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Original Research Article

Teachers' Acceptance and Challenges on Technology Use in Secondary Schools

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Abstract: The purpose of this study was to identify the computer use in the management and operation concerning teaching and learning among teachers. This study also identified technology leadership for measuring the NETS-A international standard system (ISTE, 2014) and the impact of technology achievement in these schools. ***Methodology:*** Systematic random sampling was conducted to select a total of 374 teachers and 74 principals and 74 schools from the National Secondary School in Kedah in this cross-sectional survey. The Principal Technology Leadership Assessment (PTL) is based on the National Education Technology Standards-Administrator, NETS-A (2009). The technology leadership questionnaire (PTL) contains 65 Likert-scale items used to obtain information about the involvement of principals in their work. ***Findings:*** The items of this survey were validated by pilot tests with findings of 0.915 for TTU instruments and 0.831 for PTL. The results of the actual study show that the overall leadership skills of the technology heads based on the five standards in the NETS-A are high based on the findings of mean analysis and standard deviation. The SMART-PLS analysis showed moderate achievement in each field of TTU teacher study. Simple Linear regression used to identify the principal technological leadership relationship with teacher computer use and the results were not significant. ***Significance:*** Principals as technology leaders need to facilitate and enhance ICT integration as ICT contributions have proven to be key factors for increasing productivity, promoting economic growth, and reducing poverty in a country.

Keywords: Technology, Management, Teaching, Learning, NETS-T Standards.

INTRODUCTION

Many programs have been highlighted for education sectors to improve technology usage in Malaysian schools. Ministry of Education provides opportunities for all students to have the latest technology skills in order to compete in technology world of information. The principals as well as teachers have important roles to facilitate technology in schools according to government vision.

21st century teachers need to integrate technology in education so scholars have created some kind of model or framework for technology integration in education [1]. Many of these integration models focus on general pedagogical terms, rather than on specific domains but now technologists consider the use of pedagogical technology strongly influenced by the content and knowledge domains needed to integrate technology in different subjects [1].

Today, the use of computers has spread worldwide and in schools and educational institutions it has become a necessity for educators, students and management alike to use it. The rapid development of information and communication technology (ICT) is crucial to economic development as it enables people to access information and knowledge quickly and easily [2].

Through ICT new markets are accessible at lower cost and efficient capital [3]. Chen [4] emphasizes that Internet access can promote sustainable entrepreneurial development and reduce costs. Several studies have discussed the

importance of the use of ICT in several key sectors of the economy, such as the banking sector where it facilitates the relationship between banks and their customers and enhances banking performance [5].

In the 2014 budget of RM54.6 billion was allocated for the education sector and out of this amount of RM168 million was for Internet access in schools [6, 7]. Many programs are being introduced in schools and these programs are being developed through a computer lab project by the Ministry of Education Malaysia for all primary and secondary schools to gain skills in technology as they prepare to compete for information.

The Information Technology and Communication Technology in Education will make information and communication technology (ICT) a major enabler in the teaching and learning process. These measures enhance the quality of education and give rise to knowledgeable generations and contribute to the development of the country [8].

The Information Technology and Communication Policy in Education is a continuation of the Smart School initiative which emphasizes the use of technology to foster the development of creativity, collaborative learning, critical thinking and problem solving [9].

This policy integrates and coordinates all existing ICT initiatives such as SchoolNet, Computer Labs, EduWebTV, Access Centers and any other ICT initiatives implemented over time with the aim of increasing student achievement [9].

LITERATURE REVIEW

Effective use of technology across the school system has been a subject of study by scholars in the United States since 2000 [10]. There are also local studies that attempt to address the theme of this study. Among them are Mei Wei [11], Jamil [12], Sathiamoorthy [13], and Nordin and Norazah [14].

Computer skills are important for teachers. Presticide [15] states that teaching skills using the computer is necessary for every teacher and Andoh [16] emphasizes that teachers must use the ICT in their teaching. According to [17] the adequacy, skills and attitude of teachers influence the successful implementation of ICT in schools as positive teachers' perception of ICT can give school administrators the opportunity to provide appropriate insights into the vision and mission of the school.

