

SECONDARY STUDENTS' PERCEPTIONS OF INFORMATION, COMMUNICATION AND TECHNOLOGY (ICT) USE IN PROMOTING SELF-DIRECTED LEARNING IN MALAYSIA

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Abstract: The purpose of this study was to identify secondary students' perceptions on the use of Information, Communication and Technology (ICT) in promoting students' self-directed learning in Malaysia. Survey design was used to gather quantitative data through the questionnaires. 100 students were chosen randomly as the samples from two private Secondary Schools in Selangor, Malaysia. SPSS V22.0 was used to analyze descriptive and inferential statistic. The findings showed that the use of ICT among students in Malaysia was familiar and it had promoted a high level of readiness in self-directed learning and established students' interactions with ICT, peers, and teacher. The findings also reported that there was a relationship between gender and the use of ICT and self-directed learning, the students from the urban areas also tended to be more self-directed in their learning compared to students from the rural areas. Further study should analyze the level of self-directed learning among secondary school students in the rural areas in Malaysia. The disparity between urban and rural areas in terms of facility and infrastructure is one important factor that needs to be studied.

Key Words: Self-Directed Learning; Information and Communication Technology; Secondary School; Malaysian Education.

INTRODUCTION

In this 21st century, the use of technology in education becomes a significant factor to achieve students' effective learning. Nash (2014) noted that to keep up with the demands of modern society in the information and technology era, the idea of self-directed learning which has been originated by Dewey is very significant to be applied in order to give freedom to students to come out with their intelligence in controlling their learning. In today's digital age, most students have started doing collaborative learning using numerous technology devices to promote self-directed learning skill (Cheung & Hew, 2015). They also stressed that the skill of self-directed learning is not only applicable for the students but also teachers who need to be knowledgeable to face the digital age. Therefore, teachers need to prepare the students for this kind of culture which stress on a collaboration, analyze things and solve a problem creatively by themselves.

The National Education Policy in Malaysia has stated about implementation of Primary School Standard Curriculum (KSSR) since 2011, it aims to nurture and develop the potential of students to create human capitals that are very creative, can think critically, innovative, have a right attitude and interpersonal skill as preparation to face the current challenges and 21st century learning environment (National Education Policy, 2012). One of the policies that have been written in NEP 2012 is to make sure that Information, Communication and Technology (ICT) is being used in teaching and learning at all schools in Malaysia.

Even more, Malaysia Education Blueprint 2013-2025 has been unveiled by Malaysian government and by the end of 2020, the Ministry will ensure all schools are expected to achieve the student knowledge on how to use ICT effectively in enhancing their learning performances. Then, self-directed learning could be the way to improve the teaching and learning style in using the ICT to move forward.

DEFINITION OF SELF-DIRECTED LEARNING

The term self-directed learning has diverse terms that describe the same thing. Candy (1987) identified at least 30 different terms that are used interchangeably by experts. Some of the terms include; autodidact, autonomous learning, independent learning, learner-controlled instruction, learner-directed instruction, non-traditional learning, open learning, participatory learning, self-directed learning, self-education, self-organized learning, self-planned learning, self-responsible learning, self-study and self-teaching and many other terms.

According to Annuar and Shaari (2014), self-directed learning is a process when the individuals evaluate their learning needs, formulates goals, choose and implement proper strategies and analyze learning outcome, and it also requires students to improve themselves and society. Students who develop a sense of responsibility for their own learning by mastering in academic content, critically thinking and analytically, and also effective in communication and collaboration, shows the self-directed learning (Onyon, 2012).

The history of self-directed learning begin at early 20th century and focused on the development of adult education but later researchers start think about children could possess intrinsic motivation to learn (Tan, Divaharan, Tan & Cheah, 2011). If any problem occurs, the children should make an attempts to seek knowledge and analyze it to solve the problem. Therefore, self-directed learning at first is a macro concept related to adult education then the recent researcher makes an improvement.

The most commonly used definition of self-directed learning is Knowles (1989). He described self-directed learning as “a process in which individuals take the initiative, with or without the help from others, in diagnosing their learning needs, formulating goals, identifying human and material resources, choosing and implementing appropriate learning strategies and evaluating learning outcomes” (p. 18). Meanwhile, Garrison (1997) and Oddi (1987) perceive self-directed learner is an entity that obtain a high degree of self-efficacy through intrinsic motivation and achieve the set goals with implementation of appropriate strategies while willing to face new challenges.

THE IMPORTANCE OF SELF-DIRECTED LEARNING

Tan, Divaharan, Tan and Cheah (2011) listed self-directed learning as a key component of 21st century skills that every student must possess in order to prepare them to face any incoming challenges in twenty-first century. Gibbon (2002) argued that self-directed learning is a natural process that happens to any individuals. Self-directed learning is not an inborn talent, but it is a skill that can be developed and taught with particular techniques (Wichadee, 2011; Cazan & Schiopca, 2014).

