MULTITASKING: IMPACT OF ICT ON LEARNING (LUAS)

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University students of the present generation consume information technologies much more at a faster rate compared to the previous generations. The availability of the multitasking Laptops, Smartphones, and so on has impacted learning in the present world. It is assumed that these technologies enhance productivity in students learning. There is probability that it is true that these technologies improve productivity, it is also assumed that in certain cases, these technologies could be diabolical.

Multitasking using ICT (Information and Communications Technology) has by and large created a big impact in learning. However, quite few studies have been carried out to investigate the impacts that multitasking using ICT has on learning. There is a big need for studies to look into the direction at which these technologies are actually impacting students learning. The purpose of this paper is to use a questionnaire/survey, interview, and observations, and a test to examine how multitasking using various technologies impact or affects students during their course of learning in the classroom, and also when they are away from school, and proposes a suggestion for further improvement or investigation.

**Keywords:** multitasking, effectiveness, efficiency, productivity, ICT, students, learner, learning, evaluation, monotasking, LUAS, participants.
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I dedicate this thesis to my wife and my lovely daughters: Racheal and Faith Felicity. They are the best thing that has happened to me. God bless you! Love you!

Peter Ajao
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1 INTRODUCTION: IMPLICIT ASSUMPTIONS

1.1 Background

For many years, schools have been making significant efforts in making computer available for students to help them support their learning. With the integration of all that technology could offer, computer is not only used for computing, but it is made in such a way to cater for multitasking purposes. Students of this technological age have taken every form of advantage it could offer. As will be discussed later in this paper, students make use of computer to assist in their learning, but, it is not uncommon to find students using ICT (Information and Communications Technology) to attend to some other things that are not related to their studies while studying. It is assumed that the time many students spend on their actual school-related work, is nothing compared to the time that they spend doing some other tasks that had nothing to do with school work simultaneously with their school work. Psychologically, human brain is believed to work efficiently when there is a focus on a task at a time.

It is believed that there are certain tasks that could be done simultaneously in the real world, but the fact remains that human can only focus on not more than two tasks at a time if the goal is to be productive, and efficient. A video on YouTube April, 2010, title: “Multitasking and the brain – ABC News” This video describes how human brain handles tasks simultaneously. In this video, Multitasking is described as:

“A standard mode of operation in this present technology infected age. It says further that many people are required to perform more than one task at a time to accomplish as much as possible in given period of time. A study in France found that when people do two things at once, one-half of the brain focuses on one task, while
the other half devotes itself to the other job. Researchers use MRI brain imaging to monitor the activities of the brain of volunteers. When the subject was performing one task, both sides of their brain work in unison, but when the participants were asked to do two things simultaneously, the brain activity was divided; one-half was activated while doing one task, while the other side of the brain correlated in doing the second task. Generally, people are able to perform two tasks at once and do them well, but performing more than two at once is more challenging." (ABC, 2010)

Originally, computer was introduced to school as a learning support. It is quite common to find students using computers to multitask; this is expected from computer: ‘ability to multitask’. Some advertisement show that WIFI connected laptops, palms, smart-phones; iphones would impact students learning positively, effectively, and productively. However, some studies show that technology might actually reduce productivity, instead of increasing it (Kirn, 2007). In March 2007, a video entitled “Multi-tasking baby-funny” was posted on YouTube. The video shows a baby of about 1yr sitting in the back seat of a car; the baby was eating an apple, while at the same time he was showing some signs of tiredness. Suddenly, the eating activity started to slow down and the boy engaged in another activity: ‘dozing’. At this point, the father decided to take the apple from the boy, but amusingly enough, the boy reacted, and he opened his eyes and reaffirmed his grip on the apple, and jump-started the eating activity. The boy in this video is a good example of multi-tasking in practice. Multitasking is something that is common in our everyday life. One time or another we discover we are multitasking, either consciously, or otherwise.

One notable thing about this video was that the boy had difficulty in concentrating on both eating and dozing; he divided his attention. He was quite tired, but at the same time, he was not ready to leave the apple alone. Later in the video, the boy decided to let go of ‘dozing’ and chose to focus on the apple. Until the boy focused, there was apparently no efficiency or productivity in both tasks because both tasks were done simultaneously without focusing on any.
Before the advent of graphical user interface in the 80s, students who were lucky enough to work on computer had the opportunity to do only one particular task at a time because the computers in those days were not so keen when it comes on multitasking (Frank, 2009). Even after some years, some computers at that time could do multi-tasking, but it was quite a drag because of the limitation of the memory that was available at that time. Nowadays, the present web browsers open the gate to the ability to have many windows opened at a time, which thus allow a student to be able to use one window to check electronic mail, while he can open another window to do something else such as following a course, downloading, instant-messaging, and so on.
1.2 The impact of ICT

Multitasking in general has been in existence before the arrival of ICT. ICT is believed to be an amplifier for multitasking even though it is quite clear that one does not necessarily need ICT in order to be able to execute tasks simultaneously. Multitasking in the classroom dated as far back as forever. When there was no ICT, there was multitasking. A student can be writing, while at the same time is listening to the radio, watching TV, or talking on the phone. Students’ multitasking is something that is quite familiar with the help of computer. An average computer is expected to be able to execute multiple tasks in a specific timeframe. However, it is quite unfortunate that there are not many studies that look into how the availability of all the technologies that is around today, influence learning. Most of the technologies are targeting leisure, and not originally to support learning. The potential of multitasking of these technologies made them to be a good support for learning, while it also causes distraction, and divided attention to students during learning. It is of a great importance that studies are targeted towards finding how these technologies are actually supporting learning.

Generally, students find it challenging to focus on just one particular task at a time, whilst having their laptop switched ON. There is always the enticement to do some other things, especially those things that are not related to their studies. However, it is also important to note that students sometimes need to multitask; it all depends on the situation. The purpose of this paper is to look into the impact of multitasking on learning. In other to be able to accomplish this, this paper would look into different types of multitasking situations critically and analyze them deeply. In the end, this paper would take a look into this group of situations of multi-tasking, and propose suggestions for future study on this subject.
1.3 What is Multitasking?

