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ATTITUDE AND EFFECTIVENESS OF THE USE OF TECHNOLOGY-BASED LEARNING AMONG IIUM NURSING STUDENTS

Cho Cho Zaw @ Raheema[1]
Nur Sera Azwa Md Khair[2]

[1] Kulliyyah of Nursing, International Islamic University of Malaysia (IIUM), Malaysia (raheema@iium.edu.my)
[2] Kulliyyah of Nursing, International Islamic University of Malaysia (IIUM), Malaysia (seraazwa@gmail.com)

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Abstract: *Introduction: The changes of the education system that is taking place in Malaysia is driven by the advanced technology and communication devices that is available to students wherever they are either at campus or home. Hence, the implementation of technology-based learning (TBL) in institutions in Malaysia must be effectively delivered to students. The purpose of this study was to explore the attitude and effectiveness of using TBL among IIUM nursing students. Method/Materials: A quantitative, cross-sectional descriptive study was conducted among 307 IIUM nursing students. A well-structured questionnaire was developed to collect data. Statistical analysis of the data was carried out using SPSS and association between variables was analyzed using Chi-Square test. Result: Majority of the respondents (82.6%) have their own smartphone and laptop. There were 221 (80.1%) respondents almost always get access to a computer and among them, 219 (79.3%) almost always used it in learning. Relatively, there were 96% of the respondents showed positive attitudes toward the use of TBL. 87% of the respondents agreed that TBL is effective in their learning achievement. There is relationship between the attitude toward the use of technology and the effectiveness in learning among IIUM nursing students with p-value = 0.007. Conclusion: Technology indeed provides them a very good channel and platform in facilitating them searching information and getting knowledge. Future research is recommended to conduct a survey among the administrators, lecturers, and other related personnel.*

Keywords: *Technology-Based Learning, Usage, Attitude, Effectiveness, Nursing Students*

Introduction

Education is a very crucial tool for the nourishment of the intellect and developing the social and cultural understanding in building a developed nation (NCERT, 2014). As the world has witnessed the advance and development in information and communication technology (ICT), numerous advancements keep evolving and updating over time. The Ministry of Malaysia has

invested over RM6 billion in realizing the integration of ICT in education system (MOE, 2012). The application of technology has grown rapidly in the teaching system and it is no more narrowed to the traditional form of delivery (Hsu *et al*., 2012). Technology-based learning (TBL) is a type of education that use of any electronic technology, including the Internet, intranets, satellite broadcasts, audio and video conferencing, bulletin boards, chat rooms, webcasts, and CD-ROM, for the purpose of delivering the knowledge and supporting the learning (Koller, Harvey and Magnotta, 2006). Regularly in TBL, it uses desktop or laptop computers or tablets or smart phones to provide the learning materials (Clark and Mayer, 2016). A variety of delivery methods educators use in delivering knowledge via TBL such as through tutorials, high fidelity simulations, web conferences, Wikis, Blogs, gaming and online forums (Feng, 2013). E-learning, web-based learning and online learning are the examples of TBL. Technology is one of the tools used for students learning needs since it can make interactive learning environment. Some research revealed the significant association between student's achievement and technology ($p<0.05$) (Al-Hariri and Al-Hattami, 2017), and the benefits of technology integration as an increased motivation, engagement, collaboration, confidence, learning opportunities, and technology skills of students, and allows learning at all level (Costley, 2014). Moreover, OECD (2018) highlighted in their project "Future of Education and skills 2030' about the uncertainty of future and the need to prepare the students for it by stating the importance of making ready "for jobs that have not yet been created, and the technology that have not yet been invented".

In International Islamic University Malaysia (IIUM), the lecturers have been using the technology as part of their teaching-learning activities; "I-Ta'leem" as the official e-Learning platform of the university as well as the videos, and power point slides as the interactive education. Nonetheless, few lecturers have applied the interactive games and discussions such as Kahoot and Padlet which make students have more fun and encourage active participation. The student feedback shows that learning with games and technology make them more interested in their learning. Technology innovation provides many benefits and eases students and educators as well in conducting the education process. Despite all the positive impacts, there are some studies that revealed the challenges of incorporating TBL among the nursing students. There have been debates regarding the use of TBL whether it could result in positive impacts on students' academic performance. Thus, this research was conducted to explore the attitude and effectiveness of using technology-based learning among IIUM nursing students.

