Journal of ICT in Education (JICTIE)
ISSN 2289-7844 / Vol. 2 / 2015 / 55 – 77

UPSI Students' Perceptions on the Use of ICT in Learning: Comparison Between Knowledge Test and Task-based Test on ICT Competency

Haslina Hassan[1], Ramlah Mailok[1], Rasyidi Johan[1]
[1]Computing Department, Faculty of Art, Computing & Creative Industry, Universiti Pendidikan Sultan Idris
{haslina, mramlah, rasyidi}@fskik.upsi.edu.my

Abstract

Information and Communication Technology (ICT) is one of an important factor in developing and implementing effective ways in teaching and learning. As learning at higher learning institution becoming a challenging experience, students are required to acquire knowledge and skill in ICT. It could help them to engage actively in learning process and becomes motivated learner. This paper investigated students' perceptions on using ICT in learning and evaluated their score on knowledge test and task-based test. The perceptions test is looking at how students perceived the usage of ICT in their learning process and; the knowledge and task-based test are used to identify their knowledge and skills score in ICT. Later knowledge tests data are compared with perceptions data to look at any similarity and differences. Both perceptions and knowledge test were developed based on seven knowledge constructs (ethical usage, communication, basic computer operation, personal management, information searching, software application skills and advance skills) while task-based tests focusing specifically on four software application skills. The data were collected among 59 students (year one) from seven faculties at Sultan Idris Education University (UPSI), Malaysia. The results showed that although majority of the students generally perceived themselves to be competent in ICT knowledge and skills; the knowledge test revealed that almost all knowledge construct score except personal management are equal and below than average. This indicated that majority of the students believed they had excelled required ICT knowledge but the knowledge test has proven that their existing ICT knowledge are below their expectations. However, the task-based test results show majority of the students have score more than average on the test and this indicated they are competent to perform basic application software skills.

Keywords ICT competency, perception test, knowledge test, task-based test.

INTRODUCTION

Information and Communication Technology (ICT) is introduced in education sectors due to its importance in improving quality in teaching and learning. Students since pre-school up to higher learning institutions have taken basic ICT courses to acquire relevant knowledge and skills to help them in their learning process. The usage of ICT has increasingly impact various aspects of our lives such as in social relationship, work, business, education, family, entertainment, health and etc. Since ICT leads all processes based on information, every individual in a society should become technology competent (Gulbahar & Guven, 2007).

LITERATURE REVIEW

Umar & Hussin (2014) reported that Ministry of Education Malaysia has spent great amount on ICT initiatives for education at primary and secondary schools as well as providing training to teachers. Subject such as Information and Communication Technology Literacy (ICTL) was introduced to form one and two secondary students while for primary students subject Information and Communication Technology Year Four will be introduced in 2014 at level two in Kurikulum Standard Sekolah Rendah or KSSR (Mutalib, 2013), as an introduction to basic ICT knowledge and skills. In most Institutions of Higher Education (IHE), ICT course is known to be one of the compulsory courses undertaken by most of students in their first year of studies. With these initiatives, students are expected to be competent in ICT since the emphasis on the ICT is important for learning (Md Yunus & Ashairi, 2014).

In literature, numbers of research on ICT perceptions and ICT competency have been reported (Sim & Theng, 2005; Somekh et. al., 2011; Egwali, 2012; Raman & Halim Mohamed, 2013; Mohamed Zaki, 2013) that evaluating the progress of ICT usage in or out of learning institutions and their perceptions on how ICT has affected their academic or working life. Some of the findings revealed that using ICT resources together with basic ICT knowledge have effectively motivating students to perform better in their learning abilities. However, some others finding concluded that even though they are familiar with ICT, some choose to use ICT only when it's required such as downloading course materials or reading/sending emails.

KNOWLEDGE CONSTRUCT

Competency is defined as the combination of observable and measurable knowledge, skills, abilities and personal attributes that contribute to enhance employee performance and ultimately result in organizational success (Human Resources, 2014). To understand competencies, it is important to define the various components of competencies. ICT-Competency is defined as 'the degree to which individuals are familiar with ICT and ability to demonstrate the basic knowledge, skills and attitude in the use of ICT' (National ICT Competency Standard (NICS) Basic, 2010).

There are numbers of ICT Competency framework known around the world. One of the example is a work done by Abu Bakar, Abdul Rahman, & A.lahad (2012) as shown in Table 1.

Table 1 ICT Competency Framework Analysis

No.	ICT-Competency framework	Framework	Focus
1	UNESCO ICT-Competency Framework	9 Indicators	Education [Teacher]
2	Tanzania ICT-Competency Framework	7 Indicators	Education [Teacher]
3	European E-Competency Framework 2.0	5 Dimension	ICT Professionals in industrial sectors
4	Nigeria ICT-Competency Framework	9 Indicators	Education [Teacher]
5	Monitoring ICT Skills and Knowledge	7 indicators	For Student
6	National Educational Technology Standard	10 Indicators	ICT Professional
7	ICT Skills competency	13 indicators	Teacher and Student
8	Computer Literacy Competency Rubrics	7 indicators	For both Teacher & Student
9	ICT in Education	8 indicators	For Teachers
10	ASK Model	3 indicators (ASK)	Student
11	ICT Assessment Rubric for Digital Portfolios in K-12 Schools	6 indicators	Student ICT Literacy Assessment
12	National ICT Competency Standard-Basic Commission on ICT	6 indicators	For Assessing student ICT competency

Researchers from University of Technology Malaysia (UTM) also analysed and produced a table of constructs mapping as shown in Figure 1.