Multitasking can simply be defined as a skill to do more than one thing during a specified timeframe, in parallel. It is the potential to be able to juggle tasks simultaneously. It could also be defined as an ability to do more than a task sequentially. Multitasking could be consciously, or sub-consciously. A good example of subconscious multitasking is skating on an ice rink and listening to music, bending at each turn, and engaging both eyes on where to go. The sub-conscious mind is taking care of movement, turning, and listening, while the conscious mind that can do just one thing at a time, concentrates on the direction. It is clear from this explanation that one can only execute a task consciously, while the remaining is done sub-consciously. A professional skater can perform certain tasks because she has carried out this task repeatedly that it has now become a routine to the skater.

Going back to the example of the skater, it is common to notice that learning something in the beginning do pose some challenges to the learner. The fact that the learner has no previous knowledge of the new experience calls for the whole mental faculty of the learner. The learner in this case requires total concentration in order for the conscious mind to attend to every necessary detail of action. It is only after many flawless practices that the learner becomes perfect for what she does, and can now skate and show skills at the same time.

As mentioned in the previous example of a skater; the skater apart from skating could also show some of her skills in this sport. Such skill only comes from someone who is experienced. In the example above, multitasking seems to pose no problem. Problem will start happening, for example, if the skater decided to answer phone call, reply to a text message at the same time. One common bad example of multi-tasking is text messaging while driving. Messaging while driving is an offence in some countries, but it does not mean that people do not commit this crime daily. The use of handheld cell phones while driving was banned in the UK in 2003 due to abuse by
some drivers who paid no importance to their lives and those of others (Wilkinson, 2011).

Below is the summary of Royal Society for the prevention of Accidents in 2008: “Performing mental tasks concurrently is worse compared to when performed individually because there is always the division of attention, hence switching between the tasks. The tasks all vie for the cognitive processes. A driver using a cell phone whilst driving, the driver must pay attention to operate the phone whilst maintaining the conversation. At the same time, the driver is guiding the vehicle and keeping an eye on the road” (accidents, 2008)

1.4 Multitasking and learning issue

Multitasking and learning simply shows that a learner can have divided loyalty while learning. An example of such is a learner uses a phone, sends text messages, uses twitter, plays online games, uses instant messages, has dialogue with a classmate, passes a pen, watches on online movie, and uses Facebook, while the lecture is in progress. Truly, it is believed that ICT has created a new form of technologies via the mentioned social network technologies. It is the pervasiveness that it brings along that makes the impact on productivity and effectiveness worth reviewing.

Older computer with the very early versions of windows can be compared to human type of multi-tasking. In the very old windows, the switching between tasks could be visibly noted by the user of the computer because it shows, there’s some element of a delay period that is experienced by the user. Students also divide their attention in a very similar way, and thus reveal some traces of delays in their doings.

Sometimes, this switch is invoked voluntarily. I was inspired to choose this particular topic because of the activities that I found myself in while trying to figure out a good thesis topic. Some of the activities amongst others included, check mail, check the food in the oven, do laundry, answer the phone, read text messages, check weather
report, and look at the state of my desk. I was able to achieve many of these because of the potentials of technologies. All these cause overload to the brain and do not allow full concentration and dedication. Loyalty is completely divided. Time is not managed efficiently; hence it is impossible to be effective, efficient, and productive.

The issue of task's juggling is compounded by the release of latest technologies (interruption). Students, on the other hand, are much excited by the availability of new forms of technologies, and would do anything to try it out to know if it is something they would like to add to their existing list of technologies or not. Below is a list of some of the technologies that impair or interrupt students at school, or at a learning place:

- E-Mail
- Real time data streaming
- Multitasking operation system (Graphical User Interface)
- Mobile telephones
- SMS (text messaging)
- Browsers
- Chat rooms
- Online messaging
- Social networking (Facebook, Twitter, and so on…)
- Cameras
- Watches

1.5 Research Objective and motive

The main goal of the paper is to investigate the challenges that some students of LUAS (Lahti University of Applied Sciences) face when they have lessons in a classroom equipped with computers. The general motivation that solicited for this research is the common occurrences of multitasking that goes on during lectures at schools. It is true some courses call for the use of computer, but the truth is, many of the activities some students engage in during even lecture, which require the use of
computer are not activities that relate to school work at all. This is a motive to investigate how the use of multitasking gadgets (ICT) impact's learning.

1.6 Research purpose and questions

The research purpose is to investigate why students generally find it difficult to focus, why do they think that multitasking is non-avoidable in certain circumstances? The idea is to see if the original idea of having ICT as a support is now at the expense of the student’s attainment. Research questions for this paper are:

1. Is multitasking of technology a support or a distraction to learning?
2. Are female students better in multitasking than male students?
3. What are the factors that influence multitasking during lectures or school work?

Chapters Framework

Chapter 1 describes the world of multitasking, impact of ICT, multitasking description, multitasking at school, problem description, research objective, and finally, the research questions. Chapter 2 describes the literature review pertaining to the topic. Chapter 3 discusses the method used to analyze the result of the research carried out. Chapter 4 describes the analysis of the research data, while chapter 5 discusses conclusion, answers to the research questions. Chapter 6 is on discussion, and the limitations of this study, and finally, the proposed suggestions.
2 LITERATURE REVIEW

This chapter discusses literatures that were reviewed. The literatures were related to the research topic. In this chapter, focus is on how multitasking affect the general public, and how it affects students during their learning. Further, it discussed the views of scholars on how to manage multitasking better.

2.1 Computer: multitasking

The original idea of having a computer in the school is to act as support in learning. In the beginning, before the computer finally became what could be afforded by schools in abundance, computer was made in such a way that it could handle a task at a time. In the present age, computers have become so powerful that it can do many things simultaneously. This is a good idea for users who have a list of things to do with computer; you no longer need to wait for one task to finish before executing another task. On a typical school day at Lahti University of Applied Sciences, it is quite common to find students in the classroom, library, canteen with some sort of technology, mostly mobile phones. Students are always using ICT anytime, to gather information, and to share information. It is quite obvious that ICT has a very big influence on learning and the learners.
2.2 Multitasking research

It is true that productivity paradox has been dead and buried, but what has not been properly looked into is the micro-economic impact of ICT on the productivity of students. It is assumed that multi-tasking using ICT gadgets make people in general more effective and productive. This may be true. After-all, the idea of having a faster computer processor is to be able to carry out multiple tasks in a limited timeframe. From personal experience, when a computer becomes loaded with a lot of activities, the efficiency of the computer will start to drop, which will eventually affect the efficiency of the user also. One of the notable findings from (González, 2004) is the remarkable short time that workers spent jumping from one task to another. According to the Gonzalez and Mark, the mode of work of the workers in their research was fragmented; people spend an average of not more than 3 minutes on a task before they abandon the task and jump on another. Multitasking research in this paper are divided into categories. Below are the categories that will be reviewed in this paper with more focus on ‘Multitasking impact of ICT on learning’:

