

The Use of Information Technology and Communication (ICT) Among Form Four Agriculture Students in Malaysian Secondary Schools

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DOI: 10.6007/IJARBSS/v7-i11/3545 URL: <http://dx.doi.org/10.6007/IJARBSS/v7-i11/3545>

Abstract

This study seeks to examine the use of ICT by students in the process of teaching and facilitating (PdPc) the subject of Agriculture. Experimentation and the quantitative method using questionnaires have been adopted in this study. The qualitative method using interviews is also carried out. The choice of the subject for the study is also done through the purposive sampling involving 96 Form Four students in Agriculture stream in 4 secondary schools in the District of Kubang Pasu. The study subject comprises of two conventional groups and two ICT groups. The descriptive statistic analysis is adopted, to explain the study variable based on the demography of gender and computer ownership. Meanwhile, the inference statistic analysis namely MANOVA and Pearson correlation are employed to the hypothesis of the study. The study outcome shows that there is a significant difference towards the variable of knowledge and interaction to both groups of students. The study finding also demonstrates that there is a significant difference between ICT knowledge and the aspect of student demography. The Pearson correlation analysis also shows that there is a significant relationship between the level of motivation and student interactions and the level of knowledge and student interaction. The interview analysis outcome finds that there are two main themes namely the factor that causes students to be more motivated if teacher uses ICT and there is a positive interaction effect if ICT is used during the PdPc. The conclusion from the study shows that the use of ICT in the PdPc process really leaves an impact on the knowledge, motivation and interaction of the students and it is able to increase the PdPc of Agriculture subject.

Keywords: ICT knowledge, Motivation, Interaction

1. Introduction

In the process of PdPc, the use of various materials and media is prioritised to stimulate students' thoughts and ICT serves as an important tool to help teachers and students address today's world challenges in strengthening the knowledge among students. However, we need to know the extent of the knowledge and ability of the students in using ICT according to the current information technology progress that has been changing so rapidly. Most teachers today have been comfortable with conventional methods and this fuels the problem of controlling the class (Haliza Hamzah dan Samuel, J.N., 2009).. Therefore, a lot of time has

gone to waste and this leads to disciplinary problems among students, as the conventional teaching is found monotonous.

A study (Bahrudin, Mohamad Bilal & Muhammad Kasim, 2001), shows that ICT is able to address the weakness of science education taught in a traditional way also teachers' involvement in a more productive use of the computer. Teachers can also integrate the technological skills and the chance to learn constructively to see the effectiveness of the use of technology. The role of ICT in PdPc will lead to new and innovative methods in learning and assessment.

According to Jeong-Bae Son (2009) the use of ICT in teaching especially involving online courses would be able to attract the students. The impacts of the use of ICT in PdPc are also positive. Among them is that the use of the computer is able to instil a profound interest towards the domination on the subjects learnt by students. The issues discussed above mostly focus on the importance of the teaching of ICT carried out in PdPc.

In the teaching that uses the conventional method, although it promises an undisputable success, it is also bringing about various issues and restrictions, where in conventional teaching, one-way communication is commonplace. Teachers play an important role in delivering information and students only sit and take note of the gist of the lessons. This serves to be the main factor where students will quickly lose interest in the lesson taught by the teacher. According to Abu Hassan & Meor Ibrahim (2006), in a planned activity of teaching and learning teachers need to involve students actively to encourage the formation of critical, analytical and innovative thinking.

2. Problem Statement

This study is done to look into the level of knowledge, motivation and interaction among Form Four Agriculture students during the process of learning and facilitation. A survey is also done to know the effect of using ICT and the problems that are frequently faced by teachers during Pdpc. This study is done in secondary schools in the District of Kubang Pasu in the state of Kedah. Four secondary schools are involved in this study.

3. Study Objective

The study objectives as follows:

- a) To identify the difference between the ICT group and the conventional group based on the level of knowledge in the use of ICT during the process of PdPc;
- b) To identify the difference between the ICT group and the conventional group towards the level of motivation in using ICT during the process of PdPc;
- c) To identify the difference between the ICT group and the conventional group towards the level of interaction in using ICT during the process of PdPc;
- d) To identify the relationship of ICT towards the motivation and interaction between the ICT and conventional groups.

