HEADMASTERS' TECHNOLOGY LEADERSHIP AND TEACHERS' MOTIVATION IN INTEGRATING TECHNOLOGY IN THE TEACHING AND LEARNING PROCESS

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Abstract – **Headmasters as technology leaders need to motivate teachers to integrate technology in the teaching and learning process (TnL) which in line with the transformation demanded in Malaysian education. However, the literature shows that the level of technology leadership of headmasters and the level of technology integration in TnL process in Malaysian schools is moderate. The lack of studies focused on teacher motivation on the integration of ICT in TnL and the extent to which the influence of headmasters on teacher motivation in the context of the use of technology is still lacking, especially at the primary school level in Puchong district, Malaysia is the basis for the implementation of this study. Thus, this study aims to identify the level of technology leadership of headmasters and teachers' motivation to integrate technology in the TnL process as well as the relationship between the two variables. This study uses a quantitative approach with questionnaires as instrument and involved a total of 202 primary school teachers of SJK (C) Puchong. Data were analyzed descriptively and inferentially using SPSS software version 22.0. This study found that the level of technology leadership of headmasters was high while the level of motivation of teachers to integrate technology in TnL process was very high. Correlation tests revealed a significant positive relationship at the moderate level between the technology leadership of the headmaster with the motivation of the teacher to integrate the technology in the TnL process. The findings implied that headmasters need the skills of planning and sharing technology strategic plans and expert to involve in school-organized programs or workshops in order to enhance teachers' ICT competencies so that they are motivated to integrate the latest technology in TnL. Future research is recommended to draw comparisions among the differences in perceptions between administrators and teachers about the level of technology leadership and look into other demographic factors to see its influence on teachers' motivation in technology integration.**

Keywords –**technology leadership, headmasters, primary school, motivation, teacher's technology integration in TnL process**

I. INTRODUCTION

The use of technology has grown rapidly in various fields such as distance learning, professional development, teaching skills, curriculum modification and so on. However, without educational technology leaders who act as strong leaders or supporters, the field of education will not implement the integration of technology in the school

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system or local school sites. Thus, it is needed for an expert to hold leadership roles and promote technology for educational purposes. As a technology leader in primary school, headmasters should motivate teachers to integrate technology in TnL and to drive the transformation of Malaysian education.

In the educational transformation phase of the second wave (2016-2020) in the Malaysian Education Development Plan (PPPM) 2013-2025, the government strives to invest in technology facilities and continue the goal of school improvement as well as integrating ICT in the PdP process. (KPM, 2013) Headmasters need to act as technology leaders while teachers as facilitators to provide skills and knowledge for 21st century education. (Roblyer & Doering, 2014; Thannimalai & Raman, 2018) and face the challenges of the Industrial Revolution 4.0. This challenge requires school leaders and teachers to opened to the rapid changes in technology.

Technology leadership is defined by Okeke and Dike (2019) as the behaviors and skills needed by school leaders to create and maintain support for the use and integration of technology in schools. A technology leader is also someone who can provide encouragement and motivation to his employees through the current technology infrastructure (Akcil et al., 2017). As the quality of Malaysian education can be improved by technology (Ministry of Education Malaysia, 2013),headmasters should play the role of as an influential technology leaders to increase teachers' motivation to make changes in the TnL process in line with the digital era in the 21st century.

Students' learning as well as teacher productivity can be encouraged through the integration of technology in the pedagogical management (Aldunate & Nussbaum, 2013; Jaggil Apak & Taat, 2018). The integration of technology is heavily emphasized in the classroom through innovative teaching strategies and it enables students to achieve the targeted learning objectives (Hwang, Lai, & Wang, 2015). Based on the Interim Strategic Plan 2011-2020 (Ministry of Education Malaysia, 2012), teachers should prioritize the importance of integrating ICT skills during the TnL process and use technological facilities to strengthen the management in schools. Thus, teachers who actively integrate technology in the TnL process and posses the ability to use technology is essential and is a must to form a fun TnL process while fulfilling the 21st century learning (PAK 21) needs. In fact, school leaders play an important role in leading the technology integration in the TnL process among teachers by encouraging teachers to narrow the gap in the use of technology that exists in schools so

that positive learning can be initiated by improving skills in ICT (Lailiyah & Cahyono, 2017).

