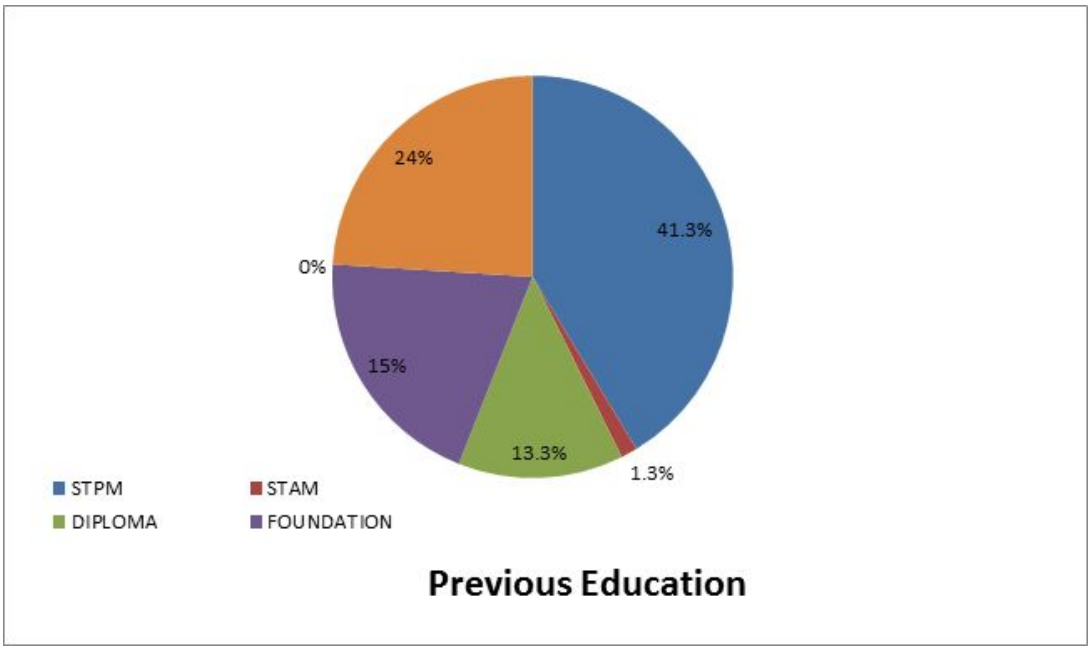
i. Chart on Student's Gender

This chart shows the demographic question of respondents' gender who respond to our questionnaire. The result shown there are 75 students of National University of Malaysia from different faculties whom respond to our online survey. Thus, 61 of them are females, whilst 14 of them are males.



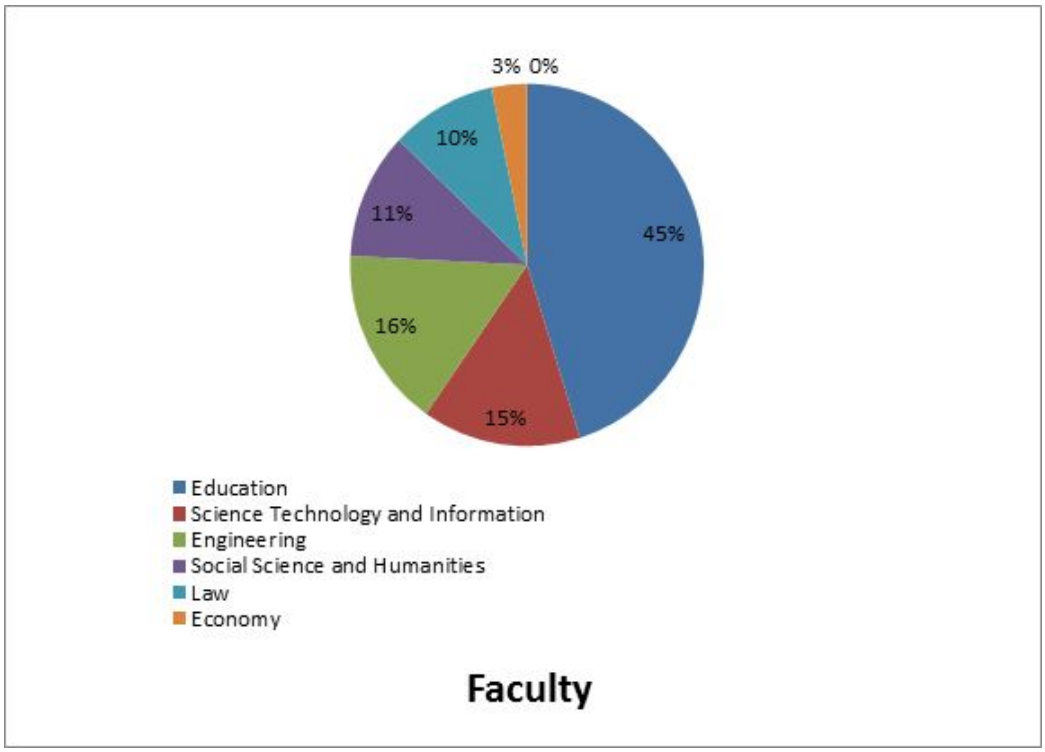
ii. Chart on Respondent's Hometown

This chart focuses on respondents' hometown, which are rural, suburban and urban area. The result showed most students who respond to our questionnaire come from suburban and urban area, whereas 32 students out of 75 are coming from both suburban and urban area. Meanwhile, the result showed only 11 students live in rural area.



iii. Chart on Respondent's Previous Education

Chart above is the summary on demography question on respondents' previous education. It showed that the respondents come from 6 different background, which are STPM, STAM, DIPLOMA, FOUNDATION, A-LEVEL AND MATRICULATION. It showed that 31 out of 75 students are STPM leavers, 15 are foundation leavers, 18 are matriculation, 10 from diploma and none respondent is an A-Level leaver.