Teo [8] in his study in Singapore found that teachers' skills, perceptions and attitudes influence the acceptance and use of ICT in schools where teachers have a positive attitude towards the use of computers in teaching and learning in the classroom and [18] must be nurtured since in further training where [16] college training institutions should emphasize the use of technology in teaching and learning. The failure of these institutions will give rise to teachers who do not understand the importance and extent to which they need to integrate ICT in teaching and that hinder the implementation of ICT in teaching and learning in schools [13].

Bordbar [19] argues that computer competence is the most important predictor in teaching. Evidence shows that most teachers who are negative and moderate about the integration of ICT in the learning and teaching process are due to lack of knowledge and skills [19]. Zaidatun *et al*. [20] emphasize that teachers' competence in ICT is high but there are still obstacles in applying it while in school. In a study by Kellah M. Edens [21], she says that the advancement of information technology has led to increased use of the web and the Internet for educational purposes.

The impact of a teacher's computer is the confidence of a teacher who has it and its ability to use it in teaching and learning in schools [22].

There are four objectives presented in this study

- To identify the level of teachers' technology in school management, teaching and learning.
- To identify the competency of computer usage among the teachers studied.
- To identify the frequency of computer use among the teachers studied.
- To measure the relationship between principals' technology leadership and teachers' technology use

Problem Statement

Method

Sampling

Systematic sampling method was used for teacher sample selection. The survey respondents consisted of teachers from selected secondary schools. A total of 74 secondary schools were involved in this study. The total number of teachers is 12131. According to the Krejcie Morgan table, 1970, the sample selected of 374 teachers was sufficient.

There are many types of secondary schools in Malaysia, especially in the northern zone of Peninsular Malaysia, but only National Secondary Schools were chosen as sample because other secondary schools have unique organizational structures and instructional programs where they are designed to meet specific needs, for example, Religious Secondary School, National Type Secondary School, Special Education School, Vocational Secondary School and International Secondary School. National Secondary School is the largest type of secondary school in Malaysia and its students are of various religions and races and have the same organizational structure and instructional program. It is easier and practical for researchers to conduct surveys in National Secondary Schools than for other types of secondary schools.

Instrument

This study uses a quantitative approach. In this study the written study tool is 'Teachers Computer Use Questionnaire' for teachers. The instrument 'STO' is an instrument for teachers developed by Alexandra B. Paige-Jones [23]. Researchers have been using the same instrument and translate it into Malay language.

'Leadership Technology Assessment' for principals which based on the National Education Technology Standards-Administrator [24]. These measures are designed to help administrators evaluate the technology direction in their schools: Visionary Leadership, Digital Learning Culture, Excellent Professional Practice, Systemic Improvement; and the Digital Education Citizenship. This survey contains five areas as outlined in the above five standards. This exploratory study was conducted randomly to test principals' leadership models and their relationship to teacher computer use.

Survey Reliability and Validity

Prior to conducting the survey at the 74 schools, the reliability test was conducted at 40 schools involving 40 principals and 150 teachers. Secondary schools other than the schools designated for the principal's survey purpose were chosen in this study. This test was conducted to identify the reliability of the study instrument to be used. Generally, reliability is a measure of the extent to which it is error-free and produces consistent results and to measure the consistency of the researchers using the Cronbach Alpha Consistency Index [5].

According to John W. Creswel [25] in his book 'Educational Research', validity refers to the development of an event in which the interpretation of a test on a concept or construct that will be measured meets the purpose of the study (p. 14). The research instruments that researchers use should be able to accurately measure what they want to measure and meet the topic, objectives and research questions [14].

RESULTS

Table-4.1: Teachers Response on Demographic Information (n = 374)

Demographic Info	Teachers Response	Frequency	Percentage (%)
Experience	Minimum I year	362	96.8
	Less than 1 year	12	3.2
Gender	Male	112	29.9
	Female	262	70.1
Age	Less than 30 years	37	9.9
	30 – 40 years	116	31.0
	41 – 50 years	132	35.3
	More than 50 years	89	23.8
Academic	Diploma	1	0.3
	Bachelor	336	89.8
	Post Graduate	37	9.9
Technology Knowledge	Yes	92	24.6
	No	282	75.6

A total of 374 teachers participated in this survey. Questionnaires were sent via 'Google Form' to their respective emails. The item distribution of this questionnaire can be found in table 3.4.3 below.