ICT-COMPETENCY FRAMEWORKS ANALYSIS		Framework										
	Construct	UNESCO framework	ICT-CTF, Tanzania, 2011 [adopted UNESCO framework]	ICT-CTF, Nigeria, 2011 [adapted framework]	ASK model by Bakarman	SDUSD Educational Technology stand 2006	ICT in education, Tondeur et al, 2007	Computer literacy competency rubrics [available online]	ICT Skills competency [available online]	ICT Assessment Rubrics for Digital portfolios, 2009	Monitoring ICT skills and knowledge, 2000	***Usage frequency***
1	Social and ethical use understanding					√	√		√	√	√	05
2	Dedication and motivation				√							01
3	Willingness to embrace new ideas	√										01
4	Team work				√		√					02
5	Time management				√		√					02
6	Awareness						√					01
7	Security /Safety	√	√				√					03
8	Creative thinking						√			√	√	03
9	Lifelong learning/ knowledge acquisition				√							01
10	Communication & Collaboration	√	√	√	√	√	√		√	√	√	09
11	Computer Hardware/ Network knowledge	√	√			√		√				04
12	Personal administration	√	√	√							√	04
13	Internet/ Information searching	√	√	√		√		√	√	√	√	08
14	Basic computer operation	√	√				√		√	√		05
15	Presentation	√				√	√		√			04
16	File management								√		√	02
18	Application software skill	√	√	√		√	√				√	06
19	Basic ICT tools						√					01
20	Productivity tools /general software	√	√	√		√	√	√	√		√	08
21	Independent learning						√					01
22	Operating System					√	√					02
	Total no of attribute in each framework	10	08	05	05	08	14	03	07	05	09	

Figure 1 ICT Competency Construct Mapping Analysis (Abu Bakar et al., 2012)

From both ICT Competency Construct Mapping Analyses, this study identified seven constructs to be implement in this research project. These seven constructs are identified as shown in Table 2.

Table 2 ICT Competency Construct and Definition

No.	Construct Grouping	Definition
1	Ethical Practice	1. Rules and policy concerning student use of computer. 2. Legal and ethical behaviors when using information and technology.
2	Communication	Ability to use computer to communicate, to support learning and work collaboratively with individual.
3	Basic Computer Operation	Use technology software to manage, monitor and assess development and learning progress.
4	Personal Management	Use technology software to manage, monitor and assess development and learning progress.
5	Information Searching	Strategies for identifying and solving routine hardware and software problems that occur during everyday use.

Continue... (Table 2)

6	Application Software Skill	Using web resources to support learning and retrieval of information (Presentation skill, Basic ICT tools, word processing, Operating System, spreadsheet, graphics and Authoring tools, File management)
7	Advance Software Skill	Using new and advance applications to support learning and retrieval of information (cloud computing, open source software and complex authoring tools)

Based from these seven constructs, all items for perception test and knowledge test were developed while for task-based test, four applications identified as word processing, spreadsheet, presentation and email were tested on 59 UPSI students to examine their ICT skills.

RESEARCH OBJECTIVES

This paper was written based on research conducted by a joined venture among Public Institution of Higher Learning (IPTA) in Malaysia including UPSI lead by Universiti Teknologi Malaysia (UTM). The research was conducted to investigate on UPSI Students' ICT perception and ICT competency using perception test, knowledge test and task-based test. These research objectives are as follow:

i. To identify how UPSI Students' perceived their competency level on ICT perception test.
ii. To analyse UPSI students' score on knowledge test and task-based test on ICT competency.
iii. To assess relationship between perception test and knowledge test based on each seven constructs of ICT competency.
iv. To assess relationship between knowledge test and task-based test.

PROBLEM STATEMENT

In relation to requirement for students to access course material thru online learning system and increasing impact of social networking media, a perceptions study was conducted to perceive the usage of ICT in learning while knowledge test and task-based test were conducted to identify their ICT competency. This was based on assumption that they have already attained a certain level of ICT skills, acquired in secondary school, pre-universities or outside the formal education system before they enrol to undergraduate program (Hew & Leong, 2011).

Verhoeven, Heerwegh, & Wit, (2011) have investigated students' self-perception of ICT skills and their learning styles. The results have shown

that students' ability for web development and maintaining basic computer improves during six months after the enrolment, but there is no improvement on their basic ICT skills and ability in using internet. Taking this as a supported research case study, we would like to investigate how UPSI students perceive their ability in ICT based on the seven constructs grouping of ICT competency.