The objectives of this study are to identify the level of technology leadership of headmasters and teachers' motivation to integrate technology in the TnL process as well as the relationship between the two variables. The findings of this study are expected to provide indications to the MOE and headmasters about the problems experienced by teachers while integrating technology in the TnL. It is hoped that the findings of this study will help the MOE provide appropriate training courses for leaders of educational institutions to improve knowledge, skills and methods of utilizing ICT in school management as well as further developing the use of ICT among teachers.

In conclusion, the efforts to integrate technology in the TnL process in schools require acceptance, sacrifice and cooperation from all parties. Technology leadership is needed for a more efficient technology management in educational institutions. School leaders should take the responsibilities in driving change in the education system so that the country is able to compete internationally and conquer the world.

II.   PROBLEM STATEMENT

The success of technology integration in schools is dependent on the influence of technology leadership which is considered an important factor (Noraini Abdullah et al., 2014; Bingham & Byron, 2001). Yu & Prince (2016) stated that school administrators are influential individuals to encourage school community to integrate technology in daily affairs. However, according to Alkrdem 2014, there are still headmasters who do not understand the practice of technology leadership to encourage the integration of technology among teachers effectively. There are studies that show that the level of technology leadership is at a moderate or unsatisfactory level of performance (Hakan Kör, Hasan Erbay, & Melih Engin, 2016; Uğur & Koç, 2019; Mohd Norakmar et al., 2019). The unwillingness of headmasters in practicing technology leadership was also found in the studies of Richardson & McLeod (2011) and Esplin (2017). The level of integration of teacher technology in the TnL process in schools in Malaysia is also found to reached moderate level (Noraini Abdullah et al., 2014; Mahmud, Ismail, & Ibrahim, 2011). Technology tools and software were only used to complete daily tasks.

Teachers' TnL practice requires mastery of technological knowledge. The study conducted by Christina Andin et al. (2014) showed that the level of teachers 'ICT skills was low although teachers' ICT knowledge in the TnL process were relatively high. Furthermore, some teachers claimed that the existence of ICT in the classroom has caused stress to them especially in situations that require an effective and efficient level of ICT use (Sang, Valcke, van Braak, Tondeur, & Zhu, 2011).

Most studies examining technology leadership and the use of computer technology among educators relate the level of ICT literacy among teachers or headmasters, demographic aspects, teachers' perceptions, curriculum management and its impact on school academic achievement and teachers' self-efficacy level. However,

there is a lack of findings to prove that the technology leadership of headmasters influences the motivation for the integration of ICT teachers in the TnL process, especially at the primary school in Puchong, Malaysia. Thus, the findings of past studies proved that there are gaps to be explored.

However, one fact that cannot be neglected is that online teaching through the Google Classroom learning platform in 2020 had been implemented in a 'desperate' or 'unprepared' manner during the COVID-19 pandemic. Most educators, parents and students are forced to adapt to new methods of work throughout the period of movement control orders. Kaviza's study (2020) found that the level of readiness of students in using Google Classroom is moderate. This is because the use of the Google Classroom learning platform as the main learning medium is still new and has not been fully explored (Kaviza, 2020). This situation has resulted in a gap for the researcher of this study to explore the level of technology leadership of headmasters in SJK (C) in Puchong and to determine teachers' motivation to integrate technology in online TnL or otherwise.

III.   LITERATURE REVIEW

Technology Leadership

Technology Leadership refers to the practice of headmasters' leadership in activities directly related to technology in schools including organizational decisions, policies, and technology implementation (Anderson & Dexter, 2005; Thannimalai Raamani & Arumugam Raman, 2018). Previous studies have found that one of the important factors for the integration of technology in schools is technology leaders (Wang, 2010; Banoğlu, 2011; Metcalf, 2012; Chang, 2012). The integration of technology in TnL process requires school leaders to create efficient and planned technology management.