Teacher Demographic Information

According to Table 4.1, 362 teachers (96.8%) had at least one year teaching experience while 12 teachers (3.2%) had less than 2 years teaching experience. In this study, 112 teachers (29.9%) were male while 262 teachers (70.1%) were female. Furthermore, Table 4.6 also shows 37 teachers (9.9%) less than 30 years old, 116 teachers (31.0%) aged 30 to 40, 132 teachers (35.3%) aged 41 to 50 and 89 teachers are over 50 years old.

In addition, one teacher (0.3%) reported having a diploma, of which 336 teachers (89.8%) were first-degree graduates while 37 teachers (9.9%) had post-graduate certificates. Based on this demographic information, the survey found that 92 teachers (24.6%) had technology knowledge in the field of study.

Table-4.2: Distribution of Teachers' Computer Use Questionnaire (TTU)

SL. No	Item	Numbers	Total
1	Computer technology competency in among the teachers	1-22	22
2	Frequency of teachers to use computer for tasks administration and management	23-27	5
3	Frequency of teachers using computers for planning teaching and during teaching	28-42	15
4	Frequency of teachers use computer to give assignments to students	43-57	15
Total			57

Table-4.3: Mean Value of Frequency for Each Item in Teachers' Computer Use Competency

Item	Statement	Mean	Score
1	I am very good at computer	3.64	1362
2	I am very good at using technology other than computers	3.48	1303
3	I talk about school technology planning with principals/teachers	3.31	1237
4	I have a goal to achieve in technology	3.60	1347
5	I use the allocation provided to fund new technology: hardware & soft ware	3.31	1238
6	I support and participate in training for the latest technology	3.70	1384
7	I use computers often	3.90	1460
8	Computers help me improve student performance / examination	3.72	1391
9	Computers have helped members of our organization communicate effectively	4.00	1497
10	Our organization members are well versed in computers	3.63	1356
11	I use computers to design lessons	3.66	1370
12	I use a computer to analyse student test/data evaluation	3.85	1440
13	I'm interested in learning more about computers	3.90	1458
14	I know the std of technology a teacher should have	3.51	1312
15	I need more computer hardware/software for teaching	3.59	1342
16	I encourage my students to use computers to do assignments	3.67	1372
17	My students are good at using at using computers to do assignments	3.51	1313
20	Computer labs at my school are always available when needed	3.41	1277
21	I use computers to achieve my curriculum goals	3.79	1417
22	I know what technology std a student should have	3.23	1209
23	I monitor students' skills in the use of technology especially computers	3.49	1307

Competence is the knowledge that is acquired and the ability to perform an activity or task [26] and researchers have found that the level of computer usage competency among teachers has been shown to provide a low level of competence for teachers to use the knowledge and skills to perform a task.

Table-4.4: Mean Value of Frequency of Computer Usage for Administrative and Management Tasks

Item	Statement	Mean	Score
24	Email	3.70	1385
25	*Online course*	3.47	1296
26	*Database* for students usage	3.42	1299
27	Website	3.55	1326
28	Accessed *shared files* through *shared network directory*	3.31	1239

Based on Table 4.4, the mean value of computer usage frequency for the highest administrative and management tasks was for item number 24 (3.70). Item No. 24 relates to email usage. In this study, the use of email among teachers was high. This is because the use of email is an alternative to manual administration and management of documents. Using email can also save time and cost.

Furthermore, the mean value of computer usage frequency for the lowest administrative and management tasks was for item number 28 (3.31). It is at a moderate level [12, 27]. Item 28 provides a statement about accessing shared files through the shared network directory. The frequency of accessing shared files through the shared network directory may be due to teachers' lack of understanding of how to access shared files.