HYPOTHESES AND RESEARCH QUESTIONS

Hypotheses

This study tries to answer these hypotheses:

H_{O1}: There is no correlation between perception test and knowledge test for ethical practice construct. ($p_1 = 0$)
H_{A1}: There is a correlation between perception test and knowledge test for ethical practice construct. ($p_1 \neq 0$)

H_{O2}: There is no correlation between perception test and knowledge test for communication construct. ($p_2 = 0$)
H_{A2}: There is a correlation between perception test and knowledge test for communication construct. ($p_2 \neq 0$)

H_{O3}: There is no correlation between perception test and knowledge test for basic computer operation construct. ($p_3 = 0$)
H_{A3}: There is a correlation between perception test and knowledge test for basic computer operation construct. ($p_3 \neq 0$)

H_{O4}: There is no correlation between perception test and knowledge test for personal management construct. ($p_4 = 0$)
H_{A4}: There is a correlation between perception test and knowledge test for personal management construct. ($p_4 \neq 0$)

H_{O5}: There is no correlation between perception test and knowledge test for information searching construct. ($p_5 = 0$)
H_{A5}: There is a correlation between perception test and knowledge test for information searching construct. ($p_5 \neq 0$)

H_{O6}: There is no correlation between perception test and knowledge test for application software skill construct. ($p_6 = 0$)
H_{A6}: There is a correlation between perception test and knowledge test for application software skill construct. ($p_6 \neq 0$)

H_{O7}: There is no correlation between perception test and knowledge test for advance software skill construct. ($p_7 = 0$)
H_{A7}: There is a correlation between perception test and knowledge test for advance software skill construct. ($p_7 \neq 0$)

Research Questions

1. Is there any significant correlation between knowledge test on application software skill construct and task-based test (word processing, spread sheets and presentation application)?
2. Is there any significant correlation between knowledge test on communication construct and task-based test score on email application?
3. Is there any significant correlation between four applications in task-based test?

RESEARCH METHOD

Verhoeven, Heerwegh, & Wit, (2011) have investigated students' self-perception of ICT skills and their learning styles. The results have shown that students' ability for web development and maintaining basic computer improves during six months after the enrolment, but there is no improvement on their basic ICT skills and ability in using internet. Taking this as a supported research case study, we would like to investigate how UPSI students perceive their ability in ICT based on the seven constructs grouping of ICT competency.

Research Context and Design

The study deployed a survey method by questionnaire for perception test. This questionnaire was used to collect basic data on how students perceived their competent level using ICT and to investigate students' needs for training and support in relation to the effective use of ICT. The study also employed two tests which involved multiple choice questions for knowledge test and instruction task questions for task-based test. The knowledge test was adapted from instruments MyICTSQ developed by (Baharom et al., 2013) and PROFIT (Baharom, Hassan, Johan, Sarkawi, & Fabil, 2013) while task-based test was adapted from instrument developed by Centre for Academic Practice & Learning Enhancement University of Strathclyde UK (2007).

This study used seven construct grouping as research design from proposing hypotheses to the significant correlation which describe the relations among variables of this research between the three tests. It utilizes a quantitative research method to collect sample data in ICT competencies from a population of first year university students in UPSI. The rationale of using quantitative research is because this study involves measurable quantities such as the levels of ICT competencies (Likert's Scale) and 100 per cent score percentage for both of the tests.

Sampling and Data Collection

The population of this research is all UPSI first year students. The size of sampling for perception test for each IPTA in Malaysia is 500 students since this research is a joined venture research with UTM. The UPSI research team

has collected 506 respondents for perception test. Random sampling technique has been used in this research from eight faculties at UPSI from both science and art streams. However, to easily administer knowledge test and task-based test, only sixty (N=60) students have been selected from respondents who had taken the perception test and randomly selected from seven faculties. Out of these, 1 sample was unusable due to incomplete of perception test. Based on the 59 usable samples, the response rate for this research is 98.3 per cent.

Variable Measurement Independent and Dependent Variables

The independent variable used in this research is the gender of first year UPSI students. Dependent variables, i.e. the seven construct of ICT competencies, were used as the dependent variables. Each of the construct in perception test was measured using the 5-point Likert's scale as shown in Table 3. For measuring score in knowledge test and task-based test, scoring is based on UPSI course grading scale as shown in Table 4.

Table 3 Scoring in Perception Test

Score	Level of Competent
1	Not Using
2	Not Competent
3	Less Competent
4	Competent
5	Very Competent

Table 4 UPSI Course Grading Scale

Grade	Marks range	CGP(S/A)	Level
A	80 – 100	4.00	Excellent
A-	75 – 79	3.70	Excellent
B+	70 – 74	3.40	Honours
B	65 – 69	3.00	Honours
B-	60 – 64	2.70	Honours
C+	55 – 59	2.40	Pass
C	50 – 54	2.00	Pass
C-	45 – 49	1.70	Weak Pass
D+	40 – 44	1.40	Weak Pass
D	35 – 39	1.00	Weak Pass
F	0 – 34	0	Fail

RESULT AND DISCUSSION

Sample Profile

The demographic profile of surveyed respondents is presented in Table 5 includes gender and faculties. The gender distribution of the survey respondents is 30.6 per cent males and 64.5 per cent females. In terms of streaming, 54.8 per cent are in science stream and 40.4 per cent in arts stream.