However, there are challenges in practicing technological leadership where there is a lack of commitment, lack of teachers or leaders, lack of infrastructure and so on. (Richardson & McLeod, 2011; Sincar, 2013). Headmasters play a major role in changing the school environment based on the needs and potential of technology-based learning by providing complete infrastructure facilities and providing adequate technology integration training for teachers (Uğur & Koç, 2019). This is supported by Arumugam, Raamani and Siti (2019) who stated that increasing professional development programs for school community is needed and needs to be coordinated with the strategic planning plan of technology to convince school community to integrate technology.

Technology Leadership Components

The National Educational Technology Standard for Administrators (NETS-A) was developed to help headmasters understand their role as technology leaders in schools. The five components of NETS-A are described as below:

i.   Visionary Leadership
Visionary leadership is the leadership of headamasters who inspire, lead development and share insights for the integration of technology as a whole to achieve excellence and support transformation in schools. (ISTE, 2014).

ii.   Digital Age Learning Culture
This component explains the role of headmasters in creating, promoting and maintaining a learning environment based on the digital era through the provision of education that is explicit, fun and relevant for all students. (ISTE, 2014).

iii.   Excellence in Professional Practice
This component requires headmasters to promote a professional learning environment and innovative educators to enhance student learning through digital resources and the latest technology. (ISTE, 2014).

iv.   Systemic improvement
Systemic improvement explains the leadership of hedmasters providing good leadership and implementing school management based on the digital era to further improve the performance of the institute with the effective use of ICT and data resources. (ISTE, 2014).

v.   Digital Citizenship
Digital citizenship explains the role of headmasters as role models in facilitating school citizens' understanding of ethics, social problems and policies as well as being responsible for matters related to digital culture change. (ISTE, 2014).

Teachers' Motivation in Technology Integration

Teachers should be encouraged to eqiup themselves with the skills to use technology as well as integrate it in the daily TnL process to improve the quality of learning by making full use of ICT. According to Bitner and Bitner (2002), motivation is needed to bear the frustration and chaos in the process of change. This is because changes are difficult and painful. Therefore, teachers who experience fatigue and pain need to be motivated. Typically, the intrinsic motivation of teachers will be nurtured when they see the potential of technology that can be offered to their students.

In this study, the technology acceptance model (TAM) as shown in Figure 1 was used to determine the level of acceptance and motivation of teachers towards the integration of technology in TnL process. According to Davis (1989) this model posits that Perceived Usefulness, PU and Perceived Ease of Use (PEOU) are the variables that predict the attitude and intention to use of the teachers to integrate technology in TnL process.
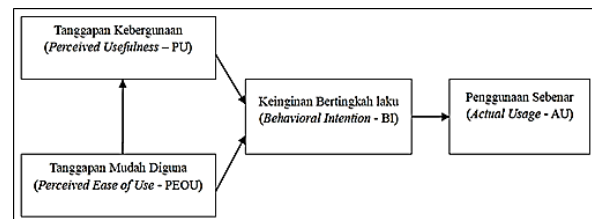

Figure 1 Technology Acceptance Model
Adapted from: Mohd Sobhi Ishak (2014); Davis et al. (1989)

There are previous studies that show the positive attitude of teachers to accept the use of technology in daily tasks and also integrate it in the TnL process. (Chung & Jamaludin, 2010; Shah Rulbani, Mohd Isa, & Khadijah, 2017; Siti Aminah & Fazlinda, 2018) However, teachers' motivation in integrating ICT in TnL process may be affected by several external factors such as infrastructure, time, teacher readiness and headmaster leadership (Siti Fatimah & AB. Halim, 2010; Prasad et al., 2015; Siti Hajar & Suguneswary, 2016). Analysis of the findings of previous studies also found that the attitude of teachers is a major encouragement in the efforts of teachers to use ICT during the TnL process. Furthermore, ICT training or courses are seen as a necessity for educators to overcome the issue of lack of ICT competencies that hinder or slow down the process of technology integration among teachers in TnL process. Highlights of previous studies also show that teachers strive to diversify their teaching methods with the help of technology so that the TnL process implemented is in line with the requirements of PAK21.

IV.   METHODOLOGY

A quantitative approach was used in this survey study to examine the level of headmasters' technology leadership from the teachers' perspective. The population of teachers involved in this study is 425 people from four Chinese national primary schools (SJK (C)) in Puchong, Selangor. A sample size of 202 respondents is determined based on the sample size table of Krejcie and Morgan (1970) and were selected randomly.

Questionnaire was used as research instrument. It is distributed online in Google Form to the respondents with the permission of the headmasters. The questionnaire consists of three parts. It includes the respondents' profile in Section A, 31 questions on technology leadership in Section B and 16 questions on teacher motivation to integrate technology in the TnL process in Section C. Questions are formulated using "Likert Scale" as the answer choice of respondents starting from the level of strongly disagree (scale 1) until the level of strongly agreed (scale 5). The instrument of technology leadership is adapted from the study of Leong, Chua, Sathiamoorthy and Shafinaz (2016) and Mohd Norakmar, Siti Noor and Abd Latif (2020) which is in parallel with the Principal Technology Leadership Assessment (PTLA) instrument. The instrument of the teacher's motivation to integrate technology in the TnL process is adapted from the study of Weng, Yang, Ho and Su (2018) and Talirkodi (2017) which is in line with the TAM model.

Content validity and face validity were performed for the purpose of instrument validity. To obtain the validity of the content, this instrument was reviewed by the supervising lecturer and two other lecturers at Universiti Kebangsaan Malaysia (UKM). A pilot study was conducted and it involved 30 respondents from three schools around Puchong district. To ensure the level of reliability of the instrument is high, a pilot study needs to be implemented. (Chua, 2011; Fauzi et al., 2014; Mohd Norakmar et al., 2019). Cronbach Alpha analysis was performed to measure the instrument reliability index. Table I below shows the results of the pilot study.

TABLE I: INSTRUMENT'S ALPHA CRONBACH SCORE

Section	Componnet	Number of items	α Value
Section B (Headmasters Technology Leadershp)	Visionary Leadership	5	0.88
	Digital Age Learning Culture	5	0.85
	Excellence in Professional Practice	7	0.93
	Systemic improvement	6	0.92
	Digital Citizenship	8	0.93
	Overall	**31**	**0.97**
Section C (Teachers' Motivation in Integrating Technology in the TnL Process)	Perceived Usefulness	4	0.90
	Perceived Ease of Use	5	0.95
	Attitude	3	0.91
	Intention To Use	4	0.91
	Overall	**16**	**0.97**

Overall, the reliability value of this instrument ranges from 0.85 to 0.95 and it is proven that all items are suitable for use to measure each component in the study. According to Bond and Fox (2015), a good and acceptable Cronbach Alpha value score in the Rasch measurement model is a value of 0.71 to 0.99.

Data analysis was carried out using SPSS program version 22. Descriptive analysis involving mean, frequency, percentage and standard deviation analysis was conducted to identify the level of technology leadership of headmasters and the level of teacher motivation to integrate technology in the TnL process. Table II shows the interpretation of the mean values.

TABLE II: INTERPRETATION OF MEAN VALUE

Mean Value	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

Adapted from Moidunny (2009) ; Hamzah et al. (2016)

Pearson correlation analysis was performed to identify the relationship of headmaster technology leadership and teacher motivation to integrate technology in the TnL process. Table III shows the interpretation of the variable's relationship strength of this study.

TABLE III: INERPRETATION OF CORRELATION COEFFICIENT

Correlation Coefficient Range (r)	Strength of relationship
0.81 - 1.00	Very strong
0.51 - 0.80	Strong
0.31 - 0.50	Moderate
0.21 - 0.30	Weak
0.01 - 0.20	Very weak

Adapted from Cohen, Manion & Marrison (2011)

V. FINDINGS

Respondents' Profile

A total of 202 samples were involved in this study from SJK (C) Puchong district with the distribution involving the factors of age and ICT experience. Table IV shows the details of the respondents.

TABLE IV: RESPONDENTS' PROFILE

Category	Demography	Frequency	Percentage (%)
Age	21 - 30 years old	71	35.1
	31 - 40 years old	77	38.1
	41 - 50 years old	31	15.3
	51 years old and above	23	11.4
ICT experience	Less than 1 year	10	5.0
	1 - 5 years	45	22.3
	5 - 10 years	78	38.6
	10 years and above	69	34.2

Based on Table IV, the descriptive analysis of the age factor found that most of the respondents (73.2%) were under 40 years old. In terms of respondents' ICT experience, descriptive analysis shows that most respondents have ICT experience of more than 5 years and above with a percentage of 72.8%.

Headmasters' Technology Leadership Level

Table V below reported the overall level of technology leadership of headmasters is high with a mean value of 4.07 (s.p. = 0.586). The Digital Era Learning Culture component recorded the highest mean score of 4.25 (s.p. = 0.491), while the Visionary Leadership recorded the lowest mean score of 3.86 (s.p. = 0.586). The Digital Citizenship component reported a very high mean score of 4.22 (s.p. = 0.581). The other technological leadership components reported high mean values, namely Excellence in Professional Practice (mean = 4.05, s.p. = 0.598) and Systemic Improvement (mean = 3.98, s.p. = 0.581). The findings of this study found that the level of readiness of SJK (C) headmasters in Puchong is high to perform the role as a leader or technology leader.

TABLE V: HEADMASTERS' TECHNOLOGY LEADERSHIP LEVEL

Code	Component	Mean	S.D.	Level
KW	Visionary Leadership	3.86	.586	High
ED	Digital Age Learning Culture	4.25	.491	Very high
AP	Excellence in Professional Practice	4.05	.598	High
PS	Systemic improvement	3.98	.581	High
WD	Digital Citizenship	4.22	.581	Very high
	Overall	**4.07**	**0.490**	**High**

Teachers' Motivation In Integrating Technology In TnL Process

Table V1 below reported the level of teachers' motivation to integrate technology in TnL process based on four dimensions. Data analysis showed that the level of teachers' motivation to integrate technology in the TnL

process in SJK (C) around Puchong district is very high with an overall mean score of 4.41 (s.p = 0.470). The Attitude component showed the highest mean value (mean = 4.57, s.p = 0.472), while the Perceived Usefulness component indicated the lowest mean value (mean = 4.20, s.p = 0.517). All levels of teachers' motivation components integrating technology in TnL process are very high. These findings proved that teachers in SJK (C) around Puchong district are highly motivated in using and integrating technology in TnL process in schools by showing a positive attitude in accepting the use of technology in schools.

TABLE VI: TEACHERS' MOTIVATION IN INTEGRATING TECHNOLOGY IN THE TNL PROCESS

Code	Cmponent	Mean	S.D.	Level
TG	Perceived Usefulness	4.20	.517	Very high
MG	Perceived Ease of Use	4.37	.561	Very high
SI	Attitude	4.57	.472	Very high
TL	Intention To Use	4.48	.513	Very high
	Overall	**4.41**	**.470**	**Very high**

The Relationship Between Headmasters' Technology Leadership and Teachers' Motivation In Integrating Technology In TnL Process

The results of the Pearson Correlation test shown in Table VII proved the existence of a moderate correlation (r = .494) between the technology leadership of the headmasters and the teachers' motivation to integrate technology in TnL. Positive relationships existed between the two variables. This means that the higher the level of technology leadership practice shown by the headmasters, the higher the motivation of teachers to integrate technology in TnL. Its significant value is .000 which is lower than the significance level of $p < 0.01$. Thus, the null hypothesis of this study is rejected. The findings proved that there is a significant relationship at the moderate level between the technology leadership of the headmaster and the motivation of teachers in SJK(C) in Puchong to integrate technology in TnL. This proved that the technology leadership of headmasters is a key factor in motivating teachers to integrate technology in TnL.

TABLE VII: RELATIONSHIP BETWEEN HEADMASTER TECHNOLOGY LEADERSHIP AND TEACHERS' MOTIVATION IN INTEGRATING TECHNOLOGY IN THE TNL PROCESS

		TEACHER'S MOTIVATION IN INTEGRATING TECHNOLOGY IN THE TNL PROCESS
HEADMASTERS' TECHNOLOGY LEADERSHIP	*Pearson Correlation*	.494**
	Sig. (2-tailed)	.000
	N	202

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

VI. DISCUSSION

Headmasters as school technology leaders must be aware to the rapid development of ICT where scientific and technological advances are around the world. The integration of technology in organizations such as schools can have a positive impact on organizational development. The findings of the study proved that the headmasters in SJK (C) in Puchong had practiced high technology leadership. This analysis is in line with previous studies that proved the success of the application of technology leadership practices in schools through high levels of technology leadership of headmasters and provide that techology leadership plays a key role in promoting school technology integration among teachers (Mohd Norakmar, Siti Noor, & Abd Latif, 2020; Zunaidah & Arumugam, 2020; Faridah & Mohd Izham, 2017; & Khadijah, 2017; Leong et al., 2016; Fisher & Waller, 2013). In contrast, the findings of this study were found to be contrary to the study of Mohd Izham, Faridah, Aida Hanim, Norazah and Noraini (2014) and the study of Mohd Izham, Norazah, Kamaruzaman, Rusnah and Yusma (2010) who reported a moderate level of technology leadership detected in Malaysian schools.

The increase in the level of technology leadership of the headmaster of SJK (C) around Puchong is driven by the culture of learning based on the digital era at a very high level in the school environment. These findings are in line with the findings of the study of Zunaidah & Arumugam (2020). In this context, an appropriate, meaningful and interesting education for students can be created through the support of headmasters in creating and cultivating digital learning (Alper & Süleyman, 2016). The effectiveness of headmasters' technology leadership in cultivating a learning environment based on the digital era can be seen by providing a student-centered environment and ensuring that teaching innovation is complemented by technology and learning resources. (Raamani Thannimalai & Arumugam Raman 2018)

In addition, the integration of technology among teachers is greatly influenced by technology leaders. According to Uğur and Koç (2019), the effectiveness of headmasters' technology leadership is shown through the shared organizational vision which are clear and easy to understand by school community where it will further strengthen the school process towards the full implementation of TnL based on PAK 21. However, the findings of this study indicate that the Visionary Leadership component needs to be given due attention by the headmasters where the mean score is the lowest among all components despite being at a high level. Inspiration and encouragement to individuals should be given by headmasters to implement and develop a shared vision to ensure comprehensive integration of technology is realized in school organizations and supports transformation and perfection (Alper & Süleyman, 2016). Based on this study, it is believed that the headmasters of SJK (C) in Puchong still needs some time to increase their understanding and readiness about planning and sharing strategic plans in the integration of technology to be implemented to the maximum. A real technology leadership requires technological planning skills as well as creative vision sharing (Banoğlu, 2011).

The findings also report that the headmasters of SJK (C) have became a role model to the school community to lead and develop a culture using technology at a very high level

as shown in the components of Digital Citizenship and it is in line with the findings of Leong, Chua, Sathiamoorthy and Shafinaz (2016). According to Wong and Khadijah Daud (2017) headmasters are role models to the school community in emulating behavior in integrating technology in schools. As a leader and the leader of technology in schools, it is appropriate to plan and take responsibility so that the use and integration of technology in schools is legitimate, safe and ethical. This statement is in line with the recommendations put forward in the NETS-A (2009) model through previous PTLA instruments. The findings of this study prove that headmasters have given awareness to school community on ethics and rules that need to be followed during the use of ICT. However, it is recommended that headmasters provide guidance to teachers in detail on how to use technology with effective communication using technology devices or software.

According to Raamani Thannimalai and Arumugam Raman (2018), headmasters should ensure that infrastructure supports the development and implementation of TnL process. Headmasters also need to strengthen innovation and professional development activities for students' and teachers' learning through digital resources (Alper & Süleyman, 2016). Involvement in ICT competency-based courses can encourage continuous ICT integration consistency to enhance teacher professionalism. Meanwhile, the improvement of ICT competencies of headmasters and teachers is very much needed to encourage the technology integration among teachers in TnL process.

The findings of this study show that teachers are highly motivated and positive towards the use and integration of technology and this finding is in line with the study of Raamani A / P Thannimalai (2018), Shah Rulbani, Mohd Isa and Khadijah, (2017) and Talirkodi (2017). On the other hand, the findings of this study are not in line with the study of Siti Aminah and Fazlinda (2018) and Chung and Jamaludin (2010) who showed that the motivation or willingness of teachers in integrating teaching aids based on technology is moderate or low. This is because a complete and adequate ICT infrastructure is provided and encouragement is given by headmasters to teachers using ICT in the TnL process. In addition, the majority of respondents are young teachers where they are more efficient in the use of technology in the classroom. The study of Yeung, Tay, Hui, Lin and Low (2014) also found that young teachers use technology more often than the senior teachers.

According to the TAM model introduced by Davis (1989), the use of computers is driven by the desire to use the system while the desire to use the system is driven by the perception of use and attitude towards system use. The study of Davis et al. (1989) also explained the easy-to-use perception factor and the usefulness perception in the TAM model has a positive impact on the use of technology. The findings of the study have strengthened this statement where the components of the notion of usefulness and easy-to-use perception of technology from respondents' perceptions are at a very high level and it contributes to the intention or motivation of teachers to integrate and use technology in TnL process.

Teachers of SJK (C) around Puchong district were found to have a very high awareness and understanding that the integration and use of technology in TnL is a trend in the field of education in this era of globalization. Respondents' attitude towards the integration or use of technology is positive and is ready to accept the integration and use of technology in the daily TnL process in schools. The findings of this study are in line with several previous studies (Siti Aminah & Fazlinda, 2018; Siti Hajar & Suguneswary, 2016; Chung & Jamaludin, 2010) on teachers' positive attitudes towards the use and integration of ICT in TnL. In other words, teachers have shown a positive view on the implementation of PAK 21 which involves the TnL process based on the digital era. This is supported by the study of Norazlin & Siti Rahaimah, (2018). The integration of technology in the classroom routine can be said to have become a must for teachers (Langworthy, 2013; Amran & Rosli, 2017).

The findings of the study also show that teachers find that the use and integration of technology can facilitate work and produce work efficiently. According to Siti Hajar & Suguneswary (2016), teachers agree that ICT facilities help save information retrieval time, diversify teaching patterns, improve student performance and understanding as well as improve teachers' ICT usage skills. The majority of respondents are very interested in the use and integration of technology in the TnL process and think that ICT equipment and multimedia materials are suitable and fun to use in the TnL process. The use of multimedia-based teaching materials helps to make the TnL process more enjoyable and leave a positive impact on students' learning (Siti Aminah & Fazlinda, 2018; Rian Vebrianto & Osman, 2012).

The integration of technology in the TnL process can be helped by having adequate access to various technological infrastructure in schools. (Hobbs & Tuzel, 2015) under the leadership technology of headmasters. The level of technology integration of SJK (C) teachers in Puchong in TnL process is very high where the majority of teachers use ICT for the TnL process. This proves that the technological infrastructure supplied in schools meets the needs of teachers. The quality and quantity of technology infrastructure should be enhanced to support their willingness and interest in using technology in PdP (Norazlin & Siti Rahaimah, 2018).

A positive and moderate positive relationship can be concluded in the findings of this study. Technology leadership can be said to act as a predictor for the technoogy integration among teachers in TnL process. Anderson and Dexter (2005) stated that efforts to integrate technology in educational institutions will be threatened except under the leadership of proactive technology leaders. The effectiveness of headmasters' leadership can be seen in driving the process of technology integration among teachers in TnL process through effective technology leadership to prevent teachers from losing interest or motivation to integrate technology in TnL process. Hence, the important role of providing long-term support should be played by headmasters to motivate teachers to integrate and use educational technology in their teaching process (Peled et.al, 2011).

VII.   IMPLICATION / RECOMMENDATIONS

The findings of the study have proven that the technology leadership of headmasters is able to motivate teachers to integrate technology in the TnL process. Through the analysis of the findings of this study, MOE is expected to formulate a Technology Leadership Model as well as produce a Technology Leadership-Based School Management Module for headmasters for all levels of schools in Malaysia.

This study also imposes that adequate technological equipment is essential for the process of technology integration in an effective TnL process under the technology leadership of headmasters. Therefore, it is hoped that the Ministry of Education of Malaysia (MOE) will continue to improve the ICT facilities of schools to ensure the adequate technological facilities that should be equipped in all school streams. The findings of this study can be referred to as a guide for MOE to formulate the evaluation of technology leadership of headmasters through periodic monitoring of schools.

Meanwhile, the findings of the study proved that technological strategic plan planning skills need to be further developed to support the school technology vision created. Therefore, it is appropriate for the Aminuddin Baki Institute (IAB) to design and implement school technology management courses or programs that apply planning and sharing skills of technology strategic plan in headmaster's management training programs. The IAB requires a standard technology management course as a compulsory course to be followed under the NPQEL program.

Headmasters need to be active in planning activities or programs that can improve teachers' 'ICT competencies and their motivation to integrate technology. The involvement of experts is required in programs or workshops organized at the school level in order to enhance the ICT competencies of teachers so that they are motivated to integrate the latest technology in the TnL process. In addition to school leaders, school teachers need to realize that the integration of technology in the TnL process is a trend in education and constantly enhances knowledge, ability, competence, readiness, skills, and attitude change in accepting new norms in education, especially online TnL implementation. It is clear that teachers need to be exposed to various programs, training or courses related to the management and integration of technology in the TnL process.

However, the findings of the study could not be generalized to all schools in Malaysia as it only involved the teachers from four SJK(C) schools in Puchong. Hence, there are still some aspects that researchers can explore in the future. Among the recommendations for further study are as follows:

1. The scope of this study can be extended to different school streams, states and school levels. Comparisons between different levels or types of streams of educational institutions are also interesting to explore.
2. A combination of quantitative and qualitative methods is proposed for further study. Qualitative instruments can explore the real problem factors faced by the headmaster or teachers in the process of technological integration in depth.
3. Further studies are recommended to involve school administrators such as headmasters and senior assistants. Comparision among the differences in perceptions between administrators and teachers about the level of technology leadership can be done.
4. Demographic factors such as the main subjects taught are suggested in further studies to see its influence on teachers' motivation to integrate technology according to subjects.

VIII.   CONCLUSION

In conclusion, the level of technology leadership of SJK (C) headmasters in Puchong district is at a high level while the level of motivation of SJK (C) teachers in Puchong district to integrate technology in the TnL process is very high. All constructs of technology leadership were found to have a significant positive relationship with teachers' motivation to integrate technology in the TnL process. Although the relationship is at a moderate level, but technology leadership is a key element to the motivation of teachers to integrate technology in the PdP process and then realize the implementation of 21st century education that integrates technology.

Headmasters' leadership practices need to change from traditional leadership practices to digital-era leadership practices. A proactive attitude is needed to be on track of educational reformation and motivate teachers to integrate technology in the TnL process. Headmasters as technology leaders must have a global view on education, highly knowledgeable and willing to seek new knowledge and have high skills in the field of ICT. If teachers are highly motivated to integrate technology fully in the TnL process under the successful leadership technology of headmasters, it is believed that changes in 21st century learning methods in the classroom are inevitable.

In reality, one fact that can not be ignored is the global crisis of the spread of the COVID-19 epidemic. Adapting educators to new teaching norms that require the TnL process to be implemented online is a new challenge. It is hoped that all school leaders can continue to play a role as technology leaders by leading this urgent change and helping teachers overcome this challenge by understanding the problems faced by teachers, understanding the context of modern technological change, providing support and utilizing technology in leading teachers to implement technology-based TnL process.

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