Literature Review

The advancement in technology gives influence towards the education system to promote the students' performance and engagement. In United States, 98.9% of institutions used presentation software to deliver knowledge to the students, 87.6% of staff members of the institutions used email in communicating with the students as it basically eases the job (Monaghan et al., 2011). In Malaysia, 70 % of the lecturers used video in their teaching, 45 % of the students used it for their assignments, and 93% of students engage to the Power Point lectures for their revision (Wai and Seng, 2015) which shows the significant benefits of applying PowerPoint and video presentation in teaching.

In a study conducted in Nigerian higher institutions, Agbatogun (2013) noted that the faculty members believed that education using TBL gives positive impacts as it could lead to an interesting teaching process as compared to the traditional model. It is because the feature of the TBL itself could attract the students nowadays and it aids in the interactive and interesting learning (Kapoor & Sharma, 2013; Umar & Hassan, 2015). In addition, Anand and Saxena (2012) revealed that over 70% of the students who get involved in e-learning are satisfied with

what all they learned. The utilization of e-learning in education system is believed to increase the active participation of students in learning process thus it will lead to the better understanding of that subject (Harandi, 2015; Williamson & Muckle, 2017). The nature of the technology itself is very friendly to our today's world and students are more likely to use it as a medium of interactive learning process (Kapoor & Sharma, 2013; Abuatiq, 2017).

Moreover, technology in nursing education is not merely related to the computer-based only, it can also be associated with the use of high-fidelity simulation. Students find high-fidelity simulation is useful for the learning experience and it helps enhancing their confidence in tackling future clinical placement (Lin, 2016), as well as improve communication skills, knowledge, satisfaction, confidence and critical thinking, and decrease anxiety (Hall, 2017). Students who are exposed with simulation learning scored higher marks in Objective Structured Clinical Examination (OSCE) compared to those who are not (Alinier et al., 2006; Lin, 2016). It allows them to equip with the nursing skills before they go to the real clinical settings. Indeed, this type of learning results in a good feedback from students as it gives the opportunity to students to prepare themselves how to respond in unexpected patient events as they will view the situation as the real one during simulation. In the study by Mawhirter and Garofalo (2016) stated 98% of the participants expressed their readiness to encounter unexpected events and all the participants agreed that simulation games have successfully decrease their fear to face the real clinical settings in the future.

The educators also promote the use of TBL as it is effective and very essential to enhance students' performance. It is found that ICT can increase the interaction between teachers and students (Rosa & Obillos, 2016; Umar & Hassan, 2015). By adopting technologies in education, it is easy for a two-way interaction happens in class. This situation creates a good environment in teaching process because the students can understand and concentrate more on their learning. However, according to Reime, Harris, Aksnes and Mikkelsen (2008) who studied about the most successful method in teaching infection control to nursing students revealed that 70% of the students were comfortable with both teaching methods employed either it was lecture or e-learning. For the students, lecturing in the class covered most of the syllabus and gave a good understanding whereas the e-learning program has a good resource of content and well-designed motivating test program.

In addition, one study found that the use of ICT in education could lead to low academic achievements because students tend to use that technology more while teachers are teaching (Song, 2012). This issue should be solved by identifying the students' perception towards the use of technology on education and inculcating sense of self-responsibility in them. Moreover, it may be related with the students' lack of preparation and confidence in using computer or other devices in learning (Manochehri & Young, 2006). Students still need teachers in between the learning process because human interaction makes them more comfortable and easier to understand the teaching. On the other hand, some teachers have still lack of interest in applying the technology in teaching and prefer the traditional teaching. According to the study (Paduraru & Mihaila, 2017), only 12.5% of teachers still inclined towards the use of traditional face-to-face method without incorporating the use technology in the education. In addition to the students, the teachers need to polish their skills in conducting technology so that the use of it can be upgraded and improved.