Table-4.5: Mean Frequency Competence of Administration and management, Teaching and Learning Planning

Item	Statement	Mean	Score
29	Word dan PowerPoint	3.55	1329
30	Microsoft Excel	3.25	1214
31	Software *Concept Mapping* eg. Inspiration	3.33	1244
32	Software to edit photos dan video eg Paint, Adobe Photoshop, Moviemaker dll.	3.30	1234
33	HTML *editing/web page,desktop publishing, eg* Macromedia Dreamweaver, Microsoft Front Page, Microsoft Publisher	3.47	1298
34	*Internet search engines* or *online encyclopedia,* eg Google, Yahoo, Worldbook Wikipedia	3.30	1236
35	Software based on skills development Web,eg. FCAT Explorer, Riverdeep	3.29	1230
36	Textbook , *online teachers guide books*	3.35	1252
37	*Database for pupils,* eg Datawarehouse, Esembler	3.37	1261
38	*Image capture devices, eg* digital camera, scanner	3.57	1335
39	*File copying and transportation devices*cth. CD burner, flash drive	3.50	1310
40	*Presenting devices* ceg. projector video, *interactive whiteboard*	3.75	1404
41	Laptop , tablet	3.27	1222
42	*DVD player*	3.81	1425
50	*Online textbook*	3.11	1164
51	*Database for students information*, eg Datawarehouse, Esembler	3.12	1168
56	Computer lab	3.06	1144
57	Computer/laptop in class	3.80	1422

The frequency of teacher technology use in teaching and teaching preparation was 3.400 mean, standard deviation 0.584 (table 4.5) showing moderate achievement. In order to achieve success in education in schools, technology leaders need to ensure that teachers integrate teaching models (objectivists) and constructivist models with the use of ICT especially computers in teaching. The blend of traditional and modern teaching models with ICT can create a new model of teaching that is suitable for students of various intelligence, abilities and backgrounds.

The mean value of computer use frequency for teaching and learning planning tasks was highest for item 42 of 3.81. The level is high [12, 27]. Item 42 is related to the frequency of using technology for teaching and learning planning tasks through the use of DVD players.

Table-4.6: Mean Value of Each Item Frequency of Computer Use for Student Assignment

Item	Statement	Mean	Score
43	Microsoft Word and PowerPoint	3.47	1299
44	Microsoft Excel	3.09	1156
45	*Concept Mapping* eg. Inspiration/Kidspiration	3.28	1227
46	Paint, Adobe Photoshop,Moviemaker	3.21	1202
47	HTML *editing/web page , desktop publishing,* eg Macromedia Dreamweaver, Microsoft Front Page, Microsoft Publisher	3.38	1265
48	*Internet search engines* or *online encyclopedia,* eg. Google, Yahoo, Worldbook Wikipedia	3.12	1166
49	Animation software eg Macromedia Flash, Poser	3.15	1178
52	*Image capture devices, eg*. digital camera, scanner	2.94	1100
53	website, eg FCAT Explorer , Riverdeep	2.97	1111
54	*classroom clickers*	3.48	1302
55	Laptop , tablet	3.75	1403

The frequency of assignments to students had a mean value of 3.259, a standard deviation of 0.652 (table 4.6) showed moderate achievement. Today, more data is accessible in schools than before, but most teachers are unable to apply it due to lack of skills in data usage [28].

Table-4.7: Summary of Teacher Computer Use Levels (TTU)

Construct	Item	Mean	Std Dev	Teacher Computer Use Level (TTU)
Competence	23	3.615	0.583	Moderate
Administration & Management	5	3.454	0.532	Moderate
Teaching and Learning Planning	18	3.400	0.584	Moderate
Student Assignment	11	3.259	0.652	Moderate

Descriptive analysis was conducted to look at the level of use of computers in school management, teaching and learning planning. The levels of computer use in school management, teaching and learning among the 374 teachers Kedah are shown in Table 4.7. The mean and standard deviation of each tested construct proved to be moderate. Determination of the level of computer use among teachers is based on the views of Jamil [12] quoted from Hamzah, Juraime, Hamid, Nordin, N and Attan [27], mean values ranging from 1.00 to 2.33 (low), 2.34 to 3.66 (medium) and 3.67 to 5.00 (high). In this study, this construct was categorized as moderate. The Competency construct had mean values ($\bar{X}$ = 3.641, SD = 0.583).