The theory of self-directed learning is derived from the principles of adult education where student expands their learning initiative, self-management, and motivation for learning (Hyland & Kranzow, 2012). However, self-directed learning not only depends on individual commitment but also it needs the support and encouragement from others (Institute for Employment Research, 2001). It also emphasized that “Learning itself is both an intensely personal activity and a quintessentially social process” (p. 1). Peckham (1995) asserted that self-managed learning is based on five principles: (1) People learn best from their experiences or others. (2) The way people learn things is different. (3) People need to learn different things. (4) To be best at learning things, people must see learning as an obligation and responsibility (5) People cannot be forced to learn.

From this point of view, self-directed learning only promotes autonomous learning for adults. So what about self-managed learning among kids and young people for instance students at primary and secondary school? Nor and Saeednia (2008) asserted that both adults and children share the same qualities of self-directed learning. The result of their study shows “self-directed learning is not solely for learning in adult years” (p. 565). They reiterated that even children at the age of nine years old were capable of self-directing their learning. The finding also showed that the children were able to demonstrate differing extents of self-discipline, curiosity, independence, persistence, goal orientation, responsibility, and enjoyment of their learning.

In the last decade, at undergraduate and graduate level, studies has shown a positive relationship between self-directed learning and students’ academic (Hyland & Kranzow, 2012). The studies involved both “on the ground” and “online” based learning and these two learning styles indicated the same trend. In their study, Cazan and Schiopca (2014) analyzed the relationship between self-directed learning, personality traits and academic achievement that involved 121 undergraduate students. The result of the study indicated that self-directed learning was correlated with personality traits. Other than that, the study also found that self-directed learning predicted students’ academic achievement. Meanwhile, Stubbe and Theunissen (2008) asserted that self-directed learning could change the student to be more strategic and efficient in learning the process. Students also could manage the way they learn and direct their educational choices.

LEVEL OF SELF-DIRECTED LEARNING

Despite individuals can be a self-directed learner, the degree of development of this skill is different since individuals have different learning motivation, self-efficacy, self-esteem, conscientiousness, openness to

experience and intelligence (Cazan & Schiopca, 2014). Therefore, teaching instructors or teachers must be thoroughly aware of this reality especially for primary school students. Teachers in primary or secondary school face the most challenging task of developing and promoting self-directed learning compare to teaching instructor at higher education level. This might be because higher education students are mature enough to set their learning objectives and have the ability to design their learning projects.

The concept of “proactive“ and “reactive” learner as described by Littlewood (1996) must be the basis for teachers to start promoting autonomous learning or self-directed learning for the students. According to him, proactive students can control and direct their learning, set the learning objectives, select learning methods and techniques and they also able to evaluate whether the learning objectives has been achieved. Meanwhile, the reactive student is a bit different. The teacher must support and encourage students’ autonomous learning by initiating and set the direction for the students so that they can set their learning goals and the way to achieve them. In line with Littlewood (1996), Snodin (2013) argued that students need to be guided and directed by the teachers to be an autonomous learner. Furthermore, he also suggested that the teacher can provide the students with appropriate ICT tools and also gives them opportunities to use and practice it.

Meanwhile, according to Gibbons (2002), there are five stages in self-directed learning that start from low degree of self-directed learning to the highest one.

Phase 1: Incidental self-directed learning: The occasional introduction of SDL activities into courses or programs that are otherwise teacher-directed.

Phase 2: Teaching students to think independently: Courses or programs that emphasize the personal pursuit of meaning through exploration, inquiry, problem solving and creative activity.

Phase 3: Self-managed learning: Courses or programs presented through learning guides that students complete independently.

Phase 4: Self-planned learning: Courses or programs in which students pursue course outcomes through activities they design themselves.

Phase 5: Self-directed learning: Courses or programs, in which students choose the outcomes, design their activities and pursue them in their way.

ICT USAGE AMONG SECONDARY SCHOOL STUDENTS IN MALAYSIA

According to Malaysia Education Blueprint 2013-2025, there are more than 6 billion Ringgit Malaysia (RM) has been spent by the Ministry of Education in supporting Information and Communication Technology (ICT) for the schools in Malaysia. The government expects that with the use of ICT in education, the students will be able to access a wider range of content that is more engaging and interactive on numerous Websites and enable them to learn the contents on their own paces or autonomously.

Studies have revealed various findings regarding ICT Skills and practice among secondary school students in Malaysia. For example, Umar and Jalil (2012) studied about secondary school students’ skills, practices and barriers in using ICT. They found that Malaysian students are at moderate level in term of using ICT for basic and internet application such as accessing and sharing information. In term of using the internet for communication skills, students are the proficient level. Meanwhile, students are at the lowest level in using advanced ICT application.

