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Roger's Acceptance Perspectives and Course Materials Innovation

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Abstract: The ministry of education has carried out various efforts and allocated much money to integrate course materials with teaching and learning. Yet, studies show that the usage of these materials among the teachers is relatively low. The aim of this study is to find out if Roger's acceptance perspectives have anything to do with the acceptance of course materials. This is a descriptive study by way of a survey research. The population of the study consists of Form 1 mathematic teachers of SMKs in Kedah. A sample of 218 teachers was randomly chosen from the population. The data for the study was collected using a questionnaire containing 50 items. The questionnaire has a high acceptance level (The value of Alpha = 0.96). The data was analysed using descriptive statistics and correlation testing. From the results of the study it was found that the course materials acceptance among the mathematic teachers was just at the average level (surface level). It was also found that Roger's perspective has great significance on the acceptance level of the materials among the Mathematics teachers. As such roger's perspectives should be given due recognition so as to elevate the acceptance of the subject materials. To do that activities should be planned to raise the psychological aspects of the teachers so that using these perspectives can be skillfully deployed in teaching and learning using ICT.

Key words: ICT, acceptance perspectives, course materials, acceptance of innovations, psychological aspects

INTRODUCTION

Malaysia is effortlessly trying to include Information and Communication Technology (ICT) in various fields such as business, industry, communication and education so as to expand and direct the development of the nation towards science and technology, in line with Vision 2020. In 2001, the government published the k-Economy Master Plan. Following that the k-economy Master Plan was manifested in the reformation of the Malaysian Educational system giving birth to various efforts to elevate the use of ICT through electronic media such as e-Book and e-Learning to subsequently replace the conventional media of Teaching and Learning (T&L).

Problem statement: The diffusion of innovation is a theory about how a new idea or object is disseminated and accepted by the targeted individuals (Rogers, 2003). Studies about the diffusion and the acceptance of innovation have been going about widely in various fields. Studies on the diffusion of products or programmes based on ICT have been done to show how ICT innovations have been circulated and accepted by the users. So, too studies on factors that influence the acceptance of ICT innovations and barriers to be overcome in the diffusion of certain ICT innovations.

In the context of Malaysia, various ICT innovations have been introduced in the educational field among which is the launching of the smart schools (Sekolah Bestari) in 1999 and the teaching of science and mathematics in english (ETEMS) in 2003. To integrate ICT in the Teaching and Learning (T&L), teachers were supplied with course materials. The Ministry of Education hoped that the acceptance and integration of the course materials will bring about great changes especially in the teacher's teaching methods and the student's learning. A study by Nizar (2007) has shown that the course materials have managed to upgrade the achievements of the students and elevated their motivation towards the subjects being learned.

Although, efforts have been carried out to introduce and encourage the use of course materials in teaching and learning, yet there remains the question of whether the teachers are ready to receive and use the course materials as hoped. This is because the acceptance of the materials in teaching and learning is still at a low level (Fong, 2006). This is substantiated by Azizah who also found that the acceptance of these materials among teachers in Malaysia

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is still low despite finding that the innovative technology capabilities of the course materials had been used to the fullest by the teachers. This shows that the diffusion process of the course materials among teachers was ineffective. As such, studies are needed to see if Roger's perspectives of acceptance may be able to contribute to the acceptance of the course materials among the Form 1 Mathematics teachers in the SMKs.

Objectives of the study:

- To identify the acceptance level of the course materials among the teachers in SMKs
- To identify the relationship between the perspective acceptance (self-efficacy and experience) factors and the acceptance of the course materials

Literature review

Roger's acceptance perspectives: Acceptance perspectives refer to the personal characteristics of individuals of self-efficacy and experience.

Self-efficacy: According to Bandura (1977) self-efficacy theory, the use of self-efficacy is based on certain information at hand. Among them are the prestige of use, experience, emotional showing and being able to express oneself. Bennett and Bennett (2003) say that budget constraints and poor technology are not excuses to the receiving of technology. Instead, they go on to say that it is the lack of confidence in being able to handle the technology and the lack of readiness of the teachers in accepting the technology that determines the readiness to receive a new technology in teaching and learning.

Experience: Bandura (1997) says that experience can reduce fear and encourage individuals to change their attitude and stance. The study by Ndubisi (2004) shows that the ability to use the computer is tied indirectly to someone keen in receiving a new technology. The knowledge about technology and Experience is able to give a teacher a positive attitude towards receiving course materials and integrating them in teaching, subsequently lessening or forgetting the worries about receiving technology.

Acceptance of course materials: Acceptance of course materials is the dependent variable in this research. The concept of acceptance is explained by the integration of course materials in the teaching and learning process by the teachers. Based on Table 1, acceptance is calculated according to the level of acceptance as suggested by Moersch (1995). The acceptance level has 7 scales beginning with not using technology (level 0) up to (level 6) able to use technology well. The use of this measurement is to determine the level of acceptance of course materials in teaching and learning by mathematic teachers.