4. Study Question

- a) Is there any difference between ICT and conventional towards the level of knowledge in the use of ICT during PdPc?
- b) Is there any difference between the treatment group and the control group towards the motivation level in the use of ICT during the teaching and learning?
- c) Is there any difference between the treatment group and the control group towards the interaction level in the use of ICT during the teaching and learning?
- d) Is there any relationship of the ICT knowledge towards the motivation and interaction between the treatment and control groups?

5. Study Methodology

5.1 Study Limitation

This study has some limitations. The limitations include the location, the study sample and the factor being studied. The feedback given by the teachers in this study is assumed to have been given honestly and with a sense of responsibility.

5.2 Study Design

In this experimental study, the quantitative and qualitative methods have been used to study the use of ICT among Agriculture students during the process of PdPc. In the study design, there are two groups of students named the treatment group and the control group. The survey method in the form of quantitative method uses questionnaire forms that are distributed to the study respondents. A total of 96 Form Four students in the Agriculture stream in four secondary schools in Kubang Pasu, Kedah are chosen as the respondents.

Prior to the distribution of questionnaires, the treatment group had undergone five sessions of Pdpc using five teaching plans prepared by researchers. The duration of time taken to use all five lesson plans was for three weeks. Next, researcher distributed the questionnaire forms to the treatment group before and after the five sessions have been completed to see the difference in the results. Other than the questionnaires, interviews are also carried out in this study. In this current work, researchers have conducted an interview on four students that have been selected at random to gather the data in more detail.

5.3 Sampling

The population of the students comprises of Form Four Agriculture students in the district of Kubang Pasu, Kedah. The study is done only in four secondary schools in Kubang Pasu, Kedah that offers Form Four Agriculture stream. Respondents are 96 students. In this study, researcher chooses purposive sampling where he will select four respondents on his own discretion to be interviewed, those deemed appropriate with the goals of the study.

5.4 Study Instrument

This study is in the form of quantitative survey, thus the questionnaire form is used as the main instrument because it is easier and more effective (Mohamad Najib, 2003). The questionnaire

used in the study is divided into 4 sections, which are sections A, B, C and D. Section A covers the general information of the background of the respondents in the purpose of obtaining information about the background of the respondents and its relation to the use of ICT.

5.5 Pilot Study

The sample of the pilot study is a total of 30 Form Four students in one of the secondary schools in the district of Kubang pasu, and they are Agriculture students. The Cronbach Alpha technique in SPSS is used to obtain the reliability of the items prepared in this pilot study. According to Mohd. Majid Konting (2012), the closer the Alpha value to number 1, the higher the internal validity of the items in the questionnaire. Meanwhile, if the Cronbach Alpha value is less than 0.6 it is thought to be weak. The finding from table 3. shows that all of the 24 items obtain the Cronbach Alpha value of 0.78. This shows that the questionnaire can be used.

6. Study Finding

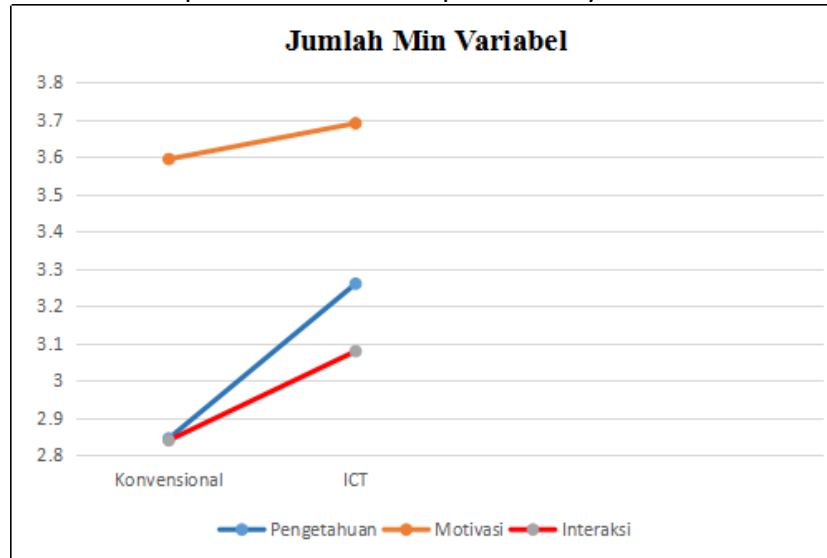
Hypothesis No I: There is No Relationship of Significant Difference between Conventional and ICT Groups towards the Level of Knowledge, Motivation and Student Interaction.