The study also found gender (male and female) has no significant difference in terms of the students’ level of ICT skills. Meanwhile, in term of geographical factor, there is a wide gap of students’ ICT skills between students from urban areas with students from rural areas. In other word, there is a significant difference between urban school students with rural school students in using ICT. In line with Umar and Jalil study but from a different context, Aesaert and Braak (2015) studied the relationship between gender and students’ socio-economic status toward students’ ICT competences. The study found that students, in general have difficulties in higher order ICT competence. However, in term of gender, unlike Umar and Jalil’s finding, the study showed that female has better technical ICT skills and higher order ICT competences compare to male students.

THE RELATIONSHIP BETWEEN ICT UTILIZATION AND SELF-DIRECTED LEARNING

The latest trend in teaching and learning process, ICT literate skill has made a vital shift whereas the approach in the classroom has changed from teacher-direction toward student-direction learning. It means that teachers no longer a sole and primary source of information and knowledge in the classroom. The style of learning has changed from a traditional learning approach toward another way of learning by utilizing ICT as the complementary tools to back up and help the teacher in directing teaching and learning the process and one of the style is by giving freedom to students in choosing their way of learning by having a self-directed learning using ICT. Nowadays, teachers and students are encouraged to use ICT to increase their performance and help teachers and students to reach their full potential (McLaughlin & Lee, 2007).

However, as mention before the about culture of people might influence the way people react to issue and to give an opinion. In this study, the researcher wants to know the degree of effectiveness in using ICT in promoting self-directed learning and ways to encourage students to change to this new style of learning.

The utilization of ICT in learning process has made the process of learning is limitless and borderless and enhances student learning (Hyland & Kranzow, 2012). By using ICT, the learning process by accessing various information and various websites can happen everywhere and anywhere even without the present of teacher (Stubbe & Theunissen, 2008). Chan (2001) proposed two principles to stimulate autonomous learning through classroom activity. First, classroom activity should promote equity among students by involving all students in various ways and secondly there should be a full range of learning conditions and classroom activities to boost and stimulate students' interest and motivation.

According to Choo (2007) ICT usage enhances students' innovative and creative skills in dealing with their daily task as a school student. When the process of learning no longer limited in the classroom with the teacher stand before the student and lecturing the lesson for them, the students are able to employ various learning method and approach that fit and suitable for each of them. Moreover, she stated "Such traditional practice faces the danger of breeding a group of students who lack the flexibility to function well or transfer learning to the competitive workplace" (p. 186). Nowadays, with the use of ICTs students can access learning materials posted by their teacher in online learning platform. Teachers can ask the student to read the materials or asked them to respond to it or asked them to make their reflection papers regarding the materials given to them.

The use of ICT in learning process enables the student to learn at their home, or everywhere else outside classroom setting. This means that, the students have learning flexibility in which they do not have in the classroom (Snodin, 2013). The flexibility of learning gives students more option about how they learn.

With the new way of teaching and learning, both teachers and students are expected to be independent or become an autonomous learner. With the physical absence of the teacher, students were encouraged to be able to overcome their problems through collaborative learning with the help of ICT tools (Dlaska, 2002). Through self-directed learning, the student can develop their way of learning that fit with their needs. Both teacher and student also can be more adaptive toward teaching and learning which mean that teacher and student have flexibility in teaching and learning (Snodin, 2013). For instance, the teacher has the flexibility in designing their classroom practice and selecting their teaching content by using ICT tools. While the student has the flexibility in their learning such as finding the best way of learning that fit and suitable for them, looking for learning content from various sources and so forth.

Murray, Ni Hourigan, Jeanneau and Chappell (2005) argued that ICT empower and motivate students to learn since it provides a natural context for students' autonomy. Through this learning approach, teachers and students also able to promote lifelong learn to support their future career and development. Moreover, the findings of the study conducted by de Sousa, Sevilla-Pavón and Seiz-Ortiz (2012) revealed that the use of ICT promotes changes in attitudes, behavior and values and also in cognitive and perceptive processes.

THEORIES AND THE CONCEPTUAL FRAMEWORK OF STUDY

In order to examine the effects of using ICT in promoting students' self-directed learning, Self-Directed Learning (SDL) theory was used as a theoretical framework of this study. Gibbons (2002) stated that the theory was based on the self-directed learning and students' readiness. The theory shows that the small level of self-direction,

which is incidental self-directed learning, is the only basic introduction of SDL activities and mostly is still teacher-direction. Then it goes to one phase to other phases, and it explains the different degree with various practices. It also changes from teacher direction to self-direction where the students do things and evaluate by themselves. Hence, there are three important aspects involved in self-directed learning, namely: ownership of learning, self-management and self-monitoring, and extension of learning.

Based on the theories, this study can conclude with a conceptual theory as below (Figure 2). The conceptual theory shows that students who practice a self-directed learning with the use of information, communication and technology can provide excellent outcomes in teaching and learning the process to face the challenges of the 21st-century world.

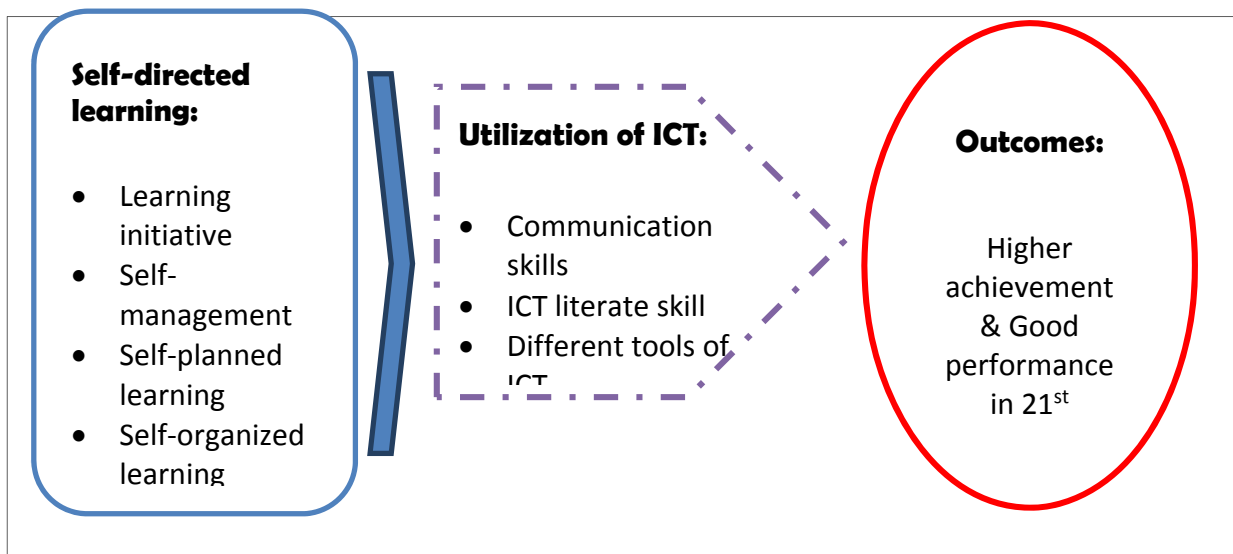


Figure 2. Conceptual framework of the study

RESEARCH OBJECTIVES

The objectives of this study were to identify students' perceptions with ICT tools in the learning activities and to measure the level of self-directed learning readiness of students. Thus, to determine whether students' interaction in using ICT can enhance students' self-directed learning. The last, to identify the relationship of students' demographic values such as gender and place of origin (urban and rural) with the use of ICT in promoting self-directed learning.

RESEARCH QUESTIONS

This study addresses the following research questions:

1. How familiar are the students with ICT tools in learning activities?
2. What is the level of students' self-directed learning readiness?
3. Does the students' interaction with ICT tools can enhance students' self-directed learning?
4. Is there any significance relationship between students' demographic values such as gender and place of origin (urban and rural) with the use of ICT in promoting self-directed learning?

RESEARCH HYPOTHESIS

With the guide of theoretical framework as well as literature review, hence the research hypothesis of this study will be designed as follows:

1. H1: There is no relationship between gender and students' use of ICT and self-directed learning.
2. H2: There is no relationship between students' place of origin (urban and rural) with the use of ICT and self-directed learning.

SIGNIFICANCE OF THE STUDY

By identifying the effects of using ICT in promoting students' self-directed learning, hopefully the members of higher educational institution (i.e., faculty, student affairs staff, administrative staff) can take further action such as making improvement in area that need to be improved or provide all need such as facilities, syllabus and other means that support and enhance students' self-directed learning using ICT tools. Then, because there is a significant gap in research regarding implementation of self-directed learning for secondary in private school as compared to primary or secondary students from public school, this study tries to fill the gap of knowledge in this area especially in private school. This study expected to be a useful source for any further researchers who want to study the same issue and hopefully this research becomes a helpful information and valuable reference for the next research.

METHODOLOGY

The study examined the effect of using ICT in promoting students' self-directed learning. However, to ascertain this fact, the researchers conducted a quantitative research approach in the research activity. Thus, a survey design was used to measure students' self-directed learning insights with ICT.

Research Design

The design of this study was based on quantitative approach which was used to determine the effect of using ICT in promoting students' self-directed learning. A survey research provided a quantitative explanation of trends, levels, interactions, and relationship by studying the sample of population. A cross-sectional survey was used to enable the researchers in order to generalize from sample to the population.

Samples

The samples of study consisted of data from two private Secondary Schools in Selangor. Although the total population of these two schools were 550 students, the researchers only selected 100 respondents randomly. The respondents were chosen from varies based on their academic levels in secondary school which varied from year 1 to year 5 respectively. This was done in order to get a greater number of responses from the participant population.

Instruments

This questionnaire was constructed by researchers consisted of 22 items in total. It was a cross-sectional survey partly developed and modified by the researcher and partly adopted from Timothy, Chee, Beng, Sing, Ling, Li and Mun (2010). Moreover, the questionnaire distributed by hand to the respondents. The respondents were given two days to complete the questionnaires and collected individually. Participants were requested to read the instructions before answering the questions. Then, the respondents completed the questionnaire consisted of 22 items based on five types of Likert scale from Strongly disagree to Strongly agree (1: Strongly disagree, 2: Disagree, 3: Neither Agree nor disagree, 4: Agree, 5: Strongly Agree).

These items were related to student self-directed learning with ICT tools as followed: Demographic data of the respondents, students' familiarities with ICT tools in learning activities, the level of students' self-directed learning readiness and students' interaction with ICT tools to enhance students' self-directed learning

The researchers distributed the questionnaires among 100 students in two private secondary schools around Selangor. The entire participants completed the questionnaires on the speculated time. All the participants volunteered themselves in answering the questionnaires and their responses were kept confidential and anonymous.

Data analysis

Data from the surveys were received by the researchers and SPSS V22.0 was used to analyze the data by descriptive statistic to get the percentage, Mean (M), and Standard Deviation (SD). The use of descriptive analysis in order to get the highest responds of items. Then, to find the significant relationship between students' self-directed learning and the use of ICT and their demographic values by using correlation test. In addition, researcher used an independent samples t-test as inferential statistic to see the relationship between two values or the relationship between students' demographic values such as gender and place of origin (urban and rural) with the use of ICT in promoting self-directed learning.

RESEARCH FINDINGS

Analysis of Descriptive statistics

The data were analyzed using various descriptive statistics as presented in numerous tables. The demographic data of the respondents was retrieved from section 1 of the survey questionnaire used in this study. It included information of gender and place of origin. The following subsections elaborate on the frequency and percentage of the demographic data. The report showed that there were 43% male and 57% female respondents of this study.

Table 1.

Distribution of Male and Female Respondents (N=100)

Category	Frequency	Percentage	Mean	Std Deviation
Male	43	43%	1.45	.688
Female	57	57%	2.90	1.411
Total	100	100%		

Likewise, the following Table 2 summarizes the majority of the respondents' places of origin was from urban areas with a total of 85% and followed by the respondents from the rural areas with 15%.

Table 2.

Distribution of Place of Origin of the Respondents (N=100)

Category	Frequency	Percentage	Mean	Std Deviation
Urban	85	85%	3.45	1.368
Rural	15	15%	2.90	1.640
Total	100	100%		

Apart from the demographical analysis, this study also aimed to provide the answer of research question 1, "How familiar are the students with ICT tools in learning activities?"

It showed that item A1, A2 and A3 have a high Mean value ($M = 4.79$) and it indicates that majority of students were familiar with ICT tools. In terms of students' level of ICT competency, majority of students believed that their competencies were at intermediate level (A5), it showed that 70% ($M = 3.49$) students acknowledged that their ICT competency skills were at the middle level or intermediate. It is supported with item A4 which was reported that only 7% of students were in basic level and none of student was in advance or expert level (A6).

Generally, the overall report of high mean value which is above 4.00 shows that the students were familiar with ICT tools in their learning activities and they have intermediate level of ICT skill. Therefore, the researchers conclude that the use of ICT among students in two private Secondary Schools in Selangor Malaysia was

familiar. The following table 3 summarizes the distribution of Percentage, Mean and Standard Deviation (SD) of the students' familiarity with ICT tools.

Table 3.

The summary distribution of Percentage, Mean and Standard Deviation (SD) of the students' familiarity with ICT tools (N = 100)

ITEMS Learning with ICT tools	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	SD
A1: I am familiar with ICT tools	0%	0%	0%	21%	79%	4.79	.409
A2: I know how to operate and use basic ICT tools	0%	0%	0%	21%	79%	4.79	.409
A3: I know how to connect to internet	0%	0%	0%	24%	76%	4.79	.429
A4: My ICT competency is at beginner level	35%	3%	55%	7%	0%	1.82	.796
A5: My ICT competency is at intermediate level	10%	0%	20%	51%	19%	3.49	1.283
A6: My ICT competency is at expert level	43%	57%	0%	0%	0%	1.57	.498

Even more, the following subsection provides the answer of the research question "What is the level of students' self-directed learning readiness?"

This report shows that items B1, B3, B5 and B7 have the highest mean score above 4. In item B1 reported that all students ($M = 4.47$) loved to learn and item B5 reported that 76% ($M = 4.11$) of students responded positively that difficult study did not bother them in learning. Additionally, item B3 reported that 71% ($M = 4.05$) of students responded that they could learn the subjects on their own paces and item B7 reported that the Mean score was 4.02 which means that students had constructed their awareness in self-directed learning. In this case, students believed that no one was responsible for their studies except themselves.