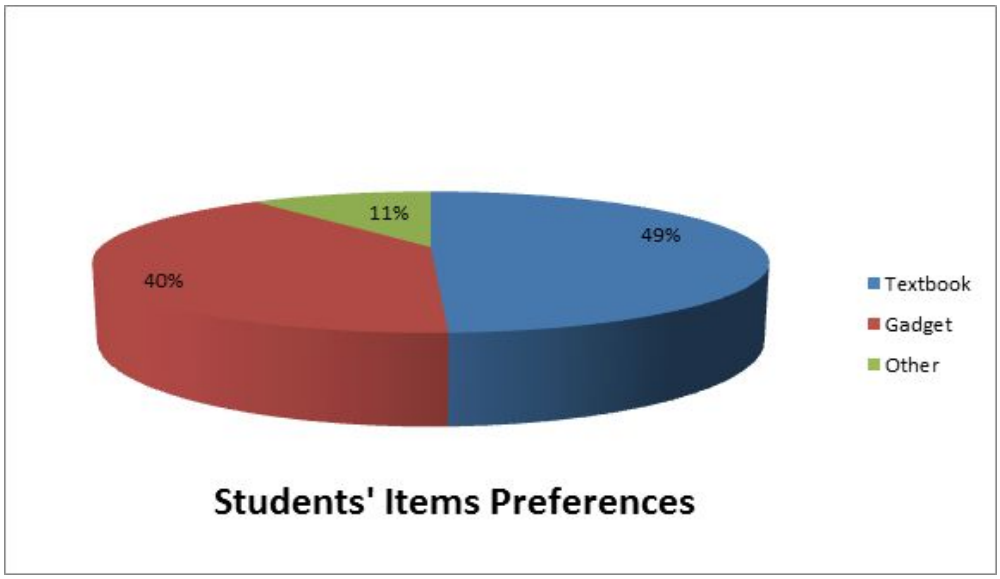
iv. Chart on Student's Faculties

The chart showed the result of respondent's faculties. It initiates that respondents are from different faculties which are Faculty of Education, Faculty of Social Science and Humanities, Faculty of Law, Faculty of Science and Technology, Faculty of Economy, and Faculty of Engineering. The result showed that Faculty of Education is the majority respondent to our online survey with 28 number of respondents, followed by Faculty of Science and Technology with 13 number of respondents, Faculty of Engineering with 10 respondents, 9 respondents are from Faculty of Technology of Science Information, whilst there are 6 respondents from Faculty of Law, and 2 from Faculty of Economy.

4.2 DATA COLLECTION

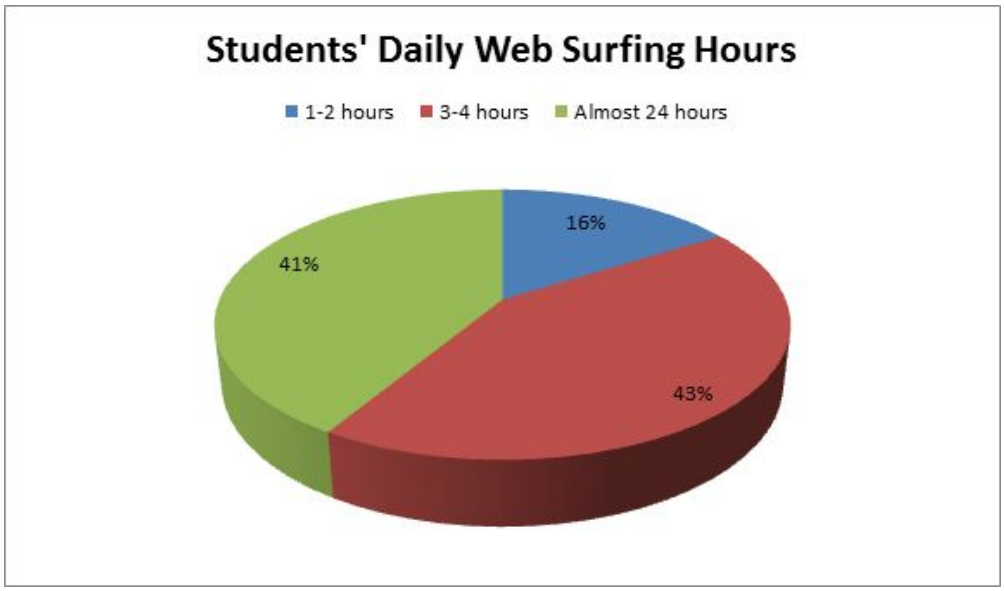
There are different kinds of instruments that can be used to collect research data. One of the instruments is quantitative questionnaire techniques. Quantitative research is a type of empirical investigation. That means the research focuses on verifiable observation as opposed to theory or logic. Most often this type of research is expressed in numbers (April Klazema, 2014). A researcher will represent and manipulate certain observations that they are studying. Based on the questionnaire conducted with 75 higher institutions students from various faculties, the data will be analyzed to identify their dependencies on ICT, their acknowledgement of the harm, and the thoughts about the advantages of it. Questionnaires are a good way to obtain information from a large number of people and/or people who may not have the time to attend an interview or take part in experiments. They enable people to take their time, think about it and come back to the questionnaire later (www.alzheimer-europe.org). As for this research, the method used to obtain answers is by using online questionnaire. An Internet questionnaire is a form of a written survey. Respondents may be invited to participate in the survey through email or because they visit a particular web page (Fairfax Country Department of Neighborhood and Community Services, 2012). The tool used to conduct the online questionnaire is Google Form. Once the questionnaire is done, it was then distributed or we can consider as "marketing" since the researchers spread the questionnaire using various social media sites and application on mobile available nowadays. The social media sites are Facebook and Twitter while the researchers use Whatsapp application as well. The questionnaire is divided into two types which are the first section is using multiple choice type of questions while the other one is using likert scale type of questions.