Table 5 Demographic Profile of Respondents

Variables		Frequency	Percentage (%)
Gender	Male	19	30.6%
	Female	40	64.5%
*Faculties	FPTV	8	12.9%
	FSSK	9	14.5%
	FSK	4	6.5%
	FBK	8	12.9%
	FPE	17	27.4%
	FPPM	6	9.7%
	FSMP	7	11.3%

FPTV	Faculty of Technical & Vocational Education
FSSK	Faculty of Sport Science & Coaching
FSK	Faculty of Human Sciences
FBK	Faculty of Language & Communications
FPE	Faculty of Management & Economics
FPPM	Faculty of Education & Human Development
FSMP	Faculty of Music & Performing Arts

Construct Validity

The reliability of the questionnaire was tested using Cronbach's alpha. An alpha value of 0.70 or greater is a sensible compromise value to take as the benchmark which indicates high reliability and good internal consistency (Hinton, Brownlow, McMurray, & Cozens, 2004). Table 6 shows result of the reliability analysis for all constructs in this study.

Table 6 Construct Scale Reliability

Construct of ICT Competency	Cronbach's Alpha
Ethical Practice	0.803
Communication	0.727
Basic Computer Operation	0.820

Continue... (Table 6)

Personal Management	0.741
Information Searching	0.821
Application Software Skill	0.864
Advance Software Skill	0.845

Descriptive Statistics

Table 7 shows mean and standard deviation for each construct of ICT competencies for perception test and knowledge test for overall score. The average level of competencies is ranged between 3.6 to 4.1 for perception test which are considered competent while for knowledge test the average level of score is range between 50 to 65. Ethical practice construct has the highest level of competency for perception test but has the lowest score for knowledge test, while advance software skill construct has the lowest level of competency for perception test but has average score for knowledge test.

Table 7 ICT Competencies Statistics (Overall) for Perception Test and Knowledge Test

Construct	Perception Test		Knowledge Test	
	Mean	Standard Deviation	Mean	Standard Deviation
Ethical Practice	4.1529	0.52397	19.9153	20.11800
Communication	3.8136	0.60812	49.4746	17.31987
Basic Computer Operation	3.4164	0.70739	23.0339	21.66036
Personal Management	3.9041	0.66726	65.0847	20.87507
Information Searching	3.9254	0.61465	32.0508	20.58408
Application Software Skill	3.6132	0.64539	46.7797	23.95691
Advance Software Skill	2.7017	0.87916	50.4237	27.26448

Table 8 shows mean and standard deviation construct of ICT competencies based on gender differences. Both genders have scored highest on personal management construct for knowledge test and also highest on ethical practice construct for perception test. However, both genders have the lowest level on advance software skills on perception test while for knowledge test both have the lowest score on ethical practice.

Table 8 ICT Competencies Statistics (Male & Female) for Perception Test and Knowledge Test

Construct	Perception Test				Knowledge test			
	Male		Female		Male		Female	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Ethical Practice	4.1211	0.52787	4.1680	0.52817	19.7368	17.83206	20.0000	21.33373
Communication	3.8026	0.53735	3.8188	0.64547	43.8947	17.80104	52.1250	16.65824
Basic Computer Operation	3.6316	0.67508	3.3143	0.70752	22.6316	19.34543	23.2250	22.91063
Personal Management	4.1058	0.58924	3.8083	0.68751	52.6316	22.32146	71.0000	17.51190
Information Searching	3.9684	0.65409	3.9050	0.60254	29.7368	24.67082	33.1500	18.58391
Application Software Skill	3.7374	0.67030	3.5543	0.63325	45.2632	20.91475	47.5000	25.49510
Advance Software Skill	2.6842	0.94355	2.7100	0.85928	46.0526	26.69680	52.5000	27.61921

Table 9 shows mean and standard deviation for four applications in task-based test. Spreadsheet has the lowest score while presentation has the highest score of the ICT competency.

Table 9 ICT Competencies Statistics for Task-based Test

Application	Mean	Standard Deviation
Word Processing	91.5254	5.30353
Spreadsheet	63.1186	10.94829
Presentation	93.8983	5.30353
E-mail	93.4068	6.71621

HYPOTHESES AND CORRELATION ANALYSIS

To test hypothesis H_{O1}: $p_1 = 0$, H_{A1}: $p_1 \neq 0$, analysis is shown in Table 10.

Table 10 Correlation between perception test and knowledge test on ethical practice construct

		Average Perception Test-Ethical Practice	Average Knowledge Test-Ethical Practice
Average Perception Test-	Pearson Correlation	1	-.295(*)
Ethical Practice	Sig. (2-tailed)		.023
	N	59	59
Average Knowledge Test-	Pearson Correlation	-.295(*)	1
Ethical Practice	Sig. (2-tailed)	.023	
	N	59	59

** Correlation is significant at the 0.05 level (2-tailed).*

In Table 10, the Sig. value is .023 (more than .05), this show there is no significant correlation. It's concluded that the finding shows a statistically no significant and low negative relationship between perception test and knowledge test for ethical practice construct, $r(59)$: -.295, $p > .05$. The coefficient of determination $r^2 = 0.087$ indicated that 8.7% of the variance in perception test is associated with the variance in knowledge test for ethical construct. This mean the null hypothesis $p_1 = 0$ is accepted and alternative hypothesis $p_1 \neq 0$ is rejected.

To test hypothesis H_{O2}: $p_2 = 0$, H_{A2}: $p_2 \neq 0$, analysis is shown in Table 11.