I. Psychology, medicine, and multitasking
II. Multitasking in general
III. Multitasking and ICT

2.3 Psychology, medicine and multitasking

2.3.1 The good…
Truthfully, multitasking can enhance productivity of an individual. It has taken the business world to a greater height; one can now execute tasks without being subject to the traditional linear style where one face a task and focus on the one task until it is completed. A good example of an efficient multitasking is eating while installing software on a computer, returning a phone call while doing software update. It is quite common that student multitask psychologically without knowing it. A simple example is looking at the screen while typing. This typing activity is done
psychologically by those that have experience in typing. They can type and not look at the keyboard but the screen, to see the output of their work. This is not the case with somebody that is beginner. The beginner will be looking at the keyboard in order to identify the right key before pressing it, and then look at screen to verify the input.

2.3.2 The bad…

Research on how human brain operates is quite uncommon. According to medicine, hippocampus is the part of the brain that accumulates and recalls data, while the striatum is the one that is in command of repetitive tasks (Kirn, 2007). According to this research, when human is consciously engaged in multitasking, the brain effectiveness slows down. It went further to explain that tiredness becomes a common characteristic of a multitasker; they become so tired that they lose control of things and forget easily. Another flaw that is associated with multitasker is: ‘stresses. Multitasker loses temper easily. According to (Dzubak, 2008), even though there is evidence that multitasking ability improves with practice; she concludes that it all depends on the task in question, the level of thinking, and future application need, there might be the consideration to do the tasks one at a time, without any form of interruption, and do the tasks well. She cited some researchers that support the claim that shifting from one task to another causes a delay (Wasson, 2007). The delay caused also affects the brain because the brain has to go back to default, restart and refocus. So, if the idea of multitasking is to gain time, then this is contrary.

It is crystal clear that executing three tasks simultaneously, takes more time and energy compared to when the tasks are done sequentially (Gay, 2003). Furthermore, according to (Robinstein et al, 2001), the act of conscious switching between tasks causes fatigue. According to Lohr (Lohr, 2007), in a citation; Meyer pointed the difference between conscious switching and unconscious switching of tasks:
Conscious switching is a decision to move from one task to another, while the unconscious is an interruption that occurs while carrying out a task, such as a phone call, text message, email alert, a beep, doorbell, and others. Multitasking generally reduces efficiency, increases the time spent to execute tasks, and the chances of making errors are higher (Brynie, 2009).

2.3.3 The ugly…

Some studies showed clearly that multitasking causes productivity to slow down, loss of time, and so on, (Mark, et al, 2005). One important thing about juggling from one task to another is, during the switches, the pauses show no significance just because they are so short that the multitasker hardly notices the pauses. At times, these delays, pauses, or interruptions are only about a second or less, but it has caused some devastating and irreversible effects in some companies, families and individual. Sometimes, it has even been fatal.

![Multitasking](image)

Figure 2: Multi-tasking in a digital age Photo by - mrjgoyeneche.
3 RESEARCH METHOD

This chapter describes the methods used in gathering data from the students, and the data collected from students of Lahti University of Applied Sciences. For the questionnaire part, data were collected from 36 participants; 18 males and 18 females. There were three groups involved in this sampling. First class was of Business class. Second class was Information Technology class, while the third one was a mixture of both. For the observation part, a class of 12 students was observed during a lecture that lasted 2 hrs. Finally the interview and test part was from 5 students, and the 5 students were from those students that took part in answering the questionnaires. The data collection period was in the space of 3 weeks. Questionnaire was done in week1; week2 was for the first observation, while week3 was for the second observation, and also for the interview, including the test.

The research methods were both quantitative and qualitative research methods. They were both suited for this research because the researcher used questionnaire, interview, observation, and a test. Quantitative research method was used with the questionnaire because it required a large sample; in this case, 36 participants took part in the sampling. Qualitative research method was used in the interview part because few students were comfortable with an interview. So, there were five volunteers for this part of sampling.

3.1 Data Collection

Data were collected through distribution of questionnaires, organizing interview, and observation of students during a lecture at LUAS. Three different groups of students took part in this survey. The first group of students was business students, while the second group was IT students, while the third group was made up of a mixture of both Business and IT students. The first group was given the questionnaire to fill; they filled it and returned it. The second group was asked to do, likewise. The third group also filled the questionnaire, but they were observed without them knowing. The researcher did not inform the class that he was going to observe. The reason is to allow the students to be their normal selves without any reservations.
The questions are fashioned in such a way to collect the necessary and related information regarding the impact of multitasking using ICT on learning. The questionnaire method was adopted because there were many relevant questions that if asked through an interview might take quite some time, and might put the participants under pressure, and hence compromise some responses. It is believed that participants find it easier to answer lengthy questions in their own home, and under no pressure. Moreover, it was made known to the participants that they did not need to write their names or give any identification whatsoever. It was all going to be treated as anonymous. Anonymity evidently allowed the participants to feel relaxed and come out of their shells in answering the questions.

3.2 Observation of students

This observation was carried out in a class of both business students and IT students. The observation was done without the knowledge of the lecturer and the students. The idea was to allow things to flow unreservedly; allowing the students to be themselves and act freely without any reason to be cautious. After all, the idea was to collect unbiased samples. Observation was carried out in a computerized classroom. There were twelve students who were observed. During the observation, two activities were observed; computer-based activity, and offline activity.

There was a visiting lecturer who gave a presentation on that day. During the presentation, the following was recorded; students were engaged in other activities that had nothing to do with the lecture; some were on game websites, social network site, news site, Hotmail site, eBay, apple.com site, Wikipedia, web player. From the twelve computers that were running, one was completely left by the user; the user paid no attention to the computer throughout the lesson. Another user was using a word processor to attend to some pending assignments, while the remaining users were busy multitasking. During the class, there were two verbal conversations.
3.3 Data collection and Analysis

The data came from students. Data were collected mainly for this research purpose, and were used in subsequent data analysis. The methods were: questionnaire, interview, observation, and a test. Further data were collected from journals, books, similar research papers, interviews, literature reviews, articles and other relevant sources. The research was carried out by using questionnaire, interview, observation, and a test. There was no fixed question, or any kind of patterned questions. Open ended questioning system was adopted. The idea was to allow students to feel free and under no pressure.