4.3 DATA ANALYSIS



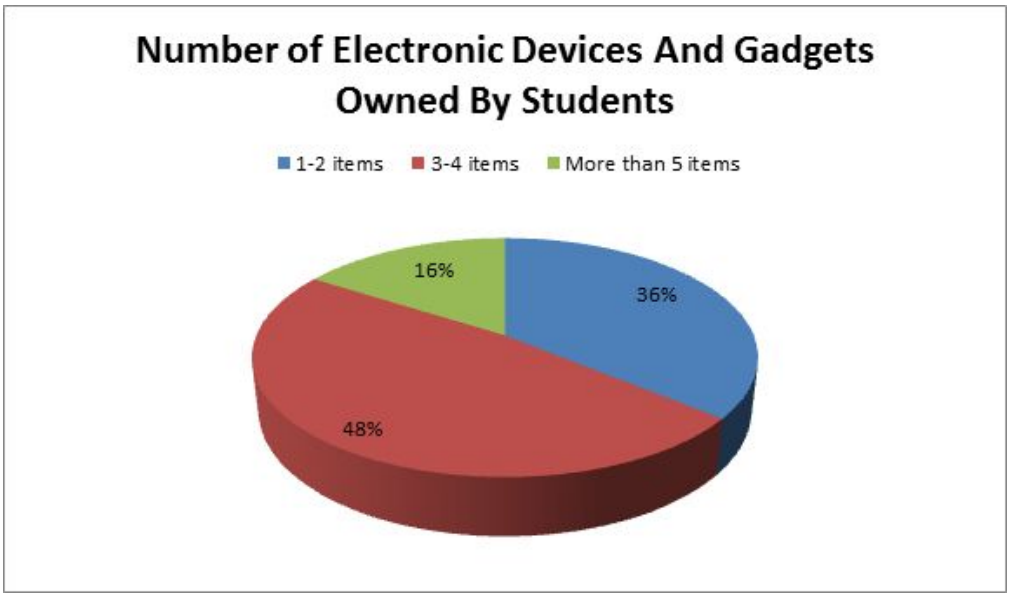
i. Chart on Students' Items Preferences

Chart above shows the responses on students' items preferences question. The question asked to identify students' items preferences during class. Majority number of 37 respondents prefer to carry their textbook as their preferences item to class. Hence, there are 30 respondents whose prefer to carry their gadget during class. There are minority number of 8 of students whose prefer to carry other belonging item to class.



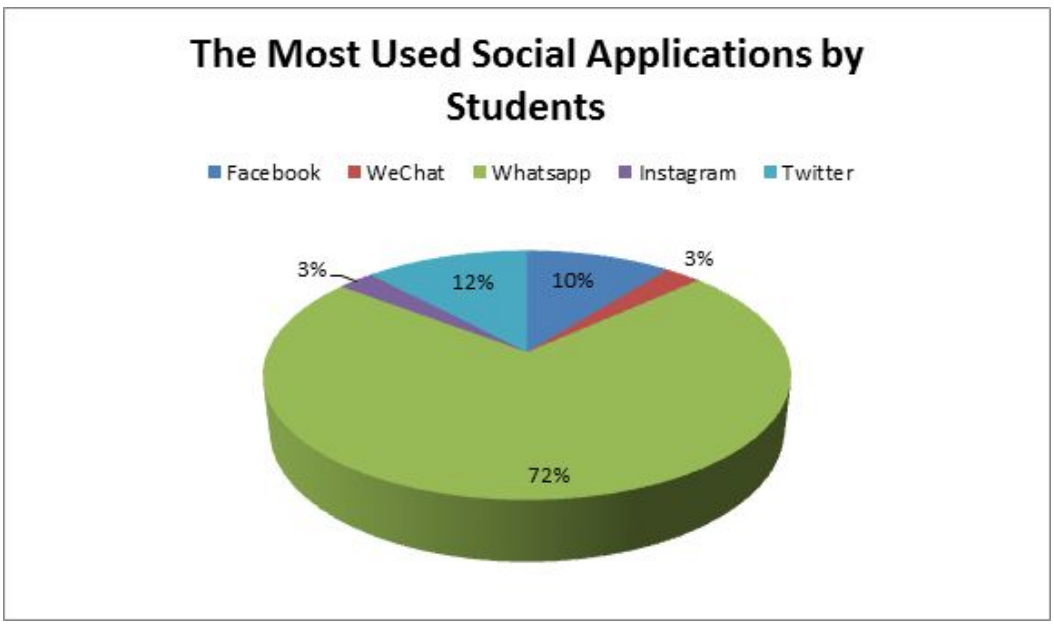
ii. Chart on Students' Daily Surfing Hours

The chart shows the result of students/respondents' daily web surfing hours. The question was asked to determine how many hours student/respondent spend to surf internet daily. Thus, the result showed 32 out of 75 students spend 3-4 hours to surf the internet, followed by 31 number of students who spend almost 24 hours daily to surf the internet. Last but not least, there are 12 students who spend only 1-2 hours daily to surf the internet.



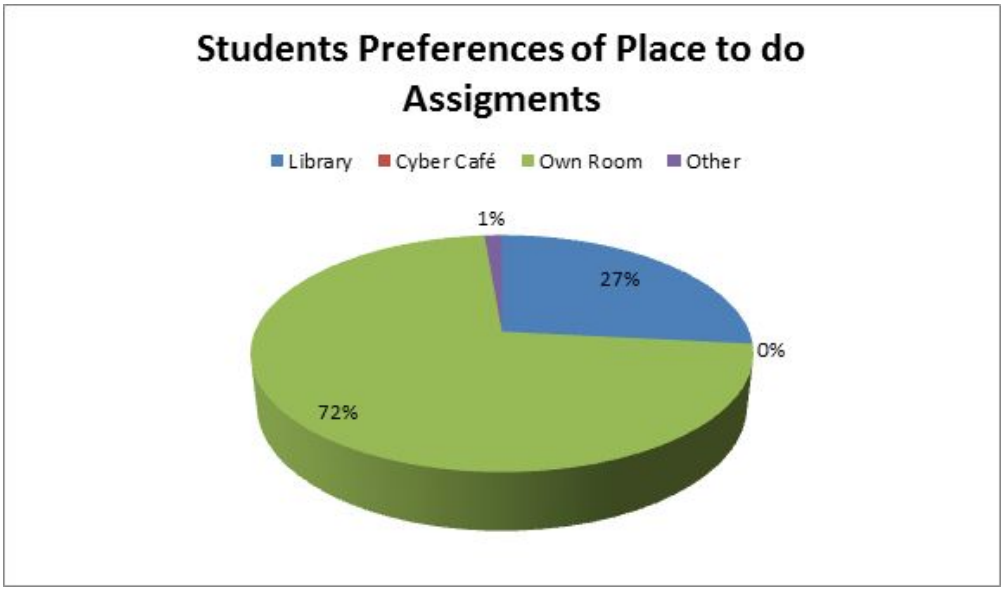
iii. Chart on Number of Electronic Devices And Gadgets Owned By Students

The question was asked to identify how many electronic devices and gadgets do students have at home. Thus, it showed that majorities with number of 36 of them have 3-4 items at home. Meanwhile, 27 of them owned 1-2 items at home, whereas, there's only 12 of them owned more than 5 items.