The mean value of computer use frequency for teaching and learning planning tasks was highest for item 42 of 3.81. The level is high *et al*. [12] Item 42 is related to the frequency of using technology for teaching and learning planning tasks through the use of DVD players. Frequency of DVD player usage among teachers was high. This study shows the DVD player was used widely among teachers in the classroom. For example, for science subjects, the use of DVD players can facilitate the process of teaching, learning and engaging students in science subjects. This is because, through a DVD player, teachers are able to explain and demonstrate basic concepts that are difficult for students to understand.

Item number 56 gives the lowest mean value of 3.06. This level is moderate [29, 27]. This indicates that the frequency of the use of computers for teaching and learning planning tasks for item 56 is low. Item number 56 presents a statement regarding the use of computer labs. In this study, teachers stated that the frequency of computer lab use was low. This low frequency may be due to the lack of equipment available in the computer lab. As such, the school management should provide adequate equipment as well as inform all students about the technological services provided in the computer lab. Table 4.5 shows the mean values and scores of all items used to assess the frequency of computer use for planning, teaching and learning tasks among teachers.

Table-4.8: Distribution of Principal Technology Leadership (PTLA) Evaluation Items by Principal

SL. No	*Construct*	*Item Number*	*Total*
1	*Visionary Leadership*	1,2,3,4,5,6	6
2	*Digital Learning Culture*	*1,2,3,4,5,6*	6
3	*Excellence in Professional Practice*	*1,2,3,4,5*	5
4	*Systemic Improvement*	*1,2,3,4,5,6*	6
5	*Digital Citizenship*	*1,2,3,4,5,6,7,8,9,10,11,12*	12
Total			35

Table-4.9: Profile of Principals (n = 74)

Variables		Frequencies (n)	Percentage (%)
Gender	Male	34	45.9
	Female	40	54.1
Age	30 – 40 years	5	6.8
	41 – 50 years	26	35.1
	More than 50 years	43	58.1
Academic	Bachelor Degree	61	82.4
	Post Graduate	13	17.6
Technology Knowledge	Yes	29	39.1
	No	45	60.9
Experience as Principal	11 – 20 years	4	5.4
	21 – 30 years	34	45.9
	More than 30 years	36	48.6

The researcher performed a descriptive analysis to answer the fourth research question that measured the level of Leadership Technology (PTLA) based on Moidunny's [30] recommendation. Moidunny [9] states that the mean score for the Principal Technology Leadership (PTLA) variable can be interpreted using the NETS-A standard values as shown in Table 4.10.

Table-4.10: Mean Score Based on NETS-A Interpretation

Mean Score	Interpretation
1.00 – 1.80	Very low
1.81 – 2.60	Low
2.61 – 3.20	Moderate
3.21 – 4.20	High
4.21 – 5.00	Very high

Source: Moidunny (2009)

Table-4.11: Summary of Principal Technology Leadership Interpretation (PTLA))

Construct	No. of Items	Mean	Std Deviation	Principal Technology Leadership Level (PTLA)
Visionary Leadership	6	3.888	0.513	High
Digital Learning Culture	6	4.068	0.528	High
Excellent Professional Practice	5	4.000	0.522	High
Systemic Improvement	6	4.018	0.508	High
Digital Citizenship	12	3.753	0.632	High

Table-4.12: ANOVA RESULT anovaa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	34536.466	1	34536.466	.475	.493[b]
	Residual	5232103.480	72	72668.104		
	Total	5266639.946	73			

a. Dependent Variables: Teachers' Computer Usage (TTU)
b. Predictors: b. (Constant), Principals' Technology Leadership (PTLA)

Table-4.13: Estimated Parameters (Coefficients[a])

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	724.952	395.901		1.831	.071
	PTLA	1.982	2.875	.081	.689	.493

a. Dependent Variable: TTU

Table-4.14

No.	Study Hypothesis	*Original Sample (ß)*	*Standard Deviation*	*T Value*	*P Value*	Result
1	Principal Technology Leadership (PTLA) → Teacher Computer Use (TTU)	0.171	0.170	1.001	0.317	Not Significant