The research approach used for this paper is: descriptive research approach, because this kind of approach allows me to describe the event in desired depth. I also chose the descriptive approach because it allows both quantitative and qualitative methods to be used. This research was conducted at LUAS; questionnaire was distributed to the participants, interview, observation, and tests were conducted using LUAS students, thus making the data collected to be reliable. The students were valid students of the institution as at the time that the research was conducted. Data are quite valid, since the participants are currently pursuing a degree program at LUAS, and they were all full-time students. The questionnaire was filled in without any pressure. The participants were informed that the data were not going to be used for any other thing apart from this research purpose, and that their participations were to remain anonymous.
3.4 Possible risks

It was impossible to rule out the possibility of risks in relation to the collected data. The research topic (Multitasking: Impact of ICT on learning) was a challenging topic. The issue here is the limitation of data collected. Participants who took part in the survey were few. So, there is possibility that the result does not actually interpret the full truth of the entire population of the school students. It is also quite possible that students are biased during their answering, have divided attention (multitasking). One important thing that should be noted is that this research was conducted using two degree programs only. This might also have some effect on validity since few samples were taken, more tests could have been done in such a way that the participants would be allowed to use their computer in one lesson, and be asked not to use a computer in the same lesson, but on different occasion, and the participants tested on both occasions, and results compared.
4 DATA ANALYSIS

4.1 Overview of chapter 4

This chapter discusses the data obtained from the questionnaires, observations, and interview in detail. The findings are laid out and analyzed in order to understand the role of multitasking in learning, and to help in answering the research questions.

4.2 Multitasking skill

![Bar chart showing multitasking skills](image)

Figure 3: Multitasking skill of participants

Figure 4 above shows the responses of the students regarding their multitasking skills. There were 64% of the students who claimed to have a ‘Good’ multitasking skill, 25% ‘Very good’, 11% ‘Fair’, while there were no candidates for both ‘Excellent’ and ‘Poor’. From this figure above, we see that many of the students have good knowledge of multitasking. So, we can say that the participants multitask, and thus are valid for this sampling.
4.3Multitasking is life

![Bar Chart](image)

Figure 4: Multitasking is life

From Figure 5 below, we can see that 5 (14%) students had no opinion, 2 (6%), strongly disagree, 3 (8%) somewhat disagree, 18(50%) somewhat agree, 8 (22%) strongly agree. Analyzing this figure 5, we can see that 26 out of 36 students agree that multitasking is a way of living; there is no better way to live and be productive without multitasking.
4.4: Multitasking disturbs focus

From Figure 6 below, we see that almost half of the students, 17 (47%) were in disagreement that multitasking interrupts their focus, or attention during lectures or studies. Also, it is interesting to note that 16 (45%) of the total students agree that multitasking does impact their studies negatively. This result shows that there is some kind of conflicts with the responses of the participants when more than half of them claimed that multitasking is a way of life to them. It could also be interpreted that some students multitask, but they do not overdo it.

Figure 5. Multitasking while studying disturb concentration or focus
From the two figs 7 and 8 above, we can see clearly that girls spent 18 hours more than boys daily. We can also see that most students like to spend no more than three hours in a day. Figure 9 is yet another interesting data representation. We could see
that 13 from 36 students use one or two devices, eight students use three devices, while two use four devices. Breaking this data further between males and females; males have eight students use 1 device; six students use 2 devices, and 3 students use 3 devices, while 1 Student uses 4 devices. On the side of the females; 5 females use 1 device. Seven females use 2 devices; five females use 3 devices, while 1 student uses 4 devices just like their male's counterparts.

4.5 Social Network.

From Fig. 10 above, we can also see that most males (seven students) spend about 2 hrs on the social network; it is the same thing with female students (6) as well. However, the figure shows that (five female students), which is almost 30% of the female population spend five hours or more on the social network daily simultaneously with their studies. These data also help to answer one of the research questions; female students do multitask more than male students. We can also see that the number of hours spent in total by female daily exceed the one spent by male students by 10 hours every day.
## ONLINE ACTIVITIES - Web Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Students</th>
</tr>
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<tbody>
<tr>
<td>LinkedIn (5 students)</td>
<td></td>
</tr>
<tr>
<td>Facebook (many students)</td>
<td></td>
</tr>
<tr>
<td>School site (2 students) visited course page</td>
<td></td>
</tr>
<tr>
<td>Online shopping…eBay.com, Apple.com (2 students)</td>
<td></td>
</tr>
<tr>
<td>Game site (3 students)</td>
<td></td>
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<tr>
<td>Hotmail (3 students)</td>
<td></td>
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<td>Web player</td>
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## OFFLINE ACTIVITIES

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<tr>
<th>Activity</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chatting with another student (4 students)</td>
<td></td>
</tr>
<tr>
<td>Playing with mob phone (0X)</td>
<td></td>
</tr>
<tr>
<td>Abandon computer to pay attention to the lecturer (4 students)</td>
<td></td>
</tr>
<tr>
<td>Media player (2 students)</td>
<td></td>
</tr>
<tr>
<td>Word processing (1 student)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 1: Class Observation

<table>
<thead>
<tr>
<th>Class observation overview:</th>
</tr>
</thead>
<tbody>
<tr>
<td>There were 12 students in the class, and every student sat in front of a computer. 10 of the students were engaged in some tasks unrelated to school or coursework. Often some of the students were switching from one task to another, even while listening to the speaker, some students still had their hands on their mice; they look at their screen and at the lecturer back and forth.</td>
</tr>
</tbody>
</table>

### 4.6 Individual Observation

Observation of just 3 students from a class:
<table>
<thead>
<tr>
<th>ONLINE ACTIVITIES- Web Activities</th>
<th>OFFLINE ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>– LinkedIn (5X)</td>
<td>Chatting with another student (2X)</td>
</tr>
<tr>
<td>Facebook (1)</td>
<td>Playing with mob phone (2X)</td>
</tr>
<tr>
<td>Cartoon site (9X)</td>
<td>Abandon computer to pay attention to the lecturer (4X)</td>
</tr>
<tr>
<td>Google search (3X)</td>
<td></td>
</tr>
<tr>
<td>Course related page (2X)</td>
<td></td>
</tr>
<tr>
<td>Other Social Network (2X)</td>
<td></td>
</tr>
<tr>
<td>News site (2X)</td>
<td></td>
</tr>
<tr>
<td>Google mail (2X)</td>
<td></td>
</tr>
<tr>
<td>Lenovo (1X)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Student1 Observation

**Student1 multitasking description:**
The first window opened by the student was of LinkedIn page, the student spent about 40 seconds on this page, and navigated to Facebook's page, and where the student did not spend even 30 seconds before jumping to Google search page. After about 25 seconds on Google's search, the student was on LinkedIn page for the second time, this time, and the student was ON for a minute, and then switched to Facebook, and back to LinkedIn page. The switching went on for about 2 minutes before the student chose to go on a Chinese movie page, from where the student navigated to a cartoon page; the student was scrolling up and down this cartoon page, and stayed on this page for a maximum of 9 minutes. Student's window changed to Lenovo page, where the student spent another 4 minutes navigating through the page. After 4 minutes on Lenovo site, the student changed to LinkedIn and spent about 5 minutes before changing to an offline task; where the student was chatting with another student in the class.