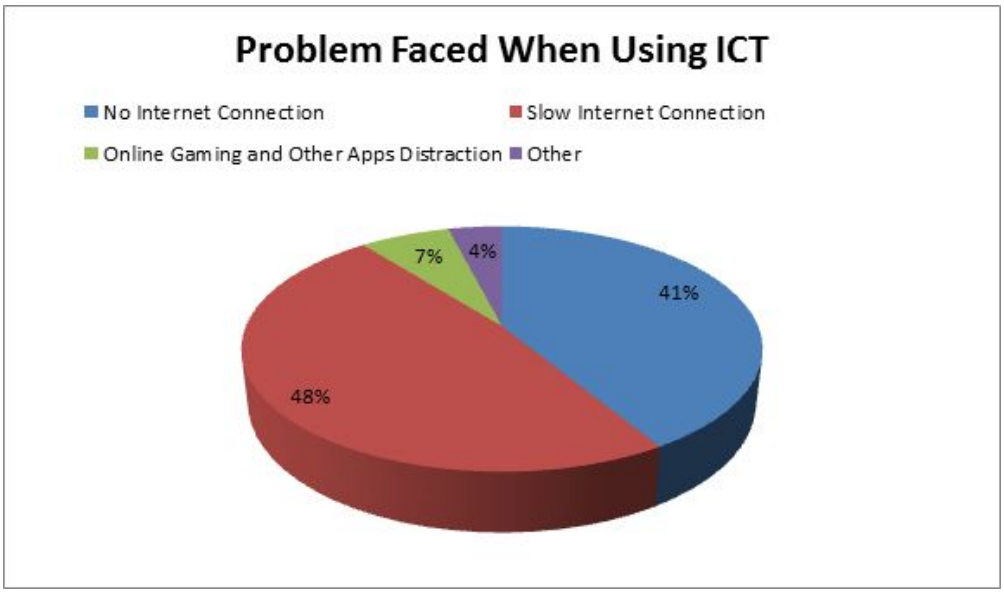
iv. Chart on The Most Used Social Applications by Students

The question on which social applications used the most by students was asked on the questionnaire. As a result, it showed that majority of students use whatsapp the most, with 54 out of 75 students, followed by 9 students who use Twitter daily. Meanwhile, there are 8 students who use Facebook daily, whereby 2 students both use Instagram and WeChat daily.



v. Chart on Students Preferences of Place to do Assignments

The question on which place would students prefer to do their assignments was also asked. As a result, it seemed like students prefer to do their assignments in their rooms, proved by 54 out of 75 of them choose to do their assignments in their rooms. Meanwhile, there are 20 students who choose library to do their assignments, and only one of them choose other place to do assignment.



vi. Chart on Problem Faced When Using ICT

The chart above shows the result of problem faced when using ICT. The result showed slow internet connection was face by 36 out of 75 students, followed by 31 students who faced no internet connection, whilst 5 of them got distracted by online gaming and other applications, and 3 of them choose other faced problem.

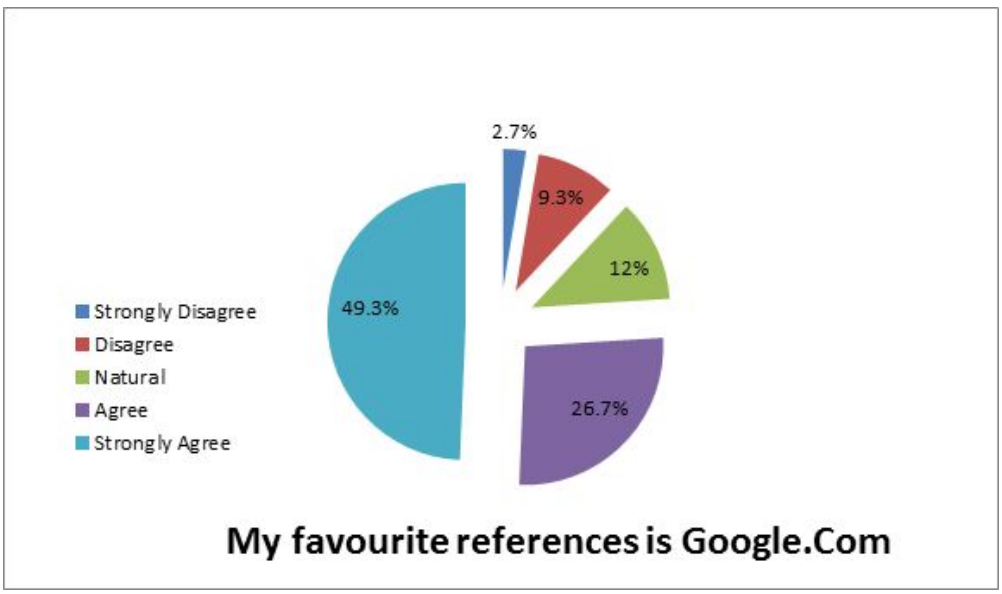


Chart 1: Google.com is My Favourite References

The question asked about whether Google.com is one's favourite references was asked on the questionnaire. Thus, the result showed majority of 37 students strongly agree that Google.com is their favourite reference, whilst 20 of them are agree. Besides, 7 of them disagree, and 2 out of 75 strongly disagree Google.com is not their favourite references. Last but not least, there's only 3 respondents who think Google.com is neither their favourite nor not their favourite.

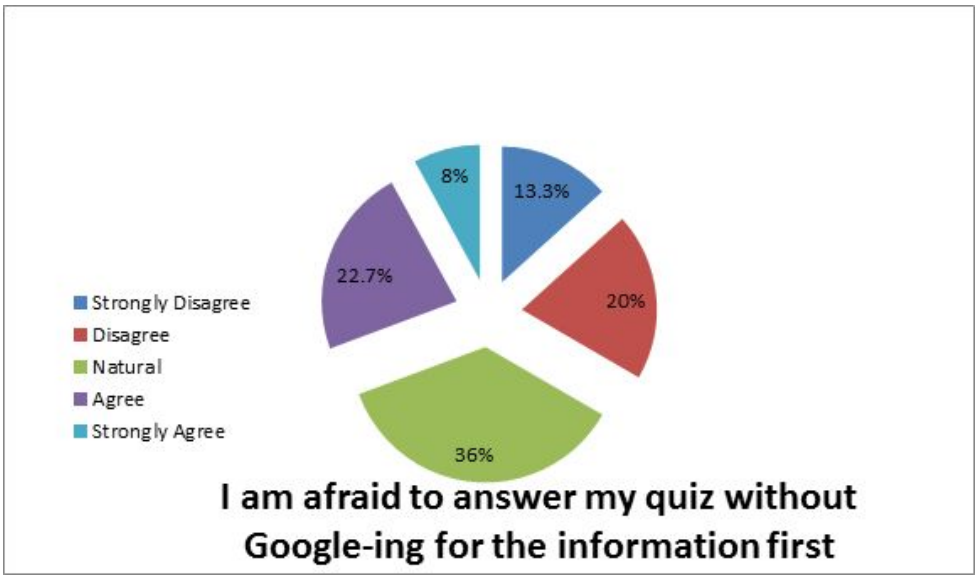


Chart 2: I am afraid to answer my quiz without Google-ing for the Information First

The chart above shows the result of question asked on student's preferences when doing their revision before having quiz. Thus, the result showed that majority of 27 students prefer to either Google-ing or not to Google-ing for the information before having quiz. Otherwise, 17 students agreed they're afraid to answer quiz without Google-ing the information first, and likewise, 6 of them strongly agree with the statement given. Meanwhile, 10 of them are strongly disagree, but only 15 of them are disagree with the statement given.