Table 1: Dependent variable

Variables	Max.	Min.	Mean	SD
Acceptance of course materials	5.75	1.00	3.42	0.85

MATERIALS AND METHODS

This study uses a quantitative approach based on data obtained using the survey method. The population of the study is the form 1 Mathematic teachers of SMKs in the state of Kedah. The sample consists of 240 Mathematic teachers chosen through cluster and random sampling.

The instrument used is a set of questionnaire built based on previous studies. The items in the study were checked for their contents and acceptability. Analysis for acceptability shows that the questionnaire has an acceptability of a = 0.96. The data obtained was analysed using descriptive statistics and inferential.

RESULTS

Findings of the dependent variable: Table 1 shows the analysis of the dependent variable, acceptance of the course materials. The mean obtained is 3.42 (SD = 0.85). The minimum value of the course material is 1.00 while the maximum is 5.75. Based on the acceptance level as suggested by Moersch (1995) the Form 1 mathematic teachers SMKs are at level three, the application level. At this level Moersch (1995) said that the teachers are capable of applying the technology such as using the data at hand, spreadsheets, presentations, graphic packages, calculators, use of multimedia and telecommunication in the teaching and learning.

Relationship between acceptance perspective factors and course material acceptance: Table 2 shows the findings of the pearson correlation obtained to study the relationship between the acceptance perspective factors (self-efficacy and experience) and the acceptance of course materials. Table 2 shows that the self-efficacy variable has a positive relationship at sig. ($p<0.05$) with the acceptance of course materials. The finding says that mathematic teachers who have high self-efficacy capabilities also have high acceptance of course materials capabilities while those with low self-efficacy capabilities also have low acceptance capabilities of course materials.

Table 2: Pearson correlation between acceptance perspective factors and course material acceptance

	Self-efficacy		Experience		
Variables	r	Sig.	r	Sig.	Acceptance
Self-efficacy	1				
Experience	0.900	0.000			
Acceptance	0.696	0.000	0.689	0.000	1.00

Sig. at $p<0.05$

Based on Table 2, it is found that the experience variable has a positive relationship at Sig. ($p<0.05$) with the acceptance of course materials. This means that teachers who have positive experiences in using ICT products have high acceptance levels of course materials while teachers who have negative experiences have low acceptance levels of course materials.

DISCUSSION

Level of acceptance of course materials: The descriptive analysis to find the level of acceptance of course materials shows that the level of acceptance by the Mathematic teachers is at level three which is the application level (mean = 3.42). Based on the levels of acceptance as suggested by Moersch (1995) at this level teachers are capable of applying technology like the data at hand, spreadsheets, presentations, graphic packages, calculators, multimedia use and tele-communication in teaching and learning. Moersch (1995) has suggested seven levels of acceptance namely, not using, awakening, groping, applying, integrating, fine tuning and expanding. As for acceptance Moersch (1995) has placed the acceptance of the course material by the teachers at the average level.

Relationship between acceptance perspective factors and acceptance of course materials: A pearson correlation analysis was carried out to test the relationship between acceptance perspective factors (self-efficacy and experience) and course material acceptance.

The self-efficacy variable has a significant relationship ($r = 0.70$, $p = 0.000$) with course material acceptance. The correlation coefficient shows a moderate relationship (Hall, 2004). The relationship between self-efficacy and course material acceptance is also positive. This shows that the mathematic teachers show high self-efficacy's in the acceptance of course materials and vice versa.

Besides that, the findings also show that experience variable has a significant relationship ($r = 0.69$, $p = 0.000$) with course material acceptance. The correlation coefficient shows a moderate relationship (Hall, 2004). The relationship between the teacher's use of ICT and course material acceptance is also positive. This shows that teachers who have much experience in using ICT are also high in the acceptance of course material and vice versa. On the whole, the correlation coefficient shows that the self-efficacy variable has a higher relationship as compared to experience with course material acceptance.

The findings show that the independent variable in the study has significant relationship with the dependent variable. The self-efficacy variable has a positive correlation and is significant with the course material acceptance. This says that an increase in the teacher's self-efficacy can increase the course material acceptance level among the mathematic teachers. The importance of self-efficacy in the level of course material acceptance is in line with the study by Lin and Jeffres (1998) who found that teachers who have high self-efficacy capabilities have little fear of computers thus helping to reduce the barriers of educators who are keen in studying the new technology.