This chat went on for another 2 minutes, before the student opened a window that had the school site. Student was on the school site for just over 1 minute before changing
to cartoon page, then LinkedIn, and back to cartoon page, all this within 2 minutes, and the student returned to LinkedIn page. The student spent about 2 minutes navigating through LinkedIn. After about a minute on LinkedIn, the student took out his mobile-phone, and he was playing with his phone for about 1 minute or so. Later, he was looking at the direction of the lecturer, without looking at the screen or his phone. The student looked in the direction of the lecturer for about 2 minutes, and he was back on cartoon page for another 2 minutes, before he chose to focus on the direction of the lecturer again, this time for a minute. Student was on cartoon page once again for another 3 minutes, and then he looked in the direction of the lecturer; the focus on the lecturer’s direction took about 5 minutes this time.

The student now decided to chat with another student (verbally). The chat went on for about 3 minutes, before he decided to go back to the cartoon page. He was on the cartoon page for about 1 minute before the class went on a short break. After the break, he started fiddling with his mobile phone for about 3 minutes before he put it away and was paying attention to the lecturer. The attention on the lecturer only lasted about 1 minute before he went back to his mobile-phone, this time for about 1 minute, and then Google mail. The student wrote an email for about 2 minutes, before navigating to news page from Google's site. After about 3 minutes on the News site, he decided to do online chat for about 2 minutes, and then back to News's site. He spent a total of 8 minutes on the News site. From the news page, he moved to cartoon site, and was active there for about 3 minutes, before going back to do online chat for not even up to a minute. He opened Google's mail, next switched to the cartoon site, in the space of 1 minute. Student opened school page, and was browsing through the course site for about 2 minutes before changing to cartoon site, then Google's search page, and the lesson ended after about 2 minutes on Google's site.

**Student1 Analysis:**
This student was quite active in switching from one task to another. One notable thing was that all the tasks had nothing to do with the course. The class started at 12:15, and the student did not look up in the direction of the lecturer until 12:45; that
was half an hour of non-course-related tasks. Another thing that was noted was that
the student had switched four tasks in 1 minute. The time spent on unrelated to the
course task was between 4-5 minutes, and a total of two minutes was spent on the
lesson.

4.6.1 Observation of Student2

<table>
<thead>
<tr>
<th>ONLINE ACTIVITIES-Web</th>
<th>OFFLINE ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LinkedIn (0X)</td>
<td>Chatting with student3</td>
</tr>
<tr>
<td>Facebook (11X) in collaboration with student3.</td>
<td>Playing with mob phone (0X)</td>
</tr>
<tr>
<td>Cartoon on facebook (unlimited)</td>
<td>Abandon computer to pay attention to the lecturer (2X)</td>
</tr>
<tr>
<td>Google search (0X)</td>
<td>Chatting with student3 ( 7X)</td>
</tr>
<tr>
<td>Course related page (1X)</td>
<td></td>
</tr>
<tr>
<td>Other social Network (0X)</td>
<td></td>
</tr>
<tr>
<td>News site (0X)</td>
<td></td>
</tr>
<tr>
<td>Google mail (0X)</td>
<td></td>
</tr>
<tr>
<td>Lenovo (0X)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Student2 Observation

**Student2 multitasking description:**
This student had his computer switched ON, but the student was not doing any online
activity. The screen remained showing the desktop for a very long time, even for the
duration of the lesson. One notable thing was that the student was actively involved
in a chat (verbal) with another student in the class. The student was talking to another
student, while at the same time, he was looking at the screen of the other student, and
they were both giggling. The other student had Facebook's page opened, and he was
navigating within Facebook to show some cartoons to student2. This was the
situation for student2 for some time, until he finally decided to abandon his desk and
move his chair closer to the other student to enjoy a better view of the other student’s screen. At some point, the student stopped briefly to pay attention to the lecturer for a total of 10mins, before he switched back to the chat, and to share the screen with the other student. The student continued chatting and viewing the screen with the other student. The other student happened to be the third student who was being observed.

**Student2 Analysis:**

This student was quite interesting; in the beginning of the class, the student had the computer ON, but showed no interest in engaging the computer. He allowed another student to lure him into a chat that interested him more than the actual lesson. It is quite unfortunate how some students who have no interest in learning manage to influence some other students to go along with them. Multitasking is not always invited by students, not like student1 who controlled almost every form of multitasking he was involved with.
Observation of Student3

<table>
<thead>
<tr>
<th>ONLINE ACTIVITIES</th>
<th>Web Activities</th>
<th>OFFLINE ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LinkedIn (0X)</td>
<td></td>
<td>Chatting with student3</td>
</tr>
<tr>
<td>Facebook (11X) in collaboration with student2.</td>
<td>Playing with mob phone (0X)</td>
<td></td>
</tr>
<tr>
<td>Cartoon on facebook (unlimited)</td>
<td>Abandon computer to pay attention to the lecturer (0X)</td>
<td></td>
</tr>
<tr>
<td>Google search (0X)</td>
<td></td>
<td>Chatting with student2 (7X)</td>
</tr>
<tr>
<td>Course related page (1X)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other social Network (0X)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>News site (0X)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Google mail (0X)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lenovo (0X)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Student 3 Observation

**Student3 multitasking description and Analysis:**

Student3 did not visit more than 2 sites during the entire class. The multitasking engagement of student3 was between facebook and chit-chatting with student2. The student spent most of the class on facebook site. Student3 was browsing through series of funny cartoon characters, and each time would get the attention of student2, and they would both giggle. The second site the student visited was the school website, and the student was on the site for 8 minutes. During the time that the student was browsing the school site, the student was constantly giggling with student2. At a point, the system crashed and the browser was forced to close. The
student immediately restarted the browser, and in no time was back on facebook page. The student never at any point looked in the direction of the lecturer for the entire duration of the class.