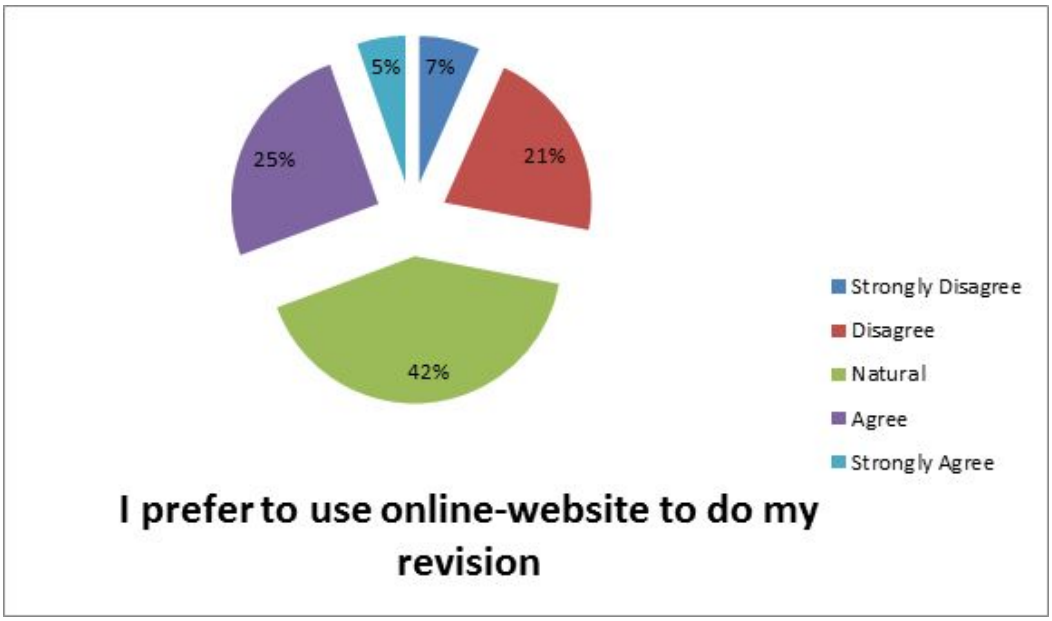


Chart 3: I Prefer to Use Online-Website to do My Revision

Chart above shows the result on question asked on students' preferences to use online-website to do their revision. Therefore. the result showed there are only 5 students who are strongly disagree with the statement given. Next, it showed that 16 of them are disagree, whilst majority of the students (31 students) are natural. Otherwise, 19 out of 75 students are agreed and prefer to use online-website to do their revision, and there is only 4 of them who are strongly agree with the statement given.

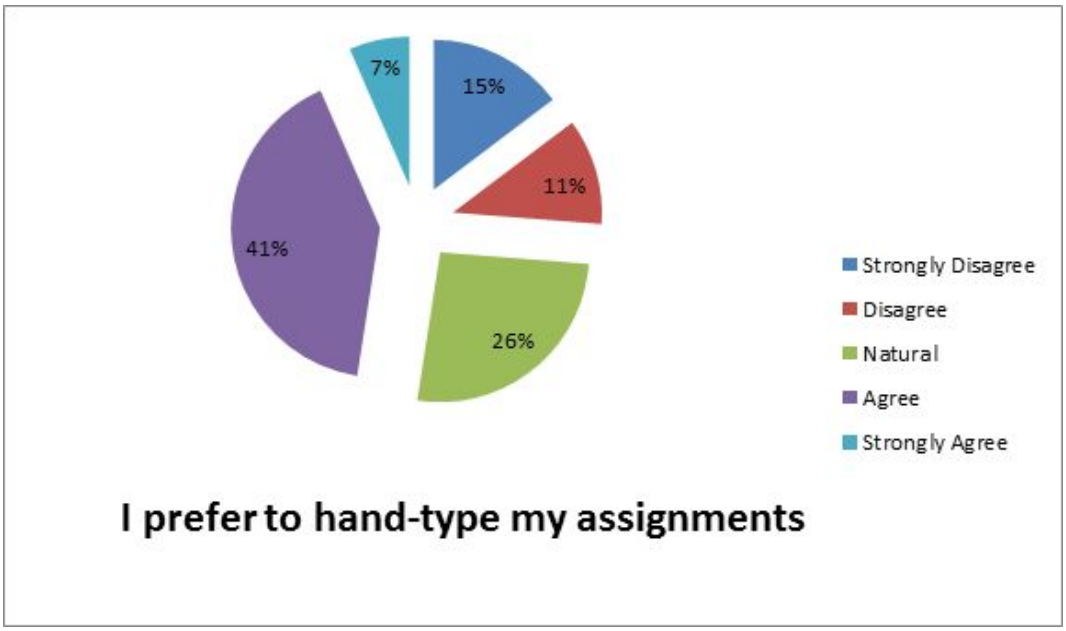


Chart 4: I Prefer to Hand-Type My Assignments

Chart above shows the result on statement given on students' preferences to hand-type their assignments. As a result, it seemed that most student with majority 25 of them are agreed to hand-type their assignments, followed by 18 of students who strongly agreed with the statement given. On the other hand, 16 of the students are natural and there are 9 of them who are strongly disagree, likewise, 7 out of 75 students are merely agreed.