Table 11 Correlation between perception test and knowledge test on communication construct.

		Average Perception Test-Communication	Average Knowledge Test-Communication
Average Perception Test-	Pearson Correlation	1	.169(*)
Communication	Sig. (2-tailed)		.200
	N	59	59

Continue... (Table 11)

Average Knowledge Test-	Pearson Correlation	.169(*)	1
Communication	Sig. (2-tailed)	.200	
	N	59	59

** Correlation is significant at the 0.05 level (2-tailed).*

In Table 11, Sig. value is .200 (more than .05), this show there is no significant correlation. It's concluded that the finding shows a statistically no significant and no relationship between perception test and knowledge test for communication construct, $r(59)$: .169, $p > .05$. The coefficient of determination $r^2 = 0.028$ indicated that 2.8% of the variance in perception test is associated with the variance in knowledge test for communication construct. This mean the null hypothesis $p_2 = 0$ is accepted and alternative hypothesis $p_2 \neq 0$ is rejected.

To test hypothesis H_{O3}: $p_3 = 0$, H_{A3}: $p_3 \neq 0$, analysis is shown in Table 12.

Table 12 Correlation between perception test and knowledge test on basic computer operation

		Average Perception Test- Basic Computer Operation	Average Knowledge Test- Basic Computer Operation
Average Perception Test-	Pearson Correlation	1	.012(*)
Basic Computer Operation	Sig. (2-tailed)		.929
	N	59	59
Average Knowledge Test-	Pearson Correlation	.012(*)	1
Basic Computer Operation	Sig. (2-tailed)	.929	
	N	59	59

** Correlation is significant at the 0.05 level (2-tailed).*

In Table 12, Sig. value is .929 (more than .05), this show that there is no significant correlation. It's concluded that the finding shows a statistically no significant and no relationship between perception test and knowledge test for basic computer operation construct, $r(59)$: .012, $p > .05$. The coefficient of determination $r^2 = 0.000144$ indicated that 0.0144% of the variance in perception test is associated with the variance in knowledge test for basic computer

operation construct. This mean the null hypothesis $p_3 = 0$ is accepted and alternative hypothesis $p_3 \neq 0$ is rejected.

To test hypothesis H_{O4}: $p_4 = 0$, H_{A4}: $p_4 \neq 0$, analysis is shown in Table 13.

Table 13 Correlation between perception test and knowledge test on personal management

		Average Perception Test- Personal Management	Average Knowledge Test- Personal Management
Average Perception Test-	Pearson Correlation	1	-.171(*)
Personal Management	Sig. (2-tailed)		.196
	N	59	59
Average Knowledge Test-	Pearson Correlation	-.171(*)	1
Personal Management	Sig. (2-tailed)	.196	
	N	59	59

* *Correlation is significant at the 0.05 level (2-tailed)*

In Table 13, Sig. value is .196 (more than .05), this show there is no significant correlation. It's concluded that the finding shows a statistically no significant and no relationship between perception test and knowledge test for personal management construct, $r(59)$: -.171, $p > .05$. The coefficient of determination r^2= 0.029 indicated that 2.9% of the variance in perception test is associated with the variance in knowledge test for personal management construct. This mean the null hypothesis $p_4 = 0$ is accepted and alternative hypothesis $p_4 \neq 0$ is rejected.

To test hypothesis H_{O5}: $p_5 = 0$, H_{A5}: $p_5 \neq 0$, analysis is shown in Table 14.

Table 14 Correlation between perception test and knowledge test on information searching

		Average Perception Test- Information Searching	Average Knowledge Test- Information Searching
Average Perception Test-	Pearson Correlation	1	.004(*)

Continue... (Table 14)

Information Searching	Sig. (2-tailed)		.977
	N	59	59
Average Knowledge Test-	Pearson Correlation	.004(*)	1
Information Searching	Sig. (2-tailed)	.977	
	N	59	59

** Correlation is significant at the 0.05 level (2-tailed).*

In Table 14, Sig. value is .977 (more than .05), this show there is no significant correlation. It's concluded that the finding shows a statistically no significant and no relationship between perception test and knowledge test for information searching construct, $r(59)$: .004, p >0.05. The coefficient of determination r^2= 0.000016 indicated that 0.0016% of the variance in perception test is associated with the variance in knowledge test for information searching construct. This mean the null hypothesis $p_5 = 0$ is accepted and alternative hypothesis $p_5 \neq 0$ is rejected.

To test hypothesis H_{O6}: $p_6 = 0$, H_{A6}: $p_6 \neq 0$, analysis is shown in Table 15.

Table 15 Correlation between perception test and knowledge test on application software skill

		Average Perception Test- Application Software Skill	Average Knowledge Test- Application Software Skill
Average Perception Test-	Pearson Correlation	1	.050(*)
Application Software Skill	Sig. (2-tailed)		.706
	N	59	59
Average Knowledge Test-	Pearson Correlation	.050(*)	1
Application Software Skill	Sig. (2-tailed)	.706	
	N	59	59

** Correlation is significant at the 0.05 level (2-tailed).*

In Table 15, Sig. value is .706 (more than .05), this show there is no significant correlation. It's concluded that the finding shows a statistically no significant and no relationship between perception test and knowledge test for application

software skill construct, $r(59)$: .050, $p > .05$. The coefficient of determination r^2= 0.0025 indicated that 0.25% of the variance in perception test is associated with the variance in knowledge test for application software skill construct. This mean the null hypothesis $p_6 = 0$ is accepted and alternative hypothesis $p_6 \neq 0$ is rejected.