This student showed a lack of interest in the class, even though he was in the class. Moreover, he managed to get hold of another student as an accomplice in multitasking doing unrelated tasks. It is difficult to place this student in that the student was observed just once. Anything might have been the cause of multitasking. Until such a case is closely monitored and recorded and then analyzed, it is difficult to make any conclusion.
Interview table

<table>
<thead>
<tr>
<th>Questions</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
<th>Student 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Q1) Do you consider yourself a confident multitasker?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>(Q2) Which of the social network applications do you use most?</td>
<td>Facebook</td>
<td>I don’t use any.</td>
<td>Facebook</td>
<td>Facebook</td>
<td>Facebook</td>
</tr>
<tr>
<td>(Q3) Do you think multi-tasking affects your focus at lectures or studies?</td>
<td>Yes</td>
<td>I can do 2 things simultaneously, and not lose focus.</td>
<td>Yes</td>
<td>Yes</td>
<td>I don’t multitask during lectures.</td>
</tr>
<tr>
<td>(Q4) Do you think that you can do more than two tasks simultaneously?</td>
<td>Yes, I think I can manage three things simultaneously well.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Only 2 things, and not more</td>
</tr>
</tbody>
</table>
(Q5) Why do you multitask during lectures or while studying?

*It comes automatic, I just find myself doing it.*

Table 5: Interview Data

From the three classes that took part in the sampling, 5 students were interviewed. Table 5 explains the data collected for the interview.

From the table Q1, we could see that three participants; student2, student3, student4, said that they were not confident in multitasking.

Q2 Four participants; student1, student3, student4, student5 frequently use Facebook social network. The findings here show that Facebook application is dominant in the lives of the students. 80% mentioned ‘Facebook’ as their favorite and all time social networks.

Q3 Three participants; student1, student3, student4 admitted that multitasking during lectures or studies do affect their focus. The findings about the impact on focus showed that 60% of the students think that multitasking do conflict with their concentration.

Q4 Four participants; student1, student2, student3, and student4 believed that they could handle more than two tasks together. The findings here show that the students who said they could handle more than two tasks simultaneously probably did not understand what they were saying.
Q5 Student1: “…it comes automatic, I just find myself doing it…”
Student2: “…I can manage 2 things simultaneously without losing focus…”
Student3: “…um, facebook is what I find really hard to handle…”
Student4: “…social network, phones, messages …”
Student5: “…I don’t multitask during lectures …”

4.7 Test Result
From the test part, participants were asked to spell “GOD BLESS AMERICA”, while at the same time, they write their full name. From the five participants, only one participant (20%) managed to complete the test successfully, while the rest of the participants could not manage to handle the two tasks simultaneously. From the 4 (80%) participants who could not manage, 3 (75%) of the 4 did manage to complete the test, but they paused many times. This caused loss of time compared to when done independently. The remaining participant who happened to be the first participant to take the test did not manage to complete the test. She said she could not handle it.

4.8 Test Analysis:
When comparing what the participants claimed in the interview, compared to how they did in the test, there were some disagreements. An example is the first participant, who also happened to be the only lady who took part in the interview and test; she said she was a confident multitasker, but could not manage to complete the test; she broke down in the middle and confessed that she could not handle it. The three that managed to complete the test did so with some breaks. This showed that they were switching tasks; hence there was evidence of delay for their brain to stop and refocus. The result shows that multitasking, especially when it has to do with tasks that one was never used to, will cause loss of time in the beginning because of lack of initial knowledge. In the case of the students, they were trying hard to focus, and it is the reason why there were a lot of pauses.
5 CHAPTER – CONCLUSION

From the data collected in this study, it is assumed that multitasking as a way of learning is on the increase side, though there are no concrete records of how detrimental it is impacting students learning. It is necessary to have research at different levels in order to be able to measure the impact of multi-tasking at distinctive levels, and how it affects learning. Assumptions from this paper are such that:

1. Negative comments made about multitasking impact on learning are not unacceptable, but they are yet to be well established.
2. The research issue of a case is not generally acceptable for another case; cases should be dealt with according to their weights.

The purpose of this paper is to answer the following research questions:

5.1 Q1: Is multitasking of technology a support or a distraction to learning?

From the findings of this research, it is quite difficult to answer this question. So, it is suggested that the answer to this question is both “Yes” and “No”; it all depends at which angle you are looking at the multitasking. As mentioned earlier, multitasking has levels. Multitasking of technology becomes a distraction when it is not managed well, such as when multitasking is heavily done, it leads to ineffectiveness, inefficiency, and affect productivity because the brain is subject to many things. Heavy multitasking is reported to cause even stress to the multitasker. In the case of students, more mental work is required since there is divided attention and concentration. So, it is possible that the education productivity goes on the dwindling side.

On the other hand, multitasking that is done moderately, and that is controlled, is seen as a support. You could check your mail during the lecture briefly, or read a text
message quickly, and not lose focus on your lecture. You could be on Facebook, and not get carried away by chats and all that stuffs. Social network could be used to one’s advantage, and not to one’s peril. A student might be on Facebook, chatting with a schoolmate about school work, might be following training, collecting materials for studies, or just socializing.

5.2 Q2: Are female students better in multitasking than male students?

From the findings of this research, we see that female students spend 10 hours multitasking more than male students. Moreover, five female students strongly agreed that multitasking is required to meet up with commitments, compared to male students (2). Also, the number of electronics that female students engage at a time is more compared to men. Similarly, female students spend more time on social network compared to male students. All these show that female students are more likely to be more effective when it comes to multitasking. In this paper, the interview did not feature more than one female from five participants, thus rendering this aspect of research not proportional. Therefore, it is advised that future studies should take note of this limitation.

5.3 Q3: What are the factors that influence multitasking during lectures or school work?

One of the fundamental factors that influence multitasking during lectures is the pre-availability of technology itself.

**Factor 1:** Computer: It is used in order to accomplish tasks, and also in order to be able to multitask. This is the opportunity that is presented to students, and they (students) take the advantages presented to them whenever they find themselves in front of a computer.