Table 1: The MANOVA Test on the Significant Difference Level between the Conventional Group and ICT Group Towards the Knowledge, Motivation and Interaction of Students (Pre Test).

Source	Variable	Type III Sum of Squares	df	Mean Square	F
Kon@Pt	Knowledge	4.14	1	4.14	12.97
	Motivation	0.22	1	0.22	0.585
	Interaction	1.36	1	1.26	2.30
Sig. Partial Eta Squared Noncent. Parameter Observed Power ^b					
	Knowledge	0.001	0.121	12.97	0.946
	Motivation	0.446	0.006	0.585	0.118
	Interaction	0.133	0.024	2.30	0.324

Based on Table 1 above, the outcome of the MANOVA test shows that there is a significant effect between the student groups towards ICT knowledge. [$F(1,94) = 12.97$; $p < .005$; partial $\eta^2 = .121$]. Meanwhile, for the variable of motivation, it shows that there is no significant effect between the groups of students towards student motivation. [$F(1,94) = 0.585$; $p > .005$; partial $\eta^2 = .006$]. For the variable of interaction, it shows that there is no significant effect between groups of students towards interaction [$F(1,94) = 2.30$; $p > .005$; partial $\eta^2 = .024$].

Graph 1: The Mean Graph for Every Variable



All in all, Graph 1 above shows the mean for every variable involved in this study, namely knowledge, motivation and interaction of the students towards two different groups which are ICT group and conventional group. For the mean for knowledge, the graph shows that the mean for the conventional group is 2.84 and the mean for ICT students 3.26. For motivation, the graph shows that the mean for conventional students is 3.59 and for ICT students 3.69. In terms of the interaction, the mean for conventional students is 2.84 and for ICT students 3.07. In sum, the means for all three variables demonstrate a higher level for ICT students compared to their conventional peers.

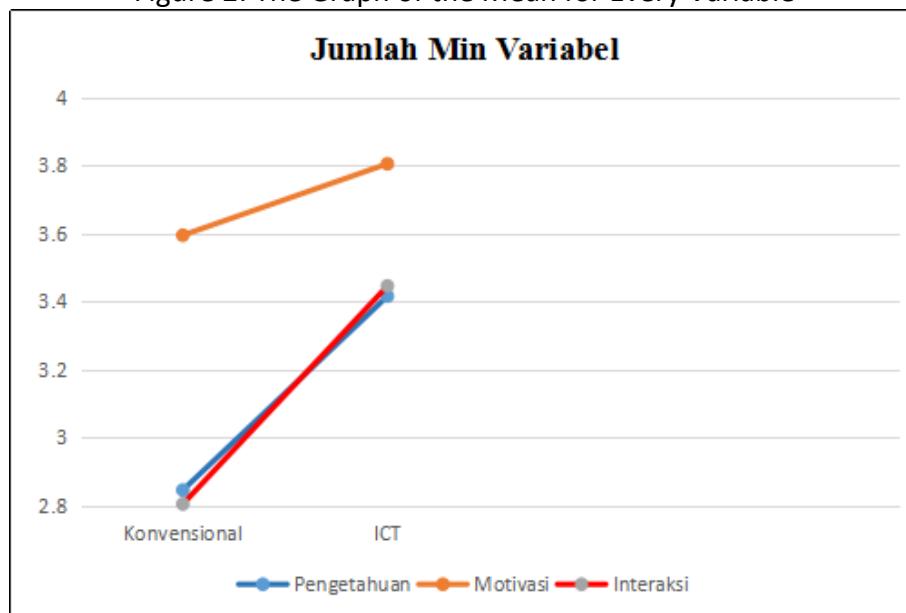
Table 2: The MANOVA Test on the Significant Level of Difference between the Conventional and ICT Groups towards the Levels of Knowledge, Motivation and Interaction of Students (Post Test)

Source	Variable	Type III Sum of Squares	df	Mean Square	F
Kon@Pt	Knowledge	7.79	1	7.79	16.86
	Motivation	1.06	1	1.06	2.42
	Interaction	8.49	1	8.49	18.70
	Sig.	Partial Eta Squared	Noncent.Parameter	Observed Power ^b	
	Knowledge	0.000	0.152	16.86	0.982
	Motivation	0.123	0.025	2.418	0.337
	Interaction	0.000	0.166	18.70	0.990

Based on Table 2 above, the outcome for the MANOVA test shows that there is a significant effect on the group of students towards ICT knowledge. [F (1,94) = 16.86 ; p < .005; partial n² = .15]. Meanwhile, for motivation variable, there is no significant effect between the student groups on their motivation. [F (1,94) = 2.418 ; p > .005; partial n² = .025]. For interaction

variable, there is a significant effect between the groups of students on interaction. [F (1,94) = 18.703 ; p < .0005; partian n² = .166].