To test hypothesis H_{O7}: $p_7 = 0$, H_{A7}: $p_7 \neq 0$, analysis is shown in Table 16.

Table 16 Correlation between perception test and knowledge test on advance software skill

		Average Perception Test- Advance Software Skill	Average Knowledge Test- Advance Software Skill
Average Perception Test-	Pearson Correlation	1	-.261(*)
Advance Software Skill	Sig. (2-tailed)		.046
	N	59	59
Average Knowledge Test-	Pearson Correlation	-.261(*)	1
Advance Software Skill	Sig. (2-tailed)	.046	
	N	59	59

** Correlation is significant at the 0.05 level (2-tailed).*

In Table 16, Sig. value is .046 (more than .05), this show there is no significant correlation. It's concluded that the finding shows a statistically no significant and low negative relationship between perception test and knowledge test for advance software skill construct, $r(59)$: -.261, $p > .05$. The coefficient of determination r^2= 0.068 indicated that 6.8% of the variance in perception test is associated with the variance in knowledge test for advance software skill construct. This mean the null hypothesis $p_7 = 0$ is accepted and alternative hypothesis $p_7 \neq 0$ is rejected.

RESEARCH QUESTION

To test is there any significant correlation between knowledge test on application software skill construct and task-based test (word processing, spreadsheet and presentation software skill), analysis is shown in Table 17.

Table 17 Significant Correlation between knowledge test on application software skill construct and task-based test (word processing, spread sheets and presentation software skill)

		Average Knowledge Test-Application Software Skill	Average Task-based Test- Word processing, Spreadsheet & Presentation
Average Knowledge Test-	Pearson Correlation	1	.213(*)
Application Software Skill	Sig. (2-tailed)		.105
	N	59	59
Average Task-based Test-	Pearson Correlation	.213(*)	1
Word processing,	Sig. (2-tailed)	.105	
Spreadsheets & Presentation	N	59	59

** Correlation is significant at the 0.05 level (2-tailed)*

In Table 17, Sig. value is .105 (more than .05), this show there is no significant correlation and low positive relationship between knowledge test on application software skill construct and task-based test (word processing, spread sheets and presentation software skill, $r(59)$: .213, $p > .05$. The coefficient of determination $r^2 = 0.045$ indicated that 4.5% of the variance in knowledge test application software skill is associated with the variance in task-based test (word processing, spreadsheet and presentation software skill).

To test is there any significant correlation between knowledge test on communication construct and task-based test (email), analysis is shown in Table 18.

Table 18 Correlation between knowledge test on communication construct and task-based test (email)

		Average Knowledge Test-Communication	Average Task-based Test- Email
Average Knowledge Test-	Pearson Correlation	1	-.009(*)
Application Software Skill	Sig. (2-tailed)		.944
	N	59	59
Average Task-based Test-	Pearson Correlation	-.009(*)	1

Continue... (Table 14)

Word processing,	Sig. (2-tailed)	.944	
Spreadsheets & Presentation	N	59	59

** Correlation is significant at the 0.05 level (2-tailed).*

In Table 18, Sig. value is .944 (more than .05), this show there is no significant correlation and no relationship between knowledge test on communication construct and task-based test (email), $r(59)$: -.009, $p > .05$. The coefficient of determination $r^2 = 0.000081$ indicated that 0.0081% of the variance in knowledge test communication construct associated with the variance in task-based test (email).

To test is there any significant correlation between four applications in task-based test, analysis is shown in Table 19.

Table 19 Correlation between four applications in task-based test

		Word	Spreadsheet	Presentation	Email
Word Processing	Pearson Correlation	1	-.164	.176	.029
	Sig. (2-tailed)		.214	.181	.828
	N	59	59	59	59
Spreadsheet	Pearson Correlation	-.164	1	-.120	-.120
	Sig. (2-tailed)	.214		.365	.365
	N	59	59	59	59
Presentation	Pearson Correlation	.176	-.120	1	.530(**)
	Sig. (2-tailed)	.181	.365		.000
	N	59	59	59	59
Email	Pearson Correlation	.029	-.120	.530(**)	1
	Sig. (2-tailed)	.828	.365	.000	
	N	59	59	59	59

*** Correlation is significant at the 0.01 level (2-tailed).*

In Table 19, there are two applications that show significant correlation between each other. With Sig. value is .000 (less than .01), this show there is a significant correlation between email and presentation applications, $r(59)$: .530, $p < .01$. The coefficient of determination $r^2 = 0.2809$ indicated that 28.1% of the variance in email application associated with the variance in presentation application.

Word processing application show no correlation with all three of the applications; spreadsheet $r(59)$: -.164, p <.01, presentation $r(59)$: 0.176, p <.01 and email $r(59)$: 0.029, p <.01. Spreadsheet application also show no correlation with all three of the applications; word processing $r(59)$: -0.164, p <.01, presentation $r(59)$: -0.120, p <.01 and email $r(59)$:- 0.120, p <.01. Presentation application show no correlation with two of the applications; word processing $r(59)$: 0.176, p <.01 and spreadsheet $r(59)$: -0.120, p <.01. Email application shows no correlation with two of the applications; word processing $r(59)$: 0.029, p <.01 and spreadsheet $r(59)$:- 0.120, p <.01.