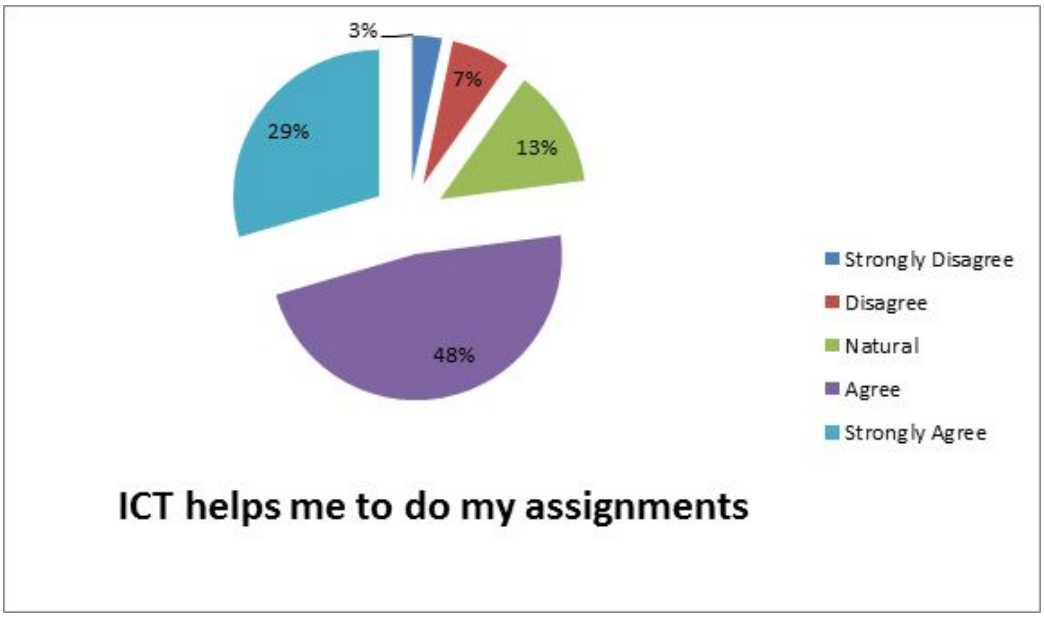


Chart 5: ICT Helps Me To Do My Assignments

Chart above shows the result on statement given, "ICT helps me to do my assignments". As a result, it seemed that most student with majority 39 of them are agreed that ICT helps them to do their assignments, followed by 17 of them who are strongly agreed to the statement. Meanwhile, 14 of them are natural, 4 are disagreed, likewise, there's only one of them who is strongly agreed to the statement given.

Section B (iii)

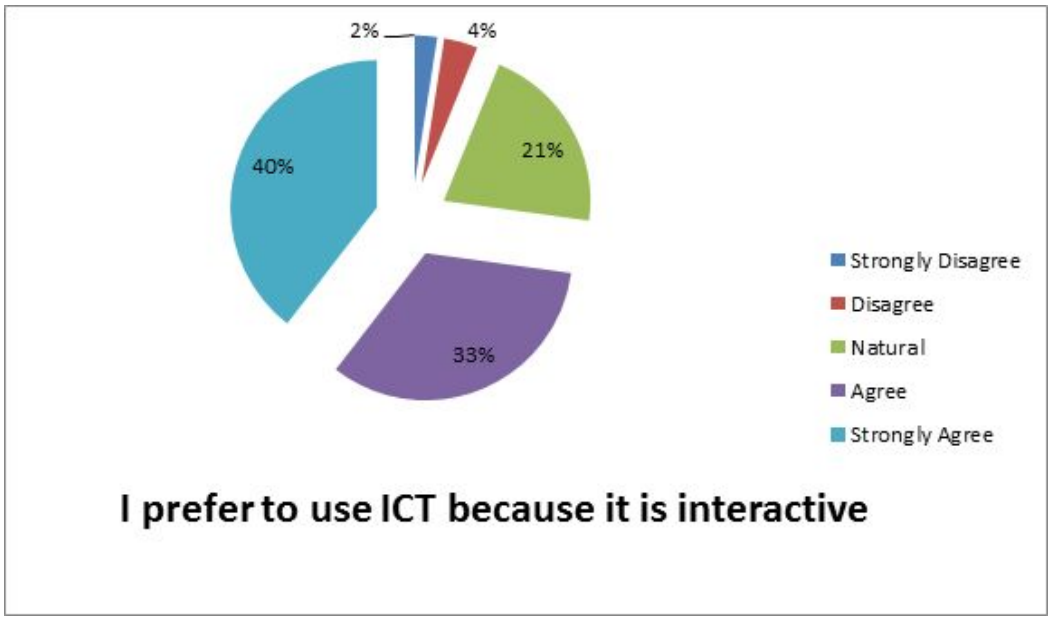


Chart 1(iii): I Prefer to Use ICT Because It Is Interactive

Chart above shows the result on statement given, which is, "I prefer to use ICT because it is interactive". Therefore, the result showed that there are 27 students who agreed to the statement given, followed by 26 of them who are strongly agreed, whilst, 17 of them are natural. On the other hand, there are only 2 of them who are strongly disagreed and 3 of them are disagreed.