Note: Not Significant at significance level 0.05 (Two tailed) with t value <1.96 and p value> 0.05

This study model involves the direct relationship between Principal Technology Leadership (PTL) and Teacher Computer Use (TTU). Table 4.14 shows the results of the evaluation of the structural model (direct effect) involving hypothesis testing of H01. Hypothesis H01 predicts that there is no significant relationship between Principal Technology Leadership (PTL) and Teacher Computer Use (TTU). The results of the H01 test were not significant (ß = 0.771, t = 35.004, p <0.05). Therefore, the study hypothesis was rejected and the null hypothesis was accepted that there is no relationship between Principal Technology Leadership (PTL) and Teachers Computer Use (TTU).

DISCUSSION

Davies [10] emphasizes that technology leadership in schools should take into account various factors from various stakeholders. All relevant parties will have an impact on the basics of technology in schools. However, this

framework does not take into account the opinions of the various parties. For example, the use of teacher technology in the classroom is not considered part of technology leadership, but rather as a 'result'. Venkatesh and colleagues [15] added that UTAUT aims to clarify the user's intent to use information systems and subsequent usage behaviors. This theory argues that the four main constructs are: 1) performance, 2) business, 3) social influence, and 4) ease of use. Koehler and Mishra [31] further emphasize the three fundamentals of science (content, pedagogy, and technology) as they are the core frameworks of technology, pedagogy, and content knowledge (TPACK). Zaidatun *et al.* [20] claiming teachers' competence in ICT is high but there are still obstacles in applying it while in school.

Descriptive analysis was also conducted to look at the level of use of computers in school management, teaching and learning. It has a total of 374 teachers who teach in National Secondary Schools throughout the state of Kedah. The researchers found that the mean values and standard deviations of each of the constructs tested were moderate. Determination of the level of computer use among teachers is based on the views of Jamil [11] quoted from Hamzah, Juraime, Hamid, Nordin, N and Attan [27], mean values ranging from 1.00 to 2.33 (low), 2.34 to 3.66 (medium) and 3.67 to 5.00 (high). In this study, the whole construct was categorized as moderate. The Competency construct had mean values ($\bar{X}$= 3.641, SD = 0.583) followed by the Administration and management constructs ($\bar{X}$=3.454, SD = 0.532). Next, the Teaching and Learning Planning construct ($\bar{X}$= 3.400, SD = 0.584) and finally the Student Assignment construct ($\bar{X}$= 3.259, SD = 0.652).

The frequency of computer use among teachers studied was about the frequency of teacher technology use in teaching, teaching preparation and assignments to students. Technology resources especially computers with sufficient numbers and in good condition are one of the important factors and they are a hindrance to the effective use of technology [32].

Implications for Teachers

The involvement of teachers in this survey reflects that teachers are aware of their increasingly challenging task and want to work with school administrators to increase their mastery of students and technology. Teachers need to master the skills of communicating information to students whether in the classroom, computer lab or in the classroom. Knowledge transfer skills to students must be in line with the competency of using computer hardware as well as the use of appropriate teaching and learning approaches such as TPACK which was popularized by Mishra and Koehler [33].

There are three core components of technology integration in teaching: content, pedagogy, and technology, and the relationships between them. The three fundamentals of science (content, pedagogy, and technology) constitute the core framework of technology, pedagogy, and content knowledge (TPACK). Teachers need to apply enough knowledge to develop technology such as producing code and algorithms and developing a simple application system for students to develop. If early exposure to Industry 4.0-related technology is possible and encouraged, this highly skilled workforce will be able to create schools according to market needs. Information and processes to gain knowledge about developing a technology are easily accessible and learned through the Internet and are largely free.

Implications for Principals

School principals must move forward to keep up with the latest emerging technology. Principals must alert of the changes occurring in the school to promote latest technology that empower educators to build students' learning through digital resources [24].

Implications for Students as future skilled workers for Industrial Revolution 4.0

Advances in Information and Communication Technology (ICT) have further increased the use of the Internet, web and networking in education. These new developments have created a more flexible learning environment in terms of time, place, methodology and learning materials, as well as creating greater opportunities for greater collaboration in the educational process [20]. Advances in information technology have led to increased use of the web and the Internet for educational purposes [21]. Communication technology enables individuals or groups of individuals to exchange data and information in unlimited time and space, quickly and simultaneously through local or global networks [29]. Progress in computing has changed the pattern of education in the country [34, 35].