**Factor 2:** External influence: Another factor from the findings in this paper is Student2 that was lured into multitasking by a fellow student. This is an external
It is common to see situations where some students show signs of weaknesses when it comes to making decision, so, decisions are made for such students.

**Factor 3:** Addiction could be a possible cause for multitasking. Just like we have people that are addicted to alcohol, drug, etc., it is also possible to have students who are addicted to multitasking. Some of the students know that they are having problems with their studies because of their heavy multitasking, but they just cannot find a way to bring themselves back to order. It is suggested that awareness should be created, and such students reached for some sort of counseling. Some of them if helped would change their habit.

**Factor 4:** Social Network: This is where most students struggle. Our findings in this paper showed that students struggle between school-work and social media (Facebook). This would reduce capacity for essential processing and representational holding, while increasing the chances of making mistakes or errors. From our findings, 80% of the students use Facebook. The unknown in this case is that this paper has no information on how students manage their Facebook activities. It is therefore suggested that further research and investigations be carried out on the activities that the students are engaged in when using social media. Hence, as mentioned earlier, social network if managed productively, could be a support for learning.

**Factor 5:** Boredom is another reason that could cause students to multitask. An example is of a student, who does not understand what the lecturer is saying, would become bored out and resort to some other engagements in order to kill the time. It is not clear if boredom was responsible for the actions of the observed students in this paper. It is seen as a possible factor, just like all the other factors mentioned earlier.
CHAPTER – DISCUSSION

From the data collected, it was found that multitasking using ICT do impact learning of the students. Some of these facts were given by the students freely which make it to be of a great deal. It is necessary that students need to keep up with their peers, and usually their best mode of keeping in touch is through the use of technologies. It is also true that students use these technologies as a support in their learning, but the amount of time that is put into the use of unrelated tasks should be put into consideration and evaluated as well. Although, (Dzubak, 2008) mentioned that multitasking do improve with age, he claims that university students are highly skilled at multitasking. On the other hand, (Craig & Bialystock, 2006) suggest that multitasking ebb with age. From the findings of these studies, it showed that many students multitasking ability improved with age. So, the findings of (Craig & Bialystock, 2006) that multitasking drop with age is not valid.

I do somehow agree with (Dzubak, 2008), that multitasking skill improves with practice, but as mentioned earlier, it also depends on the nature of the tasks, and the ability of the one carrying them out. From the studies, it was found that many students invest a lot of time on the internet keeping in touch with their friends on Facebook. Obviously, this would have adverse effect on their academic performances, one way or another (Gezell, 2007). Although, this research did not go into the academics of the students, it is suggested that future research should take this into consideration.

Secondly, in this paper, it is found that majority of the female students have strong opinions when it comes to multitasking, female students spend 10 hours more/daily than the male students, and female students use more gadgets simultaneously compared to the male students. According to (Keith, 2010), female students were 70% better than their male counterparts after taken part in a task involving searches for a lost key. According to the report of Professor Keith Laws, 50 male students, and 50 female students took part in this experiment, where the male and female students
were all given a plain paper each, they were asked to draw how they planned to search for the lost key on the paper. The report claims that the female students were better than the male students in strategic planning. I tend to agree that females are better at multitasking than men, but with the clause that it all depends on the nature of the tasks. Although, (Halpern, 2000), claims that women have an edge over men when it comes to multitasking because corpus collossum; the part that is responsible for synthesizing information between the right and left part of the brain, is wider in female.

Lastly, the data collected from the students, we can see that students use different gadgets during their course of studies. It is true that some of these gadgets are essentials, but the fact that they are engaged during learning causes divided attention and thus negatively impact learning, especially in the area of memory. According to (Arden, 2002), people flirt with memory loss when doing multitasking. He went further to add that each time an additional task is taken on board, the focus on the previous task is impaired.

6.1 Limitations

While the original aim of this paper was to research the multitasking impact of ICT on learning, it is important to understand that this paper has not covered all the possible avenues in order to come to a solid conclusion. An example is the fact that the data collected did not include any academic report of the participants, thus making it impossible to be able to analyze the impact of multitasking on learning. Also, the number of samples collected might not be enough to come to a conclusion, plus the methods used might be done in such a way that several classes are held and observed before drawing conclusions. In addition, as mentioned earlier in this paper, it might be a better idea to have a class divided into two, the first half made to go through a lecture without computers and other distractive technologies, while the other half is encouraged to use all sorts of technologies available. The two halves should then be swapped, and both tested, and compare the results of the two tests.
6.2 SUGGESTIONS

In businesses, it is assumed that multitasking is the better approach. Of course, it makes sense; businesses are there to make a profit. Companies are established with the aim to make a profit. Nevertheless, the hunting question now is how far this is true. When we talk about individual productivity, people’s effectiveness and efficiency are on the downside when they execute particular tasks. On the other hand, some tasks require multitasking in order to be effective, efficient, and productive. Considering the issue of a student while having his computer loading the operating system, decide to make a call. This is multitasking, and it is effective, efficient, and productive multitasking.

In addition, loss of time could also be associated with mono tasking (this is the act of doing a task at a time). A good example is of a factory worker on production line doing a repetitive job. Sometimes, the worker has to wait for another worker to complete his part of the work before he could give his own input. The time spent waiting is at a loss. Clearly, multitasking has its ups and downs; the downside may be more than the upside. A good note for multitasking is that ‘time management’ and ‘prioritization’ should be given special attention. As discussed earlier, all of these are achievable if multitasker can understand the tasks, manage the time well, and prioritize. Final-suggestion is for multitasker to learn to know when there is the red light indicating: ‘STOP! IT IS ENOUGH’

Also, it is of great importance that awareness is created and made known to the students, so that students that are finding it difficult to manage multitasking will seek for counseling.
6.3 DISCLAIMER

This paper makes no effort to provide a definite answers to the questions set out in this paper. The main idea was to create awareness to these questions, and to make suggestions on how to better manage multitasking at school or during studies. It is assumed that multitasking negatively affect learning, and the disadvantages outweighs the advantages, especially when it is done without control.
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8 APPENDICES

Appendix 1

Questionnaire for LUAS Students

1. In general, would you say your ICT multitasking skill is:

- Excellent
- Very good
- Good
- Fair
- Poor

2. Multitasking is required if I am to meet all of my commitments?

- Strongly disagree
- Somewhat disagree
- No Opinion
- Somewhat agree
- Strongly agree

3. Multitasking supports my study life

- Strongly disagree
- Somewhat disagree
- No Opinion
- Somewhat agree
- Strongly agree

4. Multitasking is life.

- Strongly disagree
- Somewhat disagree
- No Opinion
- Somewhat agree
- Strongly agree

5. How many hours a day do you spend multitasking?

- less than 1
- 1-3
- 3-5
- 5-8
- more than 8
6. How do you rate your multitasking today compared to 3 yrs. ago?
   [ ] Much more.
   [ ] Somewhat more.
   [ ] The same.
   [ ] Somewhat less.
   [ ] Much less.