Looking at item B2, B6 and B8, there were negative responds among the respondents. In item B2 students stated "I know what I want to learn", majority of 58% fairly agreed while 31% fairly disagreed that they had known what they wanted to learn. Also, as indicated in item B6, "If there is something I have decided to learn, I can find time for it, no matter how busy I am" 39% of students responded fairly disagree, 30% strongly disagree and only 20% agree with the statement. Lastly, item B8 stated that "If I discover a need for information that I don't have, I know where to go to get it" majority of 57% strongly disagree and 43% fairly disagree with that statement. Based on this the researcher can deduce that respondents shows a high level of readiness in self-directed learning which answer the second research question of the study.

The following Table 4 summarizes the Percentage, Mean and Standard Deviation of the students' readiness Self-directed learning.

Table 4.

The summary distribution of Percentage, Mean and Standard Deviation (SD) of the students' readiness Self-directed learning

ITEMS Self-directed learning readiness	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	SD
B1: I love to learn	0%	0%	0%	54%	46%	4.46	.501
B2: I know what I want to learn	0%	31%	58%	11%	0%	2.80	.620
B3: I can learn thing on my own better than most people	0%	0%	29%	37%	34%	4.05	.796
B5: Difficult study doesn't bother me if I'm interested in something	0%	0%	24%	41%	35%	4.11	.764
B6: If there is something I have decided to learn, I can find time for it, no matter how busy I am	30%	39%	31%	0%	0%	2.01	.785
B7: No one but me is truly responsible for what I learn	0%	0%	20%	58%	22%	4.02	.651
B8: If I discover a need for information that I don't have, I know where to go to get it	43%	57%	0%	0%	0%	1.57	.498

Furthermore, the following subsection provides the answers to the research question "Does the students' interaction with ICT tools can enhance students' self-directed learning?"

This section shows the analysis on the students' interaction with ICT tools, it includes the Distribution of Percentage, Mean and Standard Deviation. It could be seen from 4 items of this study showed the highest Mean score which means that students have good interactions with ICT in enhancing their self-directed learning skills. To enumerate, item C13 reported that 83% ($M = 4.28$) of students whether agreed or strong agreed that they used the computer to work with information for their learning. It means that students used technology tool for searching learning sources or information in relation to their learning activities. Then, item 17 reported that 79% ($M = 4.20$) of students could interact with their friends to discuss subject matters outside of class hour. It showed that this by using ICT students could establish interaction with peers and teacher inspite after the class hours. Item 14 reported that 76% ($M = 4.17$) of students could practice their learning by playing computer games. This activity showed that playing students could interact with the content of learning through educative computer games. Additionally, item 9 reported that 72% ($M = 4.03$) of students acknowledged that by interacting with technology tools, they could figure out the ways to learn when they want to learn something.

In addition, item C12, C15 and C16 reported that the Means (M) distribution was above 3 and it showed that students' perceptions were moderate and slightly positive. For example, item C12 reported that 64% ($M = 3.80$) of students found more information on the Internet to help them understand the lessons better. Also, item C16 reported that 64% ($M = 3.80$) of students used the computer to get ideas from different websites and people to learn more about a topic. Again, item 15 showed that 66% ($M = 3.99$) used the computer to become better at a skill that they interested in.

However, item C10 reported that only 11% ($M = 1.85$) of students used the technology tools to interact with their teachers outside the class for asking questions related to the lessons. Also, item 11 reported that only 27% ($M = 2.49$) of students used the computer to share their thoughts and ideas about schoolwork.

This analysis shows that item C9, C13, C14 and C17 a have high mean value that is above 4.00, this show that the student demonstrated a high attitude towards interaction with ICT tools in their learning. This answer the third research questions that the students' interact with ICT tools that enhance them towards self-directed

learning. The following Table 5 summarizes the Percentage, Mean and Standard Deviation of the students' interaction with ICT tools.

Table 5.

The summary distribution of Percentage, Mean and Standard Deviation of the students' interaction with ICT tools

ITEMS Students' interaction with ICT tools	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	S.D
C9: If there is something I want to learn, I can figure out a way to learn it	0%	0%	28%	25%	47%	4.03	.731
C10: I go online to ask my teachers questions on my lessons when I am not in school.	46%	34%	9%	11%	0%	1.85	.989
C11: I use the computer to share my thoughts and ideas about my schoolwork.	23%	32%	18%	27%	0%	2.49	1.124
C12: I find out more information on the Internet to help me understand my lessons better.	0%	0%	36%	48%	16%	3.80	.696
C13: I use the computer to work with information for my learning.	0%)	0%	17%	38%	45%	4.28	.740
C14: I practice skills that I learned in school through playing computer games.	0%	0%	24%	35%	41%	4.17	.792
C15: I use the computer to become better at a skill that I am interested in.	0%	0%	34%	27%	39%	3.99	.859
C16: I use the computer to get ideas from different websites and people to learn more about a topic.	0%	0%	36%	48%	16%	3.80	.696
C17: I can interact with my friends to discuss subject matters outside of class hour.	0%	0%	21%	38%	41%	4.20	.765

Analysis of Inferential Statistics

Inferential analysis examines the relationship between two values or the relationship between students' gender and place of origin with the use of ICT in promoting self-directed learning. Therefore, this analysis tries to provide the answer of the research questions: "Is there any significance relationship between students' demographic values such as gender and place of origin (urban and rural) with the use of ICT in promoting self-directed learning?" Hence, there were two hypotheses examined in this study as followed.

Hypothesis 1:

Null hypothesis, H_0 : There is no relationship between gender and students' use of ICT and self-directed learning

$H_0: \mu \text{ male} = \mu \text{ female}$

Alternate hypothesis, H_1 : There is relationship between gender and students' use of ICT and self-directed learning

$H_1: \mu \text{ male} > \mu \text{ female}$

From the independent t-test Means, the results showed that the use of ICT and self-directed learning of the male ($M = 1.45$, $SD = .688$) was less than the use of ICT and self-directed learning of the female ($M = 2.90$, $SD = 1.411$) was significant, $t = -3.198$, $d.f. = 30$, $p = .003$. Therefore, since the $p < .05$ so null hypothesis was rejected and the Means of the two groups were significantly different from each other.

Thus, the data provided sufficient evidence to conclude that the use of ICT of female were adequate in self-directed learning than the male. Therefore, there was a relationship between gender and students' use of ICT and self-directed learning. In other words, female students had much more self-directed learning skills when using ICT rather than the male. The following table 6 summarizes the relationship between gender and students' use of ICT and self-directed learning.

Table 6.
The relationship between gender and students' use of ICT and self-directed learning

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Learning with ICT tools	Male	43	1.45	.688	.207
	Female	57	2.90	1.411	.308

Independent Samples Test										
		Levene's Test for Equality of Variances		The t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Learning with ICT tools	Equal variances assumed	10.441	.003	-3.198	30	.003	-1.450	.453	-2.376	-.524
	Equal variances not assumed			-3.907	29.938	.000	-1.450	.371	-2.208	-.692

Hypothesis 2:

Null hypothesis, H_0 : There is no relationship between students' place of origin (urban and rural) with the use of ICT and self-directed learning.

$H_0: \mu_{urban} = \mu_{rural}$

The alternate hypothesis, H_1 : There is a relationship between pupils' place of origin (urban and rural) with the use of ICT and self-directed learning.

$H_1: \mu_{urban} > \mu_{rural}$

The results shows in the following Table 5 that self-directed learning readiness among the urban ($M = 3.45$, $SD = 1.368$) was higher than that of the rural ($M = 2.90$, $SD = 1.640$), $t = .950$, $d.f. = 30$, $p = .047$. Hence, since the $p < .05$ so null hypothesis was rejected and the means of the two groups were significantly different from each other. So, the conclusion is that students from urban areas tend be more self-directed in their learning compare to students from rural areas in the class.

Table 7

The relationship between between pupils' place of origin (urban and rural) with the use of ICT and self-directed learning

Group Statistics						
		Gender	N	Mean	Std. Deviation	Std. Error Mean
Self-directed learning readiness	urban		85	3.45	1.368	.413
	rural		15	2.90	1.640	.358

Independent Samples Test											
		Levene's Test for Equality of Variances		The t-test for Equality of Means							
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
Self-directed learning readiness	Equal variances assumed	4.290	.047	.950	30	.350	.550	.579	-.632	1.732	
	Equal variances not assumed			1.007	23.936	.324	.550	.546	-.578	1.677	

DISCUSSION

The results of the study have revealed the level of students' competency in using ICT tools. In line with previous study also at the same context conducted by Umar and Jalil (2012), the study found that the level of secondary school students' in Malaysia were at intermediate level in term of using ICT for basic and internet application such as accessing and sharing information. Moreover, the study also found that the majority of the students were at a low level in term of using advanced ICT application.

Furthermore, the result of the study also showed that the level of students' self-directed learning readiness was at a low level based on Gibson's stages of self-directed learning readiness. In contrary with Douglass and Morris (2012) finding, this study concluded that the participants were categorized as reactive learners as described by Littlewood (1996). In term of time management, participants also indicated that they were still having difficulties to set the time to learn what they have decided to learn. Participants also did not know where to get needed information. Meanwhile, Douglass and Morris (2012) findings of their study that investigated students' perceptions in promoting self-directed learning, found that students must be proactive students, have good time management and set personal goals in order to succeed.

Littlewood (1996) defined reactive learners as learners that need teachers' support and encouragement to promote autonomous learning by setting direction for the learners, so that they can set their learning goals and decide the way to achieve them. Therefore, the finding of this study indicated that the role of teachers was imperative to support and facilitate students to be self-directed learners.