According to Pradhan *et al*. [3], the information and communications technology infrastructure refers to digital telephone networks, mobile phones, Internet capabilities, Internet browsers, broadband and other technologies. Principals and teachers need to be efficient and frequent users of this infrastructure as they need to provide students with these technology applications. The rapid development of ICT is crucial to the growth of the country's economy as the development of this technology enables its users to access information easily and quickly to obtain information and knowledge [2]. ICT also enables companies to communicate faster and better, thus reducing production costs and increasing productivity of a country [6].

ICT also enables access to new markets, lower cost of capital as a result of efficient functioning of financial markets, reducing regional differences in income and productivity, enabling access to human capital through telecommunications networks [3]. The use of ICT through Internet access can promote sustainable entrepreneurship and small business development as it reduces their financing difficulties by reducing agency costs [4].

The emergence of new technologies can provide greater opportunities for students with physical disabilities and the development of new technologies also helps those with disabilities start something that gives them comfort. Many new systems in the field of technology are on display at the Electronic Consumer Exhibition in Las Vegas and are aimed at improving the quality of life of individuals with disabilities [20].

Limitations

This study was carried out only in the state of Kedah, hopefully further research will be done in other states in Malaysia. The following study can include students involvement for better result. This was a cross-sectional study and it is recommended a mix-method approach to get more precise outcomes.

CONCLUSIONS

The rapid explosion of the computer industry has led to various technological innovations around us. The technology field are becoming important so people are trying their best to learn it, so it is imperative that our students move forward if we want to see our students in line with the students in developed countries.

REFERENCES

1. Arumugam, R. (2014). *Mengukur tahap keyakinan teknologi pedagogi kandungan (PTPK) dalam kalangan guru pelatih di Universiti Utara Malaysia.*Sintok, Universiti Utara Malaysia.
2. Sepehrdoust, H.(2018). Impact of information and communication technology and financial development on economic growth of OPEC developing economies. *Kasetsart J*. Soc. Sci.
3. Pradhan, R. P., Mallik, G., & Bagchi, T. P. (2018). Information communication technology (ICT) infrastructure and economic growth: A causality evinced by cross-country panel data. *IIMB Management Review*, *30*(1), 91-103.
4. Chen, Y., Gong, X., Chu, C. C., & Cao, Y. (2018). Access to the internet and access to finance: Theory and evidence. *Sustainability*, *10*(7), 2534.
5. Arsaythamby, V., & Arumugam, R. (2016). *Kaedah analisis & interpretasi data* (4th ed.). Sintok: Penerbit UUM.
6. Meijers, H. (2014). Does the internet generate economic growth, international trade, or both?. *International Economics and Economic Policy*, *11*(1-2), 137-163.
7. Ministry of Finance. (2014). *Feedback on The Auditor General's Report, Series 3*. Putrajaya: Ministry of Finance.
8. Ministry of Education Malaysia. (2012a). *Educative Summary Malaysia Education Blueprint 2013-2025(Preschool to Post-Secondary Education).* Putrajaya.
9. Ministry of Education Malaysia. (2013b). *Malaysia Education Blueprint 2013-2025 (Preschool to Post-Secondary Education)*. Putrajaya.
10. Richardson, J.W.,& McLeod, S. (2011). Technology Leadership in Native American Schools. *Journal of Research in Rural Education, 26*(7). http://jrre.psu.edu/articles/26-7.pdf
11. Ministry of Education Malaysia. (2010). *Policy on ICT in Education Malaysia*. Putrajaya: Ministry of Education.
12. Jamil. (2011). *Kepimpinan Teknologi Pengetua di sebuah Sekolah Bestari, Kota Tinggi Johor.* Kertas projek Sarjana Kepengetuaan yang tidak diterbitkan. Kuala Lumpur:Universiti Malaya.
13. Higgins, S., & Moseley, D. (2011) Teachers' thinking about ICT and learning: believes and outcomes. *Journal of Teacher Development*, *5*(2) 191-210 http://dx.doi.org/10.1080/13664530100200138
14. Hamzah, M. I. M., Nordin, N., Jusoff, K., Karim, R. A., & Yusof, Y. (2010). A quantitative analysis of Malaysian secondary school technology leadership. *Management Science and Engineering*, *4*(2), 124-130.
15. Prestridge, S. (2012). The beliefs behind the teacher that influences their ICT practices. *Computers & education*, *58*(1), 449-458.
16. Buabeng-Andoh, C. (2012). An exploration of teachers' skills, perceptions and practices of ICT in teaching and learning in the Ghanaian second-cycle schools. *Contemporary Educational Technology*, *3*(1), 36-49.
17. Keengwe, J., Onchwari, G., & Wachira, P. (2008). Computer technology integration and student learning: Barriers and promise. *Journal of science education and technology*, *17*(6), 560-565.
18. Hennessy, S., Onguko, B., Harrison, D., Ang'ondi, E. K., Namalefe, S., Naseem, A., & Wamakote, L. (2010). Developing the use of information and communication technology to enhance teaching and learning in East African schools: Review of the literature. *Centre for Commonwealth Education & Aga Khan University Institute for Educational Development–Eastern Africa Research Report*, *1*.
19. Bordbar, F. (2010). English teachers' attitudes toward computer-assisted language learning. *International Journal of Language Studies*, *4*(3).
20. Jamalludin, H., & Zaidatun, T. (2003). *Multimedia dalam pendidikan*. Pahang: PTS Publication & Distributors.