In the contexts of this study, confidence and the belief of teachers towards the course materials in making the teaching of Mathematics easier possibly has reduced the fear of the teachers in accepting and integrating the materials in the teaching and learning. Besides that, the confidence towards ICT has also motivated the teachers to always overcome technical problems like fixing and using the technological tools which often has been the barrier towards the teachers integrating them in teaching and learning. As such, the lacking of ICT knowledge and the lack of time is no more a barrier to teachers whose self-efficacy capabilities are high.

Other than that it has also been proved that the Experience variable in using the ICT products will determine the experimentation level of the course materials among the Mathematic teachers. This is because the experience variable and acceptance level are significant and positive. Teachers who gain positive experience will be motivated to use the course material in teaching and learning. This is in tandem with the study by Nizar (2007) who found that the positive experience gained when using technology will motivate the teachers to accept ICT innovations.

The level of knowledge and ability present will enable the teachers to use the interactive multimedia in teaching and larning. The experience will lessen the worry and fear and encourage the teachers to change their attitudes and actions to receive interactive multimedia course materials in the teaching and learning of Mathematics.

CONCLUSION

In conclusion, we found that the acceptance level of course materials among mathematic teachers involved in this study is at level three which is the application level.

The findings of the study show that the self-efficacy variable and experience have significant relationship in the acceptance of course materials by the form 1 mathematic teachers. As such, Roger's acceptance perspective factors have to be utilized fully so as to elevate the use of the course materials in the teaching of Mathematics.

IMPLICATIONS

Based on the discussion and explanation, this study has several implications to those responsible in innovation and teachers who integrate wholly the course materials in class. The findings of the study show that the acceptance level of course materials among form 1 mathematic teachers is at the third level which is the application level. This means that the acceptance level of course materials among mathematic teachers who teach form 1 is at the average level. This means that the diffusion process and the acceptance perspective factors which have significant relationships with the acceptance of the course materials have to be stressed more so as to raise the acceptance levels among the mathematic teachers. This is because the usage of mathematic course materials will make the subject more attractive by having various techniques of teachings and multimedia elements besides the training of problem solving skills or having alternatives to the teaching of subject that is often difficult to be grasped by the students through the use of conventional teaching methods (Azan *et al*., 2009).

besides that the study makes clear the importance of the diffusion theory in diffusing course materials among the mathematic teachers. The finding proves that there exists influencing factors in the acceptance perspectives towards the acceptance of the course materials among mathematic teachers. This shows that in the implementation of a technological innovation the characteristics of individuals must be taken into account so that the processes of diffusion and innovation acceptance can occur effectively.

SUGGESTIONS

This study only involves factors that are dominant in the acceptance perspectives. As such, studies to come should use factors such innovative perspectives, financial environment perspectives, infrastructures, the need for trainings and the styles of teaching of the teachers in the acceptance of course materials.

The study on the relationship between the acceptance perspective factors and level of acceptance of course materials can also be done in the science subjects.

Consequently, the researchers can identify the level of acceptance of course materials among science teachers and the influences in the acceptance perspective factors.

In this study, the researcher only used the survey method. It is suggested that in future studies other methods such as observations, testing or interviews be used to obtain a better picture. The use of various methods can help the researchers to identify other factors that influence the diffusion process of an innovation besides self-efficacy and experience.

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REFERENCES

Azan, M.Z.N., B.Z. Halimah and M.N.S. Azman, 2009. Courseware evaluation adaptive multimedia (A-Maths) based learning style. J. Inf. Technol. Multimedia, 5: 61-78.

Bandura, A., 1997. Self Efficacy the Exercise of Control. W.H. Freeman and Co., New York.

Bennett, J. and L. Bennett, 2003. A review of factors that influence the diffusion of innovation when structuring a faculty training program. Internet Higher Educ., 6: 53-63.

Fong, S.K., 2006. ICT Support for Science and Mathematics Teachers in the Implementation of ETeMS. Deakin University, Geelong, Victoria,.

Hall, R.J., 2004. Correlation Coefficient Estimator. Texas A&M University, College Station, Texas,.

Lin, C.A. and L.W. Jeffries, 1998. Factors influencing the adoption of multimedia cable technology. Journalism Mass Commun. Q., 75: 341-352.

Moersch, C., 1995. Levels of technology implementation (LoTi): A framework for measuring classroom technology use. Learn. Leading Technol., 23: 40-40.

Ndubisi, N.O., 2004. Factors influencing e-learning adoption intention: Examining the determinant structure of the decomposed theory of planned behaviour constructs. Proceedings of the 27th Annual Conference on HERDSA, July 4-7, 2004, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia, pp: 252-262.

Nizar, M.Y., 2007. The effectiveness of the use of educational software. Masters Thesis, Universiti Utara Malaysia, Changlun, Malaysia.

Rogers, E.M., 2003. Diffusion of Innovations. 5th Edn., Simon and Schuster, New York, USA., ISBN-13: 9780743258234, Pages: 576.