DISCUSSION

Hypothesis 1

H_{O1}: There is no correlation between perception test and knowledge test for ethical practice construct. ($p_1 = 0$)
H_{A1}: There is a correlation between perception test and knowledge test for ethical practice construct. ($p_1 \neq 0$)

The first hypothesis revealed a statistically no significant correlation between perception test and knowledge test on ethical practice construct. However, it shows low negative relationship when perception test score increase, score in knowledge test decrease.

Hypothesis 2

H_{O2}: There is no correlation between perception test and knowledge test for communication construct. ($p_2 = 0$)
H_{A2}: There is a correlation between perception test and knowledge test for communication construct. ($p_2 \neq 0$)

The second hypothesis revealed a statistically no significant correlation and no relation between perception test and knowledge test on communication construct.

Hypothesis 3

H_{O3}: There is no correlation between perception test and knowledge test for basic computer operation construct. ($p_3 = 0$)
H_{A3}: There is a correlation between perception test and knowledge test for basic computer operation construct. ($p_3 \neq 0$)

The third hypothesis revealed a statistically no significant correlation and no relation between perception test and knowledge test on basic computer operation construct.

Hypothesis 4

H_{O4}: There is no correlation between perception test and knowledge test for personal management construct. ($p_4 = 0$)
H_{A4}: There is a correlation between perception test and knowledge test for personal management construct. ($p_4 \neq 0$)

The forth hypothesis revealed a statistically no significant correlation and no relation between perception test and knowledge test on personal management construct.

Hypothesis 5

H_{O5}: There is no correlation between perception test and knowledge test for information searching construct. ($p_5 = 0$)
H_{A5}: There is a correlation between perception test and knowledge test for information searching construct. ($p_5 \neq 0$)

The fifth hypothesis revealed a statistically no significant correlation and no relation between perception test and knowledge test on information searching construct.

Hypothesis 6

H_{O6}: There is no correlation between perception test and knowledge test for application software skill construct. ($p_6 = 0$)
H_{A6}: There is a correlation between perception test and knowledge test for application software skill construct. ($p_6 \neq 0$)

The sixth hypothesis revealed a statistically no significant correlation and no relation between perception test and knowledge test on application software skill.

Hypothesis 7

H_{O7}: There is no correlation between perception test and knowledge test for advance software skill construct. ($p_7 = 0$)
H_{A7}: There is a correlation between perception test and knowledge test for advance software skill construct. ($p_7 \neq 0$)

The seventh hypothesis revealed a statistically no significant correlation between perception test and knowledge test on advance software skill construct. However, it shows low negative relationship, when perception test score increase, score in knowledge test decrease.

Research Question 1

1. Is there any significant correlation between knowledge test on application software skill construct and task-based test (word processing, spread sheets and presentation application)?

The first research question revealed a statistically no significant correlation and no relation between knowledge test on application software skill and task-based test (word processing, spread sheets and presentation application). In knowledge test students are examine on their understanding about word processing, spread sheets and presentation application however it shows no relation with their skill ability to operate those applications.

2. Is there any significant correlation between knowledge test on communication construct and task-based test score on email application?

The second research question revealed a statistically no significant correlation and no relation between knowledge test on communication and task-based test (e-mail). When knowledge test on communication is used to examine student understanding using email in their learning however its show no relation with their skills using this application.

3. Is there any significant correlation between four applications in task-based test?

The correlation significant of four applications in task-based test was calculated and the finding shows that only two of the applications have significant correlation. It also shows that those applications have moderate positive relation between presentation and email applications. It shows that high score in presentation is associated with high score in email. It predicted that when students score higher in presentation, they are likely to score higher as well in email and vice versa.

CONCLUSION

This study also raises a number of specific issues with student's ability in knowledge and skill in ICT. Since schools in Malaysia are already well down the road of using ICT in teaching and learning, student need more time and support to acquire greater competence in a broad range of applications in order to extend into competitive world of technology today.

With this in mind, since majority of schools and IPTA in Malaysia are using ICT for teaching and learning in classrooms, it is importance as a learner to be actively engage in learning (Venkatesh, Croteau, & Rabah, 2014). Taking Sultan Idris Education University (UPSI) as our case study, system known as 'MyGuru' is the most important system for delivering and conducting teaching and learning process. Students are required to understand and used 'MyGuru'

to download course materials, read announcements, uploading assignments or communicate with the course coordinators.

As blended learning is going to be part of UPSI teaching and learning environment, this process is making useful contribution to learning in many diverse ways. The issue is how to find the best tools (software and hardware) and how to match them to different types of task so as to develop, for example, independent learning and metacognitive awareness. With this finding, researches at UPSI strongly believed that ICT knowledge and skill need to be taught to first year UPSI students to achieve necessary competent level to support students in learning. As part of the benefit from this research, an 'ICT Competency' course will be introduced to first year UPSI as one of university courses starting November 2014.