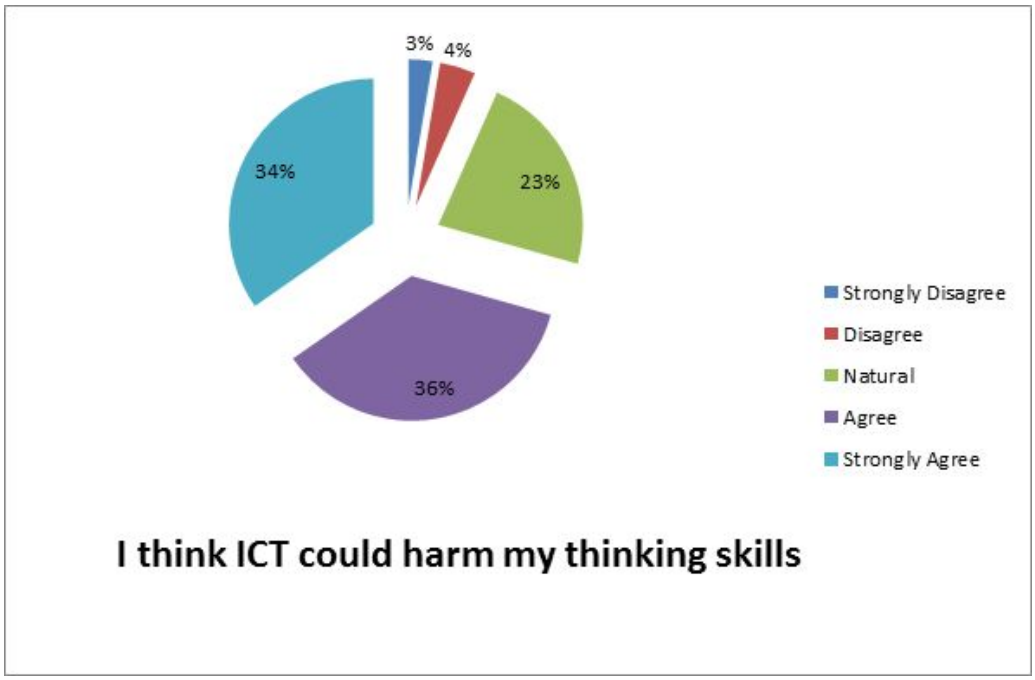


Chart 2 (iii): I Think ICT Could Harm My Thinking Skills

Chart above shows the result on statement given in our online survey. It showed that one of the students are neither agreed nor disagreed with the statement, whilst, 17 of them are strongly agreed and majority of 39 students are agreed with the statement. On the other hand, there is only one person who are strongly disagreed , and there are 4 of them who are disagreed.

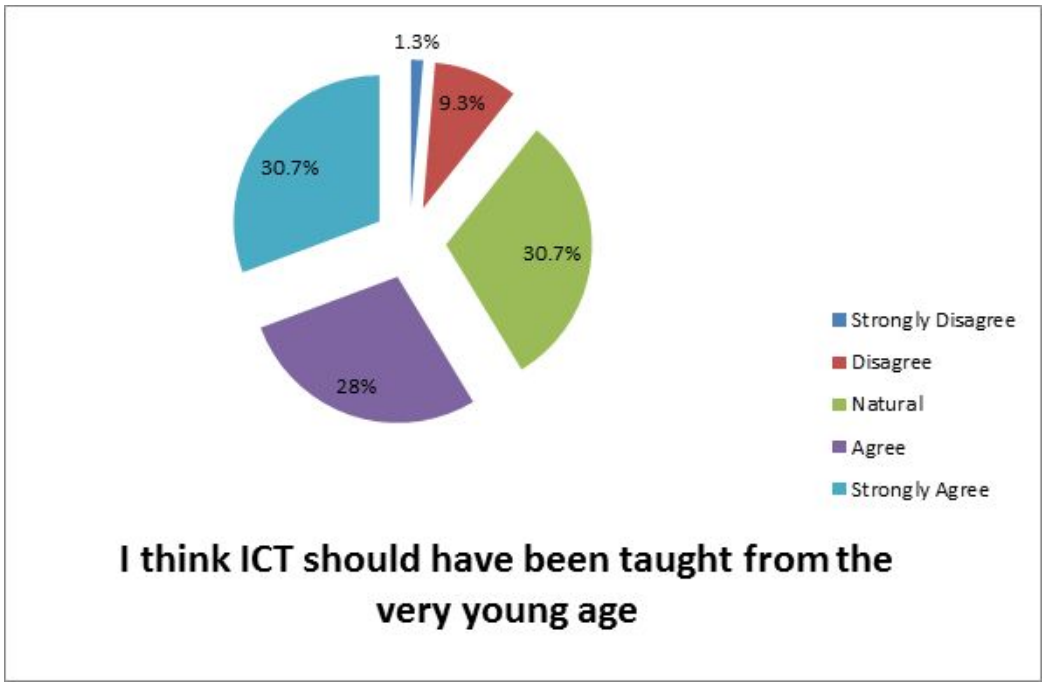


Chart 3(iii): I Think ICT should have been taught from the very young age

Chart above is based on the result of the statement given, "I think ICT should have been taught from the very young age". Thus, it showed that majority of 23 students neither strongly agreed and natural regarding the statement. Meanwhile, there are 7 of them who are disagreed and there is only one of them who is strongly agreed with the statement.

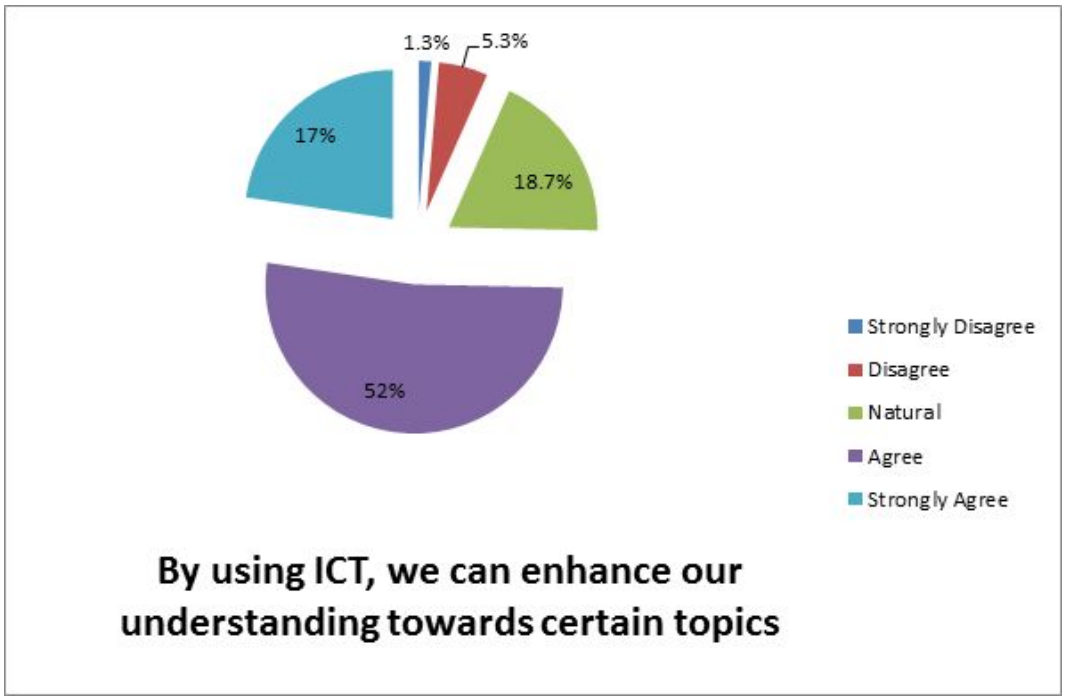


Chart 4(iii): By using ICT, we can enhance our understanding towards certain topics

Chart above is based on the result of the statement given, "By using ICT, we can enhance our understanding towards certain topics". Thus, it showed that majority of 39 students agreed to the statement given. Meanwhile, 17 of them are strongly agreed, and 4 of them are otherwise. On the other hand, there is only one of them who is strongly agreed to the statement, and 14 of them natural regarding the statement.