21. Edens, K. M. (2008). The interaction of pedagogical approach, gender, self-regulation, and goal orientation using student response system technology. *Journal of Research on Technology in Education*, *41*(2), 161-177.
22. Peralta, H., & Costata, F. A. (2007). Teachers's competence and confidence regarding the use of ICT. *Sísifo-Educational Sciences Journal*, 75-84.
23. Page-Jones, A. (2008). Leadership behavior and technology activities: The relationship between principals and technology use in schools.
24. International Society for Technology in Education (ISTE). (2009). *NETS for Administrators.* Eugene, OR: Author. Retrieved from http://www. iste. org/
25. Adhya, Z., Borozdenkova, S., & Karim, M. Y. (2011). The role of cytokines as biomarkers in systemic lupus erythematosus and lupus nephritis. *Nephrology Dialysis Transplantation*, *26*(10), 3273-3280.
26. Quinn, T. M., Crowley, T. J., & Taylor, F. W. (1996). New stable isotope results from a 173- year coral from Espiritu Santo, Vanuatu. *Geophysical Research Letters*, *23*(23), 3413-3416.
27. Hamzah, A. (2014). Pendidikan Agama Islam Untuk Perguruan Tinggi. *Bandung: Alfabeta*.
28. Yusup Hashim (2008). Kajian kompetensi pengetua/guru besar dalam standards teknologi pendidikan. Kepimpinan teknologi pendidikan dalam kurun ke-21*:Cabaran untuk pentadbir sekolah*. Kolokium ICT, Institut Aminuddin Baki, 18 Jun, 2013.
29. Retrieval, M. D. (2002). Technology in education 2002. *Retrieved September*, *23*, 2002.
30. Content /NavigationMenu/NETS/ForAdministrators /2009Standards/NETS _for_ Administrators_2009.htm
31. Breisser, S. R. (2006). An examination of gender differences in elementary constructionist classrooms using Lego/Logo instruction. Computers in the Schools, 22, 7-19.
32. Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational technology research and development*, *55*(3), 223-252.
33. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers college record*, *108*(6), 1017-1054.
34. Wong, S. L., Khambari, M. N. M., Silong, A. D., & Talib, O. (2011). *Technology & Education: Issues, Empirical Research and Applications*. Universiti Putra Malaysia Press.
35. Ghozali, I., & Latan, H. (2015). Partial Least Squares, konsep, teknik dan aplikasi menggunakan program Smartpls 3.0 untuk penelitian empiris. *Semarang: Badan Penerbit UNDIP*.