ACKNOWLEDGEMENTS

Authors would like to thank Universiti Teknologi Malaysia (UTM) for funding us with a one year research grant and research team members from Universiti Teknologi Mara (UiTM), Universiti Islam Antarabangsa Malaysia (UIAM) and Universiti Teknikal Malaysia (UTEM) for conducting the knowledge test.

REFERENCES

Abu Bakar, A. Z., Abdul Rahman, A., & A.lahad, N. (2012). *ICT-Competency framework for Malaysian IHL'S students (ICT-CFS).* UTM Skudai, Johor Bharu, Johor Malaysia.

Baharom, S., Hassan, H., Johan, R., Sarkawi, S., & Fabil, N. (2013). *PROFIT: Proficiency test for ICT*. Joined Venture Project UPSI-MIMOS, Tg Malim Perak Malaysia.

Baharom, S., Hassan, H., Johan, R., Sarkawi, S., Shariff, A. S., & Fabil, N. (2013). *MyICTSQ: Malaysian ICT skills questionnaire*. Geran Penyelidikan 2011-0047-106-01 GPU Sultan Idris Education University, Tg Malim, Perak Malaysia.

Egwali, A. O. (2012). Evaluation of perception and performance in ICT related courses. (IJACSA) *International Journal of Advanced Computer Science and Applications*. 3(6), pp. 121–124.

Gulbahar, Y., & Guven, I. (2007). A survey on ICT usage and the perceptions of social studies teachers in Turkey. *Educational Technology & Society*. 11(3), pp. 37–51. Retrieved from http://eric.ed.gov/?id=EJ814116.

Hew, T. S., & Leong, L. Y. (2011). An empirical analysis of Malaysian pre-university students' ICT Competency Gender Differences. *International Journal of Network and Mobile Technologies*. 2(1), pp. 15–29. Retrieved from http://ijnmt.intimal.edu.my.

Hinton, R. P., Brownlow, C., McMurray, I., & Cozens, B. (2004). *SPSS Explained*. New York: Routledge.

Human Resources. (2014). The definition of competencies and their application at NU | Human Resources | University of Nebraska–Lincoln. The University of Nebraska-Lincoln. Retrieved May 25, 2014, from http://hr.unl.edu/compensation/nuvalues/corecompetencies.shtml.

Md Yunus, M., & Ashairi, S. (2014). Information & communication technology (ICT) tools in teaching and learning literature component in Malaysian Secondary Schools. *Canadian Center of Science and Education*. 10(7). doi:10.5539/ass.v10n7p136.

Mutalib, Z. A. (2013, November 23). *Berita Harian* | KSSR Tahap II dilaksana bermula tahun depan. Berita Harian Online. Kuala Lumpur. Retrieved from http://www.bharian.com.my/bharian/articles/KSSRTahapII dilaksanabermulatahundepan/Article/index_html.

National ICT Competency Standard (NICS) Basic. (2010). Commission on information and communications Technology. Quezon City Philippines. Retrieved May 21, 2014, from http://www.ncc.gov.ph/nics/ files/NICS-Basic.pdf.

Perceptions, T. (n.d.). ImpaCT2 pupils' and teachers' perceptions of ICT in the home, school and community.

Raman, A., & Halim Mohamed, A. (2013). Issues of ICT usage among Malaysian secondary school English teachers. *English Language Teaching*. 6(9), pp. 74–82. doi:10.5539/elt.v6n9p74

Sim, J. C. H., & Theng, L. B. (2007). Teachers' perceptions of the use of ICT as an instructional tool in Mathematics and Science. In proceedings of *International Conference on Teaching and Learning Proceedings 2007*. Putrajaya Malaysia.

Somekh, B., Lewin, C., Mavers, D., Fisher, T., Harrison, C., Haw, K., … Scrimshaw, P. (2011). Impact2 pupils' and teachers perceptions of ICT in the home, school and community. *British Educational Communications and Technology Agency (BECTA)*. Retrieved May 19, 2014, from http://dera.ioe.ac.uk/id/eprint/1573.

Umar, I. N., & Hussin, F. K. (2014). ICT coordinators' perceptions on ICT practices, barriers and its future in Malaysian secondary schools: Correlation analysis. *Procedia - Social and Behavioral Sciences*. 116, pp. 2469–2473. doi:10.1016/j.sbspro.2014.01.593

Venkatesh, V., Croteau, A.-M., & Rabah, J. (2014). Perceptions of effectiveness of instructional uses of technology in higher education in an era of Web 2.0. In proceedings of the *2014 47th Hawaii International Conference on System Sciences*, pp. 110–119. IEEE. doi:10.1109/HICSS.2014.22

Verhoeven, J. C., Heerwegh, D., & Wit, K. (2011). First year university students' self-perception of ICT skills: Do learning styles matter? *Education and Information Technologies*. 17(1), pp. 109–133. doi:10.1007/s10639-010-9149-1

Zaki, M., & Zahilah, F. (2013, November 4). ICT and internet usage in early childhood education: A comparative study of Australian and Malaysian teachers' beliefs and current practices. Queensland University of Technology. Retrieved from http://eprints.qut.edu.au/63895/1/Filzah Zahilah_Mohamed Zaki_Thesis.pdf