5.0 FINDINGS

The demographic questions which consists of four questions were conducted. First, a question on respondent's gender was asked. The questions was asked to identify the gender of the respondent and to know which gender get more interested in our topic. It showed that most of the respondents are female, and there are only plenty of male respondents. Besides, the question on respondent's previous education was asked. It was to determine respondent's level of education. Thus, it turned out that the majority of respondents are students from Faculty of Education, whilst the others are minorities from other faculties. A question on respondent's hometown was also asked as the initial intention was to get to know respondent's hometown, which turned out the majority of students are come from both suburban and urban areas.

Section B(i) of this questionnaire is a multiple choice question. "Which one would you prefer to carry to class" is the first question asked in Section B(i). The question was conducted to determine student's preferences items for them to carry along. Therefore, the result showed that most students prefer to carry their textbook rather than technology devices. Next, the question entitled "How long do you surf the web daily" was asked. The question was specifically to recognize how long does the time spend by respondent to surf the internet daily. As a result, it indicated that people now cannot live without internet as most students spend 3-4 hours daily on internet, and only plenty of them who are spending only 1-2 hours daily on internet. Furthermore, the question also focus on how many electronic devices and gadgets does the respondent have at home. As a result, it seemed that majority of them have 3-4 gadgets. It's also not surprising as students nowadays are very keen on ICT and it is just because everything is depending on internet based information. Also, a question asked on which social applications does the respondent use the most was conducted to recognize the most favourited social applications used by students. Thus, the result showed that students use Whatsapp application frequently as it is a convenience application to communicate in person or a group with each others. On the

other hand, the question on which place does the respondent prefer to do their homework and assignments was inquired. The aim of this question is to ascertain the respondent's preferences place to do their assignments. The result indicated most students prefer to do their assignment in their own rooms rather than other places. It so because students are comfortable with their room environment as they can also focus when doing their assignments. "What is the problem you face when using ICT" is the last question inquired in this online survey. The question was asked to establish the problem faced by respondents when using ICT. As a result, it was proved that students are facing problem on slow internet connection. Slow internet connection is also something really is concerning in every collages in UKM as students get to face it very frequently.

Meanwhile, Section B (ii) of this questionnaire is a scale based question, whereas a statement was given as an optional answers for respondent. The first question entitled "My favourite references is Google.Com". The statement was provided to get a clear picture of respondent's preferences on their online search engine. As for a result, majority of students are strongly agreed to the statement given. This is because Google.com is one of the leading search engine in the world so it is something familiar for them students nowadays. Next, the statement on student's fear before having quizzes was also given. "I am afraid to answer my quiz without Google-ing for the information first" was the statement given to establish student's dependencies on 'Google-ing' before examination. Thus, this result might be because students are too dependent on ICT, which had already 'spoon feed' them rather than using their thinking skills to think critically. Next, the statement on student's opinion in using traditional method to do revision. The result showed that most of them are agreed, but only 23 of them are strongly agreed to this statement. It so is because in nowadays' globalisation century, every information could be found just by a *click of fingertip*, though the fact that textbook only offer limited information. Otherwise, the opposite of the statement was also given as to identify the respondent's opinion in using 'high-tech' method to do their revision. The result indicates that majority of them are agreed to the statement. It is so might be because it is simplier and less burdening as they would have to bring along their laptops around, or likewise, in

this case, they would just need their notes and could also write anywhere they would like to. Furthermore, a statement entitled, “ICT helps me to do my assignments” was also conducted. The aim of providing this statement is to get a clear picture of student’s reliance on ICT. The result has proved that students are strongly agreed to this statement. It is probably because they tend to use a simpler way to find an information, and in other term, ICT has everything, so it is not something surprising to embarked with.

On the other hand, Section B(iii) also is a scale based statement. “I prefer to use ICT because it is interactive’ was the first statement give on this section. The main purpose of this statement was provided was to recognize student’s opinion in ICT’s function. As for a result, it seemed like most of them are strongly agreed to the statement given. It so because they might think using ICT is very easy, and it is also proved to be interactive as well. Besides, “I think ICT should have been taught from the very young age” is also one of the statement given in this online survey. It was aimed to get a clear picture of respondent’s opinion in ICT learning should be implemented to human and for a result, it has showed that most of the students are natural to this statement. This is because they might think that there is always an implications, both pros and cons, if only ICT would be taught from young age. Moreover, the statement that was specifically aimed to get to know respondent’s opinion in ICT bad effects. The result indicates that majority of students are either agreed nor disagreed to this statement as they might also think that ICT could not be harmful nor harmful to their thinking skills. Lastly, a statement entitled,” By using ICT, we can enhance our understanding towards certain topics” was given. It was aimed to identify student’s knowledge on ICT’s benefitts. Thus, it has been proved that majority of them are agreed to the statement as the reason could be the realisation on student regarding the benefits of ICT.

6.0 DISCUSSIONS AND CONCLUSIONS

As a whole, this topic of discussion gives us a clearer picture of how people nowadays are so dependent on ICT. No matter where we are, ICT is there to help us solve our daily problems. As a matter of fact, the survey that we conducted on higher institution students, which are UKM students, has shown us that ICT has been part of their life especially when we are talking about education. For example, when the question how long is their daily surfing hours, we can see that most of them spend almost ⅙ of their time on surfing the internet and some even surf for almost the whole day. From this simple question, we indicate that people already used to the use of technology devices and gadgets in their daily activities, for instance "*Typically 16 -24 years olds spend their time on mobile phones and social networking sites than watching television." (OfCom, 2010)*.

The evolution of education also become one of the reason why students are more dependant on ICT. As we can see, in older style of educational only involve chalk and board plus books. Slowly, radio and after that presentation slides are included too. Now, ICT are widely use in education no matter in what form, a tutor, tutee, or tool. That is why ICT are a dominant tool for higher education students to assist them in learning process. This is a huge contrast that shows how ICT has affected our daily life and education nowadays. Lecturers are encouraged to conduct their lessons with the assistant of ICT and students are usually given work or task that involves ICT. Thus, this is also another conclusion we can make from this discussion.

Last but not least, we must accept ICT but at the same time balance it up in our daily life. Although some may say that ICT affects our thinking skills, but looking at the bright side, ICT is also helping us developing our thinking skills as information now are a two-way process, which is receiving and sharing.

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