By relying on Gibson's model of five stages in self-directed learning, from the finding the writer concluded that the level of self-directed learning of secondary school students was at incidental self-directed learning. At this point, students need teachers' guidance and direction to promote self-directed learning. The degree of students' dependent on teachers to direct learning at this phase was high.

Moreover, in term of whether students' interaction with ICT can promote students' self-directed learning, the finding indicated that students showed self-directed learning values when they used ICT to support their learning. In line with Choo (2007) which stated that ICT usage can enhance students' innovative and creative skills in dealing with their daily task as a school student, the finding of this study also found the same phenomena. The students used ICT tools such as computer and the internet to bolster up their learning. ICT utilization helps students figure out the way to learn something they are interested in.

ICT usage also helped them to get ideas from various sources such as websites and interact with people virtually by using computer and the internet. ICT usage enables the students to interact with their friends to discuss subject matters outside of class hour as well. Overall, the finding of this study indicated that students' ICT utilization promote and stimulate students to become more self-directed and autonomous in their learning.

The findings of this study share the same findings with Snodin (2013), Murray, Ni Hourigan, Jeanneau, and Chappell (2005) and Broke (2013). They found that the use of ICT enabled students to learn at their home or everywhere else outside classroom. ICT usage makes students become more adaptive and flexible in learning process since they can find the best way of learning that fit and suitable for them and they also able to find various learning content from different resources from the internet.

Moreover, the finding of this study also found that ICT usage can promote and facilitate collaborative learning with their friends and people by using computer and the internet. Therefore, the finding is in line with Snodin (2013). He found that students' ICT utilization in blended learning promotes and facilitates collaborative learning because it encouraged students to form group and network.

Accordance with study conducted by de Sousa, Sevilla-Pavón and Seiz-Ortiz (2012) which revealed that the use of ICT promotes changes in attitudes, behavior and values and also in cognitive and perceptive processes, the finding of this study also revealed that the use of ICT tools such as computer and internet changed students learning attitudes and behaviors. When ICT involved in students learning the process, they showed more self-directed and self-managed behaviors in their learning.

The finding of the study has found the relationship between gender and the use of ICT and students' self-directed learning. Though the level of relationship between gender and the use of ICT and self-directed learning is not indicated high significance, still the mean value showed that female students had higher level of self-directed learning compared to male students. This finding was in coherence with the report of Reio and Davis (2005) that female students were more likely had higher levels of self-directed learning readiness than males students. Also, another report showed that the male students indicated the lowest level of self-directed learning readiness compared to female students (Reio & Choi, 2004).

Also, the result of the study has revealed that there was a relationship between students' place of origin (urban and rural) with the use of ICT and self-directed learning. Thus, the conclusion is that students from urban areas is better in term of the use ICT and self-directed learning readiness compare to students from rural areas. It was in coherence with the statement of Li and Ranieri (2013) that students in urban school are more advantageous in learning facilities which equipped by adequate ICT infrastructure, hence, they could easily improved their learning activities including learning on their own paces.

IMPLICATION AND RECOMMENDATIONS FOR FUTURE RESEARCH

The values from self-directed learning can be developed and promoted by using ICT that is a complementary device that help students learning the process. The findings of this study have revealed that the level of students' competency in using ICT tools is at moderate level. Therefore, the need to enhance students ICT competency by conducting ICT training or other related programs that aim to enhance students ICT competency is very urgent. Stakeholders must take an action to address this issue. The initiative must come first from the Ministry of Education as the highest authority in the country to make such decision.

Moreover, since the level of students self-directed learning is still low, stakeholders at school level, principals and especially teachers need to help students develop their self-directed learning skills and encourage them to use ICT to help their learning. It is important since self-directed learning can make the students more freedom and independent in their learning and the finding of this study has revealed that ICT usage can promote self-directed learning. In other word, self-directed learning makes students more autonomous and responsible for their learning. Furthermore, students' autonomy in learning also can promote lifelong learning. Therefore, the school must create a conducive environment to promote this skill by making curriculum design that can promote this skill and teachers also need to change their professional attitudes and traits.

At last, this study is expected to be useful resources for any further researchers who are interested in conducting their study in this area of study. Hopefully, this study becomes a useful information and valuable resource for further study.

Since this study focuses on the level of ICT competency and the level self-directed learning readiness of secondary school students, further study should focus on the level of ICT competency among primary school students. Moreover, the context of this study that located in urban areas is also another limitation. Further study should analyze the level of self-directed learning among secondary school students in rural areas. The disparity between urban and rural areas in term of facility and infrastructure is one important factor that needs to be studied. Usually, schools in urban areas are better equipped to schools in rural areas.

Another limitation of this study is this study conducted in private schools that do not have any financial support from the government. Unlike private schools, public schools have better support financially from the government. Therefore, it enables them to equip their school with various ICT tools and also can make training and other programs that help increasing students' ability in using ICT tools to promote self-directed learning. Thus, further studies should focus on public schools to compare the level of ICT competency and measure students' self-directed learning readiness and compare it with private schools.

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