Figure 2: The Graph of the Mean for Every Variable



All in all, in Graph 2 above, it shows the means for every variable involved in this study namely knowledge, motivation and interaction of the students towards two different groups namely ICT and conventional groups. For the mean for knowledge, the graph shows that the mean for conventional students is 2.85 and the mean for ICT students 3.12. Meanwhile, for motivation, the graph shows that the mean for conventional students is 3.59 and the mean for ICT students 3.80. For interaction, the mean for conventional students is 2.85 and the mean for ICT students 3.45. In sum, the means for all three variables demonstrate that there is a higher level for ICT students compared to the conventional student group.

Hypothesis No 2: There is No Significant Relationship between Knowledge, Motivation and Interaction of Agriculture Students

To test this hypothesis, the Pearson correlation analysis was carried out and the method is consistent with the study question, which is ‘What is the significant relationship between ICT knowledge, and students’ interaction and motivation?’ After the analysis, the relationship between the three is summarized in Tables 3 and 4 below.

Table 3: The Correlation Test- Relationship between ICT Knowledge and Motivation and Interaction. (Pre Test)

Variable 1	Variable 2	Pearson Correlation	Sig. (p)	N
Knowledge	Motivation	0.197	0.055	96
Knowledge	Interaction	0.170	0.099	96
Motivation	Interaction	0.427**	0.000	96

** p < 0.01; * p < 0.05

Based on the result of the pre-test in Table 3 above, it is found that there is a very strong relationship on the moderate level between motivation level and interaction level of the students. ($r = .427$; $p < .05$). Meanwhile, between knowledge and interaction, the relationship is found to be weak ($r = .170$; $p > .05$). This is consistent with the assessment between knowledge and motivation which stays at a weak level. Thus, the null hypothesis is rejected because there is a significant relationship between motivation and interaction.

Table 4: Correlation Test- the Relationship between ICT Knowledge and Motivation and interaction. (Post Test)

Variable 1	Variable 2	Pearson Correlation	Sig. (p)	N
Knowledge	Motivation	0.156	0.128	96
Knowledge	Interaction	0.219*	0.032	96
Motivation	Interaction	0.390**	0.000	96

** $p < 0.01$; * $p < 0.05$

Based on the results in Table 4 above, it is found that there is a very strong relationship at a moderate level between the motivation and interaction levels of the students. ($r = .390$; $p < .01$) and a strong relationship at a weak level between knowledge and interaction ($r = .219$; $p < .05$). In turn, the assessment between knowledge and motivation stays at a weak level. Thus, the null hypothesis is rejected because there is a significant relationship between motivation and interaction and knowledge and the interaction of agriculture students.

7. Conclusion for the Study Outcome

The analysis outcome reveals that there is a significant relationship for knowledge only for the pre-test. As for the post-test, it is found that there is a significant relationship between knowledge and interaction towards two different groups of students, namely ICT group and conventional group. This study is also supported by the finding of the study by Rose Aminah et al. (2004) the opportunity for the inculcation of skills in the science process does exist in the teaching and learning of science especially in Bestari School. Such an opportunity is found to have begun from the teaching and learning materials used. Students will be more motivated to get excellent results if teachers use appropriate teaching and learning materials.

Other than that, for the conclusive outcome of the correlation test it is found that there is a significant and strong relationship between motivation and interaction and a significant relationship between knowledge and motivation. In turn, the correlation level between knowledge and motivation is at a weak correlation level. Therefore, this finding confirms the statement made by Mulyani et al. (2008) in the environmental exploration study which proves that teaching methods such as ICT can make students more active, creative, effective and facilitative during the process of teaching and learning (George & Glasgow 2002). When students are motivated in class, automatically students will interact more with the teachers and other friends to exchange ideas and opinions.

This sits well with the opinion raised by Kosasih dan Robertus (2007) that the teaching medium can be used to channel messages, stimulate the mind, arouse motivation and attention and even desire towards something (Pea 1994; Kurzel, Slay & Chau 2002; Brody 2005; Ramsey & Hungerford 1989).

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