7. Which of these devices do you use while doing school work or classwork?
   [ ] Mobile phone
   [ ] IPad.
   [ ] Laptop.
   [ ] MP3 Player.
   [ ] Television.
   [ ] All of the above.
   [ ] None.

8. Which of these devices do you use most throughout the day?
   [ ] Mobile phone
   [ ] iPod.
   [ ] Laptop.
   [ ] MP3 Player.
   [ ] Television.
   [ ] All of the above.
   [ ] None.

9. Multitasking while studying disturbs my focus.
   [ ] Strongly disagree
   [ ] somewhat disagree
   [ ] No Opinion
   [ ] Somewhat agree
   [ ] Strongly agree
10. How many hours do you spend on social network daily? (facebook, icq, IM, twitter, messenger)

☐ less than 1  ☐ 1-2  ☐ 2-3  ☐ 3-4  ☐ over 4

11. What gender are you?

☐ Male  ☐ Female  ☐ Other

12. In which year were you born?

☐ Before 1950
☐ 1950s.
☐ 1960s.
☐ 1970s.
☐ 1980s.
☐ 1990s.

---

13. Finally, I would like to ask you a few more questions by telephone. If you have 10 minutes, please give me a phone number and the best time to call.

Name:
Mob phone No:

Thank you!
Peter Ajao
Appendix 2

Questionnaire for LUAS Students

Girls Results

1. In general, would you say your ICT multitasking skill is:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>0</td>
</tr>
<tr>
<td>Very good</td>
<td>5</td>
</tr>
<tr>
<td>Good</td>
<td>11</td>
</tr>
<tr>
<td>Fair</td>
<td>2</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
</tbody>
</table>

2. Multitasking is required if I am to meet all of my commitments?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>0</td>
</tr>
<tr>
<td>somewhat disagree</td>
<td>0</td>
</tr>
<tr>
<td>No Opinion</td>
<td>2</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>6</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>10</td>
</tr>
</tbody>
</table>

3. Multitasking supports my study life

<table>
<thead>
<tr>
<th>Rating</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>0</td>
</tr>
<tr>
<td>somewhat disagree</td>
<td>0</td>
</tr>
<tr>
<td>No Opinion</td>
<td>10</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>8</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>0</td>
</tr>
</tbody>
</table>

4. Multitasking is life.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>1</td>
</tr>
<tr>
<td>somewhat disagree</td>
<td>0</td>
</tr>
<tr>
<td>No Opinion</td>
<td>8</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>9</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>0</td>
</tr>
</tbody>
</table>

5. How many hours a day do you spend multitasking?

<table>
<thead>
<tr>
<th>Hours</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1</td>
<td>(0)</td>
</tr>
<tr>
<td>1-3</td>
<td>(8)</td>
</tr>
<tr>
<td>3-5</td>
<td>(4)</td>
</tr>
<tr>
<td>5-8</td>
<td>(3)</td>
</tr>
<tr>
<td>more than 8</td>
<td>(3)</td>
</tr>
</tbody>
</table>

6. How do you rate your multitasking today compared to 3 yrs. ago?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much more</td>
<td>10</td>
</tr>
<tr>
<td>Somewhat more</td>
<td>8</td>
</tr>
<tr>
<td>The same</td>
<td>0</td>
</tr>
</tbody>
</table>
0 Somewhat less.
0 Much less.

7. Which of these devices do you use while doing school work or classwork?

12 Mobile phone
0 IPad.
18 Laptop.
2 MP3 Player.
6 Television.
0 All of the above.
0 None.

8. Which of these devices do you use most throughout the day?

11 Mobile phone
0 IPod.
16 Laptop.
4 MP3 Player.
7 Television.
1 All of the above.
0 None.

9. Multitasking while studying disturbs my focus.

0 Strongly disagree, 8 somewhat disagree, 3 No Opinion, 2 Somewhat agree, 5 Strongly agree

10. How many hours do you spend on social network daily? (facebook, icq, IM, twitter, messenger)

(3) less than 1, (6) 1-2, (3) 2-3, (1) 3-4, (5) over 4
11. What gender are you?
    0 Male, 18 Female, 0 Other

12. In which year were you born?
    (0) Before 1950
    (0) 1950s.
    (0) 1960s.
    (0) 1970s.
    (9) 1980s.
    (9) 1990s.
Questionnaire for LUAS Students

Boys Results

1. In general, would you say your ICT multitasking skill is:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Excellent</td>
</tr>
<tr>
<td>4</td>
<td>Very good</td>
</tr>
<tr>
<td>12</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Fair</td>
</tr>
<tr>
<td>0</td>
<td>Poor</td>
</tr>
</tbody>
</table>

2. Multitasking is required if I am to meet all of my commitments?

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>1</td>
<td>Somewhat disagree</td>
</tr>
<tr>
<td>5</td>
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</tr>
<tr>
<td>10</td>
<td>Somewhat agree</td>
</tr>
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<td>2</td>
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3. Multitasking supports my study life

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4. Multitasking is life.

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</tr>
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<tbody>
<tr>
<td>1</td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>3</td>
<td>Somewhat disagree</td>
</tr>
<tr>
<td>4</td>
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</tr>
<tr>
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<td>Somewhat agree</td>
</tr>
<tr>
<td>2</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

5. How many hours a day do you spend multitasking?

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>less than 1</td>
</tr>
<tr>
<td>6</td>
<td>1-3</td>
</tr>
<tr>
<td>10</td>
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<tr>
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</table>
2  Somewhat less.
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7. Which of these devices do you use while doing school work or classwork?

8  Mobile phone
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(0) Before 1950
(0) 1950s.
(1) 1960s.
(0) 1970s.
(7) 1980s.
(10) 1990s.
Observation guide for LUAS students

Computer Based Activities:
Web based activities:
Computer based:
Media player:
Word processing:

Offline Activities:
Face to face
Conversation:
Eating or drinking:
Talking on the telephone: