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The Integration of Techno-Pedagogical Approach in Teaching and Learning among Lecturers in Public Universities in Malaysia

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Abstract

The dynamism of the technological world has resulted in overwhelming resources, enriching the process of meaning making and information gaining. Such facets surround the growth of present students, forming the "new millennium learners". These learners are associated with different expectations of meaningful learning. With the immense potential technology holds in innovating educational practices, there is a need for educators to master the techno-pedagogical content knowledge (TPK) alongside with the subject matter to be taught. TPK is a framework encompasses two different types of knowledge, namely technological knowledge and pedagogical knowledge. As a fragment of the knowledge areas making up Techno-Pedagogical Content Knowledge by Mishra & Koehler (2006), TPK is a staple skill for the 21st century educators. This is especially true when the educational landscape nowadays is overwhelmed with vast array of digital devices. Other than that, there is also a need for teachers to be creative in using their techno-pedagogy skills, referring to the ability of the teachers to make lesson interesting though technological and imaginative approaches. The study attempts (1) to study the current level of techno-pedagogical knowledge among lecturers in public universities in Malaysia.(2) To study how techno-pedagogical knowledge help lectures in integrating blended learning into their teaching and learning process.(3) To study the impact of techno-pedagogical approach in teaching and learning in Public universities in Malaysia. This study will be carried out using quantitative and qualitative approaches where two different questionnaires on techno-pedagogy and pedagogical creativity will be distributed to a large number of lectures. In-depth interviews and observation will be conducted with selected lecturers to provide further insights on the data collected. It is hoped that the findings of this study can provide further insights on the need to emphasize on the techno-pedagogical skills and consequently, improve the current TPK courses available for lecturers.

Introduction

The current scenario of Malaysian public university witnesses exponential growth of learners who are thriving for higher degree of knowledge hence promoting bigger number for enrolment each year. Despite the goal of getting more learners and training them to become skilful and knowledgeable workers in realizing Vision 2020, the outsourced facilities of the public university can be a barrier to large enrolment. Consequently, the integration of technology into education has brought a different paradigm in viewing education in higher institutions, emphasizing blended learning as a panacea. Besides enabling learning through virtual communication and setting, educational technology provides numerous benefits.

Technology has been recognized as a powerful enabler, endowed with vast potential to innovate the education practices (Atkinson & Castro, 2008). Recent decades had recognized the need for learners to learn in the environment supporting their need to understand contents in animated, dynamic and unusual manner. One of the impetus resulting from this thinking is the development of various policies worldwide, including Malaysia, emphasizing on the provision of such assess to technologies. For example, the smart school initiative in Malaysia in 1997 was started with the aim to integrate ICT into education (MOE, 1997). Following that, all schools in Malaysia are equipped with computer labs and internet connection to foster technological literacy, eliminating the digital divide and build a community of technology users (MOE, 2009). However, the investment in placing computers did not yield expected outcomes for pedagogical change as it was later found out that teachers' ICT literacy competence is not equivalent to their technological pedagogy competency (Ala-Mutka, 2008). One factor of such shortcoming is because teachers simply cram and fit new technologies in the existing pedagogical structure instead of engineering a new model for more effective pedagogical framework (Bottino, 2003; Coldwell, 2003; Kwang, 2010).

The need for individuals to equip themselves with ample skills of technology also has been extensively emphasized, as mastering such skills allow them to use, manipulate and disseminate information in the sophisticated world. However, the real importance underlying the need for students to have technological skills is the lifelong learning it promotes; providing freedom for learners in shaping their own learning paths through collaborations and new technologies (Attwell, 2007). Hence, educators have to emphasize the use of technology to motivate learners to use and understand the potential for meaningful learning through digital platforms. Other than that, the developments of information, communication, knowledge and technology in the recent era have resulted in a different type of learners, compared to the traditional era. 2. Pedro (2006) claimed that these learners are the cohorts growing up surrounded with digital media. He referred them as the "new millennium learners" associated with short attention spans, multi-tasking and non-linear ways in retrieving information. Hence, educators teaching the new millennium students need to attract and retain the attention of the students in different ways during the teaching and learning process (Ala-Mutka et al., 2008). This can be more challenging as students learn best differently and educators need to have a wide pedagogical coverage to cater for meaningful learning for each kind of learners.

Not limited only to the subject matter needed to be taught, the educators are also expected to have the pedagogical content knowledge in order for them to teach effectively, and

creative enough to incorporate multiple approaches in teaching to suit various types of learners. While the common facet of assessment in educators' education courses emphasizes on the content knowledge and the pedagogical content knowledge, integrating ICT into educators' pedagogy has been under explored in the local setting. Studies conducted locally has insofar investigated on Smart School Project (Yaa'cob et al., 2005; Zin, 2003; Ong & Ruthven, 2009), ease of use of technological gadgets (Moses et al., 2013; Samuel & Bakar, 2006) and on the readiness of teaching with ICT (Koo, 2008; Goh & Wahid, 2006). These studies suggested that the competency of local educators to integrate ICT into education has been sidelined. Hence, educators' techno-pedagogical competency is placed under the focus in this study.

Another facet that was brought to the fore is the educators' creative teaching ability, referring to teachers' ability to manipulate and incorporate different approaches in teaching. It has also been reported that "one-size-fits-all" techno-pedagogy does not result in effective instructions as students learn differently (Oster-Levinz & Klieger, 2011). Hence, it is required them to be able to manipulate the technology in different ways to convey the lesson for various types of learners. While it is acknowledged that students are more dominant in a type of learning, multiple approaches in teaching methods benefits more students. For example, the creative way of teaching can blend all audio, kinesthetic and visual learning at once to benefit a wider range of learners with different learning preferences.

Literature Review

The exponential growth of technologies has propelled various transformations in life and foster dynamism in various walks of life. The need for individuals to equip themselves with ample skills of technology has been extensively emphasized, as mastering such skills allow them to use, manipulate and disseminate information in the sophisticated world. However, the real importance underlying the need for students to have technological skills is the lifelong learning it promotes; providing freedom for learners in shaping their own learning paths through collaborations and new technologies (Attwell, 2007). Information, communication, knowledge and technology in the recent era have resulted in a different type of learners, compared to the traditional era. 2. Pedro (2006) claimed that these learners are the cohorts growing up surrounded with digital media. He referred them as the "new millennium learners" associated with short attention spans, multi-tasking and non-linear ways in retrieving information. Hence, educators teaching the new millennium students need to attract and retain the attention of the students in different ways during the teaching and learning process (Ala-Mutka et al., 2008). This can be more challenging as students learn best differently and educators need to have a wide pedagogical coverage to cater for meaningful learning for each kind of learners.

Reasons for Technology-Enabled Teaching and Learning

Technology has been recognized as a powerful enabler, endowed with vast potential to innovate the education practices (Atkinson & Castro, 2008). Recent decades has recognized the need for learners to learn in the environment supporting their need to understand contents in animated, dynamic and unusual manner. One of the impetus resulting from this thinking is the development of various policies worldwide, including Malaysia, emphasizing on the provision of such assess to technologies. For example, the smart school initiative in Malaysia in 1997 was started with the aim to integrate ICT into education (MOE, 1997).

Following that, all schools in Malaysia are equipped with computer labs and internet connection to foster technological literacy, eliminating the digital divide and build a community of technology users (MOE, 2009). However, the investment in placing computers did not yield expected outcomes for pedagogical change as it was later found out that teachers ICT literacy competence is not equivalent to their technological pedagogy competency (Ala-Mutka, 2008). One factor of such shortcoming is because teachers simply cram and fit new technologies in the existing pedagogical structure instead of engineering a new model for more effective pedagogical framework (Bottino, 2003; Coldwell, 2003; Kwang, 2010).

Techno-Pedagogical Content Knowledge

It is vital that every lesson intended to be delivered in class is well-planned for. Scrivener (2005) mentioned that lesson planning is important as it help the teachers to cater for more different learning styles of their learners, and provides the educator with more coherent framework for efficient teaching. Hence, developing a good plan for a particular lesson needs both sound knowledge of content and pedagogy. However, Shulman (1986) pointed out that these two knowledge are usually treated as separate concerns in teacher education trainings, and introduced the term "Pedagogical-content Knowledge" (PCK) that reflects the interrelated components for effective teaching. Extending from this notion, Hughes (2000) added technology as another component of educator's knowledge, articulating the need for technology to be blended into the teaching in the 21st century. As mentioned previously, effective usage of technology enables effective teaching and learning and hence, the rationale for the knowledge of effective integration of technology into a lesson.

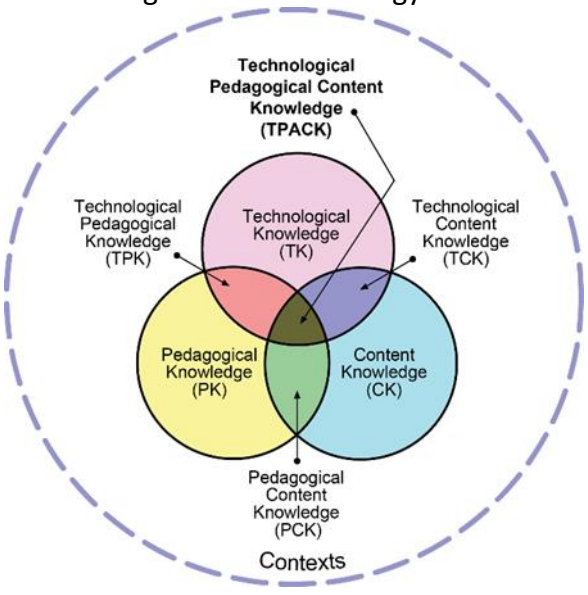

Figure 1: Framework for TPACK (Koehler & Mishra, 2009)

In the TPACK framework, there are three primary knowledge for an educator which is focused upon, namely Technological Knowledge, Content Knowledge and Pedagogical Knowledge (see Figure 1). These three are not to be viewed in isolation, but it reflects the complex interplay of all knowledge essential for teaching with technology, positioned at the heart of this framework. The concept of TPACK goes beyond the blend of Content, Technology and Pedagogical knowledge where another four knowledge base arise from the intersection

of any two. These four knowledge bases are Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK) and Technological Pedagogical Knowledge (TPK). The intersection of all three circles is the Technological Pedagogical Content Knowledge (TPACK). Quoting Koehler and Mishra (2009, para. 8), "An understanding of how teaching and learning can change when particular technologies are used in particular ways. This includes knowing the pedagogical affordances and constraints of a range of technological tools as they relate to disciplinarily and developmentally appropriate pedagogical designs and strategies".

While the common facet of assessment in teacher's education courses emphasizes on the content knowledge and the pedagogical content knowledge, integrating ICT into educator's pedagogy has been underexplored in the local setting. Studies conducted locally has insofar investigated on Smart School Project (Azizah Yaa'cob et al., 2005; Sharifah Maimunah Syed Zin, 2003; Ong & Ruthven, 2009), ease of use of technological gadgets (Moses et al., 2013; Samuel & Bakar, 2006) and on the readiness of teaching with ICT (Koo, 2008; Goh & Md. Wahid, 2006). These studies suggested that the local educators' competency and knowledge on techno pedagogy has been sidelined. Hence, educator's techno-pedagogical competency is placed under the focus in this study.

The Technology Integration Planning Model

The choice of whether or not to integrate technology into the classroom is up to the educator, but usually with little understanding on the impact and the strategies for technology integration during decision-making. To address the issue of integrating technology effectively into teaching, a model called Technology Integration Planning (TIP) was developed which guide educators to make good decision about integrating technology into their teaching (Roblyer & Doering, 2013), and subsequently result in successful teaching and learning outcomes.

The model outlaid three different phases for technology integration into teaching, namely Phase One: Analysis of needs, Phase Two: Planning for integration and Phase Three: Post instruction analysis and revisions.

Phase One involves the educator to reflect on the strategies that they have used or planned to use and how technology can help address the issues raised. There is also a need to review on whether the technology is necessary to be integrated or not. This is because technologies, which are used blindly or ineffectively, will only cause more burdens to the students, in understanding how both content and technology work. Besides that, the element TPACK was made an important part of the model as teaching is a complex combination of what the educator is teaching, how to teach the content in the best way, and the knowledge on the tools for them to carry out their lesson plans. Phase Two of the TIP model on the other hand, consists of more specific learning planning and products where the educators should know the skills that he or she wants the students to learn through the lesson, the strategies that will work best in achieving that aims, and if the essential conditions for technology integration are present for the technology to support the lesson successfully. The third and last phase of the TIP model involves post-instruction analysis where the educators reflect critically on the execution of the lesson planned. Educators should constantly reflect on the outcome data and be informed of the technology-integrated methods that can be successfully implemented in the future lessons.

Scenario in Malaysian Higher Educational Institutions

With the expansion of global education and globalization, many higher educational institutions took up the initiatives of offering more diverse programs and courses, thereby increasing the need for institutional partnership, both local and international. Students' profile in HEI also witness significant changes, with more foreign students enrolled for the courses offered. The difference in geographical and demography rationalized the need for HEI to implement the use of technology in it teaching and learning process, resulting in vast investment for ICT infrastructure to support blended learning and distance education. However, a study conducted by Raja Maznah (2004) revealed that it's a norm for most HEI to provide ICT infrastructure but lack of plan to implement technology effectively. In another view, the ICT infrastructure is to only support online learning and not to enhance teaching and learning process. Enhancing more on the online learning and technology-enabled teaching and learning was also seen as a panacea to the proliferating number of students that caused limitation in classroom availability in many HEIs (Farahiza, 2010).

Purpose of the Study

This study attempted to answer the following questions:

i. To study the current level of techno-pedagogical knowledge among lecturers in public universities in Malaysia.
ii. To study how techno-pedagogical knowledge help lectures in integrating blended learning into their teaching and learning process.
iii. To study the impact of techno-pedagogical approach in teaching and learning in Public Universities in Malaysia.

Methodology

This study was descriptive and collected both quantitative and qualitative data. The respondents for this study were 104 lecturers from Universiti Teknologi MARA, constituted of 26 (25%) males and 78 (75%) females. Lecturers were chosen via cluster and systematic sampling based on their streams, namely Social Science and Science. In terms of the highest qualification of this group of respondents,, majority of lecturers have Masters (75%) consisting of 78 people and PhD (21.2%) consisting of 22 people. The rest were Bachelor Degree holders (2.9%) consisting of 3 people and only 1 (1%) of other qualification. majority of respondents were lecturers with 6-10 years of experience (36.5%) consisting of 38 people and lecturers with less than 5 years of experience (23.1%) consisting of 24 people. Meanwhile, the rest consist of 20 (19.2%) lecturers with more than 20 years of experience, 11 (12.4%) lecturers with 16-20 years of experience while only 10 (9.6%) lecturers with 11-15 years of experience.

This study used questionnaire and interviews to collect the data. Data gained were analyzed using the descriptive and inferential statistics, where the descriptive analysis describe the frequency, percentages, means and the standard deviation of the demographic details.

Results and Discussion

Current Level of Techno-Pedagogical Knowledge among Lecturers in Public University In Malaysia

Techno-Pedagogical Knowledge: Technology Access

The below items are to find out the current level of Techno-Pedagogical Knowledge among Lecturers in Public University in Malaysia. Table 1 presents the respondents' techno-pedagogical knowledge on technology access. Item 1 has the highest mean which is 4.68 with standard deviation of 0.53 while item 3 is the second highest with mean 4.44 with standard deviation of 0.55. The lowest mean is item 2 at 4.14 with standard deviation of 0.78.

Table 1
Technology Access

No	Item	Mean	Standard Deviation
1	I have access to a computer with an Internet connection.	4.68	0.53
2	I have access to a fairly new computer (e.g., Faster RAM, speakers, CD-ROM).	4.14	0.78
3	I have access to a computer with adequate software for teaching and learning (e.g., Microsoft Office).	4.44	0.55
	Average	4.42	0.46

Techno-Pedagogical Knowledge: Online Skills

Table 2 shows the techno-pedagogical knowledge on online skills and relationships. Item 3 has the highest mean which is 4.81 with standard deviation of 0.39. Item 5 has the middle mean which is 4.38 with standard deviation of 0.79. Item 6 has the lowest mean, 4.00 with standard deviation of 0.94.

Table 2
Online Skills

No	Item	Mean	Standard Deviation
3	I can send an email with a file attached.	4.81	0.39
1	I have the basic skills to operate a computer (e.g., saving files, creating folders).	4.74	0.44
2	I have the basic skills for finding my way around the Internet (e.g., using search engines).	4.69	0.46
4	I think that I would be comfortable using a computer if I participate in IT courses.	4.46	0.75
5	I think that I would be able to communicate effectively with others using online technologies (e.g., chat).	4.38	0.79
9	I think that I would be able to ask questions and make comments in clear writing.	4.19	0.69
7	I think that I would be able to use online tools to work on assignments with students in different places.	4.18	0.94

8	I think that I would be able to schedule time to provide timely responses to other students and/or the instructor.	4.02	0.76
6	I think that I would be able to express myself clearly through my writing (e.g., emotions, humor available in online tools).	4.00	0.94
	Average	4.38	0.46

Techno-Pedagogical Knowledge: Motivation

Table 3 is the respondents' responses regarding techno-pedagogical knowledge on motivation. Item 2 has the highest mean which is 3.67 with standard deviation of 0.95 while item 1 is in the middle with mean 3.63 and standard deviation of 0.89. Item 3 has the lowest mean, 3.27 with standard deviation of 1.03.

Table 3
Motivation

No	Item	Mean	Standard Deviation
1	I think that I would be able to remain motivated even though my students are not online at all times.	3.63	0.89
2	I think that I would be able to complete my work even when there are online distractions (e.g., friends/colleague sending emails or Websites to surf)	3.67	0.95
3	I think that I would be able to complete my work even when there are distractions in my home (e.g., television, children, and such).	3.27	1.03
	Average	3.25	0.70

Techno-Pedagogical Knowledge: Online Audio/Video

Table 4 shows items that answer the question on the respondents' response regarding techno-pedagogical knowledge on online audio/video. Item 2 has the highest mean, 4.06 with standard deviation of 0.73. In the middle is item 3 with mean 4.05 and standard deviation of 0.73. Item 1 has the lowest mean which is 4.03 and standard deviation of 0.67.

Table 4
Online Video/Audio

No	Item	Mean	Standard Deviation
1	I think that I would be able to relate the content of short video clips (1-3 minutes typically) to the information I have read online or in books.	4.03	0.67
2	I think that I would be able to integrate video in my teaching	4.06	0.73
3	I think that I would be able to explain course related information when it's presented in video formats.	4.05	0.73
	Average	4.05	0.63

Techno-Pedagogical Knowledge: Internet Discussion

Table 5 shows the respondents' response on the techno-pedagogical knowledge on Internet discussion. The highest mean, 4.14 with standard deviation of 0.72 is item 4. The second highest mean is item 4 with 3.98 with standard deviation, 0.72. Item 2 has the lowest mean with standard deviation of 0.89.

Table 5
Internet Discussion

No	Item	Mean	Standard Deviation
1	I think that I would be able to carry on a conversation with others using the Internet (e.g., Internet chat, instant messenger).	4.14	0.72
4	I sometimes prefer to have more time to prepare responses to a question.	3.98	0.72
3	I think that I would be able to follow along with an online conversation (e.g., Internet chat, instant messenger) while typing.	3.84	0.86
2	I think that I would be comfortable having several discussions taking place in the same online chat even though I may not be participating in all of them.	3.73	0.89
	Average	3.92	0.58

Techno-Pedagogical Knowledge: Supporting Elements

Table 6 describes the respondents' techno-pedagogical knowledge on supporting elements. Item 2 has the highest mean which is 4.55 with standard deviation of 0.60. Item 3 has the middle mean which is 4.34 with standard deviation of 0.66. Item 1 on the other hand has the lowest mean which is 4.14 with standard deviation of 0.78.

Table 6
Supporting Elements

No	Item	Mean	Standard Deviation
2	Quick technical and administrative support is important to the success in online course.	4.55	0.60
4	I feel that prior experiences with online technologies (e.g., email, Internet chat, online readings) are important to the success with online course.	4.35	0.70
3	Frequent participation throughout the learning process is important to the success in online course.	4.34	0.66
5	The ability to immediately apply course materials is important to the success with online course.	4.34	0.73
1	Regular contact with my students is important to the success of online course.	4.14	0.78
	Average	4.34	0.52

Techno-Pedagogical Knowledge: ICT Abilities

Table 7 shows the respondents' techno-pedagogical knowledge on ICT abilities. Item 8 has the highest mean which is 4.67 with standard deviation of 0.46. Item 3 has the middle value of mean which is 4.33 with standard deviation of 0.83. Item 5 has the lowest mean which is 3.14 with standard deviation of 1.24.

Table 7
ICT Abilities

No	Item	Mean	Standard Deviation
8	I have experience using software such as Microsoft Office (e.g., Word, PowerPoint, and Excel)	4.67	0.46
10	I am proficient at sending/receiving emails.	4.65	0.49
11	I am proficient at sending/receiving emails with attachments.	4.63	0.55
6	I am able to use a web browser/search engine to navigate the internet (e.g., Mozila Firefox, Safari, Internet Explorer, Google Chrome etc.).	4.50	0.57
1	I have regular access to a computer or laptop each week for my course(s) (4 to 5 times a week).	4.45	0.74
3	I have access to a printer.	4.33	0.83
9	I have experience downloading/installing programs or plugins (Such as Java, Adobe Reader, Quick Time, etc.).	4.32	0.86
7	I am proficient typing on a keyboard.	4.27	0.77
2	I have regular access to the internet each week for my course(s) (4 to 5 times a week).	4.26	0.88
4	I have access to headphones or speakers for courses that may have video conferences or require student-recorded presentations.	3.59	1.16
5	I have access to a microphone for courses that may have video conferences or require student-recorded presentations.	3.14	1.24
	Average	4.25	0.50

If your university plans to implement Blended Learning, how much of face-to-face (f2f) vs online do you prefer? *

Table 8 presents how much of face-to-face (f2f) vs online respondents' prefer if their university plans to implement blended learning. Majority of the respondents which is 33 of them preferred to have 70% of f2f and 30% online (31.7%). 8 of the respondents preferred 90% of f2f and 10% online (7.7%) and minority chose 20% f2f and 80% online; and 10% of f2f and 90% online which is 2 respondents each (1.9%).

Table 8
Blended Learning Models

No	Mode	Frequency	Percentage
1	f2f 90 %: Online 10 %	8	7.7
2	f2f 80 %: Online 20 %	17	16.3
3	f2f 70 %: Online 30 %	33	31.7
4	f2f 60 %: Online 40 %	18	17.3
5	f2f 50 %: Online 50 %	17	16.3
6	f2f 40 %: Online 60 %	4	3.8
7	f2f 30 %: Online 70 %	3	2.9
8	f2f 20 %: Online 80 %	2	1.9
9	f2f 10 %: Online 90 %	2	1.9
		104	100

If your university plans to implement Blended Learning, what format do you prefer the teaching content to be made available online? (Respondents can choose more than one answer)

Table 9 shows the format the respondents prefer the teaching content to be made available online. For this question, the respondents were allowed to choose more than one answer. Majority of the respondents answered 'other' (100%). 44 of the respondents answered PowerPoint Presentation only (42.3%). The least preferred format is audio only (audio recording of teaching content (16.3%).

Table 9
Teaching Content

No	Item	Frequency	Percentage
1	Reading Text Only (eg. PDF)	40	38.5
2	PowerPoint Presentation Only	44	42.3
3	Audio Only (Audio recording of teaching content)	17	16.3
4	Video Only (Video recording of teaching content)	33	31.7
5	PowerPoint with Audio (PowerPoint with audio explanation)	61	58.7
6	PowerPoint with Video (PowerPoint with video explanation)	71	68.3
7	Animated PowerPoint (e.g. Flipped PowerPoint)	63	60.6
8	Animated Text (e.g. Flipped Notes/Articles)	42	40.4

9	Text with Audio (Notes with audio explanation)	35	33.7
10	Text with Video (Notes with video explanation)	46	44.2
11	Other	104	100

If your university plans to implement Blended Learning, how often do you prefer to meet face-to-face with the students of a course? *

Table 10 describes how often do the respondents prefer to meet face-to-face with the students of a course if the university plans to implement Blended Learning. 71 of the respondents answered once a week (68.3%). Meanwhile 5 of the respondents chose once every three weeks and once a month each (4.8%). On the other hand, minority of the respondents answered other (3.8%).

Table 10
Frequencies of Face-to-Face Meeting

No	Item	Frequency	Percentage
1	Once a week	71	68.3
2	Once every two weeks	19	18.3
3	Once every three weeks	5	4.8
4	Once a month	5	4.8
5	Once a semester	0	0
6	Other	4	3.8

Impact of Techno-Pedagogical Knowledge

Majority of respondents said that teaching using just whiteboard and marker is not similar to using technology. The main reason is due to technology's flexibility and higher effectiveness in elevating the overall teaching and learning tool and experience. Furthermore, using technology would also cater to millennial students who has their own 21st century skills and preference. As one respondent shared,

> *"…technology allow the teaching and learning process more interactive, increase students' focus in class and lead to active learning. Somehow, today's generation are more attached to technology. So, technology allow them to participate more in learning session." (Lecturer A14).*

> *However, some respondents emphasized on the advantages of teaching using whiteboard and marker over technology. One respondent argued that "Using whiteboard and marker are more effective mode of learning and teaching process, whereby the students are having a great experience of debating, discussion, etc" (Lecturer A3).*

Yet, several respondents noted that it depends on the teachers themselves to use the tools that caters to their teaching and learning process as well as their students. Lecturers pointed out that it is important to focus on which tool would deliver the contents effectively to students' learning as they stated below:

"However the use of both traditional and new media must be balanced in order to better deliver and express the information/ knowledge to the learner" (Lecturer A5).

"It depends on how the tools are used, the proficiency of the teacher and the readiness of the students towards learning…" (Lecturer A20).

Hence, majority of respondents who provided a variety of perspectives in response to teaching using just whiteboard and marker versus using technology felt that both method is dissimilar. From the analysis, their differed opinions may due to their teaching preferences or individual teaching pedagogy. Further study need to be conducted in order to reveal other underlying reasons that may affect their stance in this topic.

In the next section of the survey was concerned with the lecturers' implementation of technology.

Lecturers' Implementation of Technology

Over half of those surveyed reported that they agree on the importance of knowing how to utilize the technology to their advantages. They viewed technology as a tool to not only improve their teaching approach but also to suit their students' 21st century learning styles and skills. They shared a consensus that by having the adequate skills to use the technology would cater to their students' interest, lengthen their attention span and ensure an effective communication throughout learning process. As these lecturers stated:

"Yes! Very important. Students are always with gadgets and their knowledge on technology goes beyond certain educators. We have to keep up with these younger generations and current technology to make teaching and learning more interesting and accessible." (Lecturer B5).

"It is important because students nowadays prefer to use the latest technology available. It is easier and faster for them to get information…prefer an interactive learning rather than traditional whiteboard method…" (Lecturer B15).

Furthermore, lecturers added that technology implementation help to ease their workload. It save time and aid their teaching if used effectively and appropriately. One lecturer suggested, *"Yes. The technology is the main form of interaction between people for mass distribution of communication. (mass com). Lecturers involve with mass number of students and with the time constraint due to administrative work, technology is an enabler." (Lecturer B8).*

Thus, it can be derived that majority of the respondents realized on the importance of implementing technology in their teaching and learning as it improves communication between lecturers and their students in class through effective use of technologies.

In the final part of the survey, respondents were asked to describe one episode where they effectively demonstrated or modeled combining technologies and teaching approaches in a classroom or lecture.

In response to item 21, most respondents described their teaching method in class as an active user of technology. Whilst a minority mentioned that they have yet to fully utilize technology in their teaching, the rest have effectively used basic devices such as computers, laptops, ipads and projectors alongside programs like Microsoft word document, PowerPoint slides as well as videos or excerpts from movies and Youtube in their teaching.

Besides, they also conducted online quiz, online forum and utilize UiTM i-learn system in order to monitor their students' learning progress. Additional teaching materials were also given to students through a website link or related online articles. Online/offline dictionary and educational websites such as Flocabulary and paperrater.com were also mentioned as they promotes self-directed learning.

More than half respondents reported that they also used web 2.0 to collaborate and share information online with their students through the use of social medias or other platforms such as Prezi, Padlet, Powtoon, Phet, Emaze or Google Drive. As one respondent commented,

> *"I am using my ipad and stored all teaching related materials in google drive. It is convenience since I just connect my ipad to VGA cable of projector. I saved my power point file into pdf format and make it offline in google drive (in case internet coverage is not available)…" (Lecturer C16).*

Overall, these results suggest that all respondents associated their experience in combining technologies and teaching approaches in class as a positive. It is shown through their comments on their students' positive feedback and enhanced teaching and learning process. On the other hand, although respondents were reported to be an active user, they are varied from basic to proficient user of technologies which suggest that further exposure on how to integrate technologies in teaching approaches might be in line with their needs.

Conclusion

Technology has been recognized as a strong tool that can be used to innovate the education practices. However, to utilize it, individuals need to be equipped with ample skills of technology to allow them to use, manipulate and disseminate information in the sophisticated world. Besides that, the educators are expected to have pedagogical content knowledge so that they can teach creatively and effectively to integrate various approaches in their teaching to suit the needs of the learners. Educators also have the responsibility to emphasize to the learners, the use of technology to motivate them to use and understand the potential for meaningful learning through digital platforms.

Based on the findings, it can be seen that majority of the respondents have access to the technology as well as basic knowledge to integrate it into their teaching. However, perhaps trainings and encouragement should be given to the lecturers so that they can explore and experiment with variety of approaches and methods to get their students to participate in the lessons. Besides that, findings show that majority of the lecturers prefer to have more time in face-to-face lesson rather than online lesson and choose PowerPoint presentation with videos which can be implied that lecturers are not ready to integrate technology fully into their teaching. Hence, it is important for institutions to provide continuous support to the lecturers.

It is hoped that these findings are able to provide further insights on the need to emphasize and integrate the techno-pedagogical skills and improve the current TPK courses available for lecturers.

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