Material and Methods

A cross-sectional descriptive study was conducted among nursing undergraduate students of International Islamic University Malaysia, Kuantan campus, Pahang. A universal sampling

method was used in conducting this study. The sample of this study was taken among all the undergraduate students which consists of Year 1, Year 2, Year 3 and Year 4 students who have been enrolled in Kulliyyah of Nursing, IIUM, Kuantan, Pahang in the second semester of 2017/2018 session. The total sample size was 276 participants after deducted the sample from pilot study. A well-developed questionnaire covered for the respondents' demographic data, technology usage, attitude and effectiveness of TBL. The questionnaire that was used for Section A was developed by Wai and Seng (2015) and the score of the Cronbach's Alpha was 0.7. Meanwhile, for the questionnaire that was used for Section B was developed by McFarlane *et al*. (1997) and the score of the Cronbach's Alpha was 0.95 and the questionnaire that was used for Section C was developed by Gulbahar and Guven (2008) that is considered fit for this research. The score of the Cronbach's Alpha for the reliability was 0.87. The instrument was adopted and modified from the original questionnaire to make it suitable according to the study setting. Moreover, the pilot study was conducted before data collection among 10% of population from each year of students to measure the reliability of the questionnaire and the result of Cronbach's Alpha from it was 0.782.

Prior to collect the data, the **p**ermission to conduct the study was obtained from the Kulliyyah of Nursing Post Graduate Research Center (KNPGRC) and IIUM Research Ethics Committee (IREC). The purpose of the study was explained and after getting the informed consent from the respondents, the questionnaires were distributed to them and collected back after completion. The statistical analysis program, SPSS was used for data management. Descriptive and inferential statistic (chi-square test) was used for analysis. P value <0.05 was set as statistically significant.

Results

Table 1: Sociodemographic Data Among Kulliyyah of Nursing Students

Variables	Items	Frequency (n)	Percentage (%)
Year	Year one	71	25.7
	Year two 1st batch	71	25.7
	Year two 2nd batch	50	18.1
	Year three	31	11.2
	Year four	53	19.2
Gender	Male	46	16.7
	Female	230	83.3
Current CGPA	2.49	1	0.4
	2.50 – 2.99	46	16.7
	3.00 – 3.49	198	71.7
	3.50 – 4.00	31	11.2
Technology Ownership	Smartphone only	5	1.8
	Smartphone &laptop	228	82.6
	Smartphone, laptop & desktop	12	4.3
	Smartphone, laptop, desktop & tablet	10	3.6
	Smartphone, laptop, & tablet	21	7.6

The total numbers of respondents who participated in this study were 276, comprising 46 males (16.7%) and 230 females (83.3%). The respondents who were year one students consisted of 71 (25.7%), year two students were 121 (43.8%), year three students were 31 (11.2%) and year four students were 53 (19.2%). Meanwhile, according to the current CGPA, most of the respondents (n= 198, 71.7%) achieved pointer 3.0-3.4999. In term of the ownership of technology, majority of the participants have their own smartphone and laptop which accounted for 228 (82.6%). Above Table 1 presents the detailed distribution of sociodemographic data among the respondents.

Table 2: Students' Usage of TBL

No.	Item	Never	Rarely	Frequently	Almost Always
1	I use technology devices in learning	0 (0.0%)	1 (0.4%)	56 (20.3%)	219 (79.3%)
2	Use comp for learning and completing class work	0 (0.0%)	2 (0.7%)	53 (19.2%)	221 (80.1 %)
3	Use PowerPoint	0 (0.0%)	5 (1.8%)	60 (21.7%)	211 (76.4%)
4	Use Video	0 (0.0%)	36 (13.0%)	138 (50%)	102 (37.0%)
5	Online exercise and online quiz	10 (3.6%)	106 (38.4%)	101 (36.6%)	59 (21.4%)
6	Educational game	4 (1.4%)	69 (25.0%)	125 (45.3%)	78 (28.3%)
7	Use email	8 (2.9%)	72 (26.1%)	100 (36.2%)	96 (34.8%
8	Use forum to ask and discuss	24 (8.7%)	140 (50.7%)	74 (26.8%)	38 (13.8%)
9	Search Internet for information	0 (0.0%)	6 (2.2%)	75 (27.2%)	195 (70.7%)
10	Use mannequin	2 (0.7%)	40 (14.5%)	124 (44.9%)	110 (39.9%)

Table 2 above summarizes the result of the students' usage of TBL. The data indicated their usage of TBL by using a four-point likert-type scale (3=Almost always, 2=Frequently, 1=Rarely and 0= Never). Of all the respondents, there were 221 (80.1%) almost always get access to a computer and among them, 219 (79.3%) almost always used it in learning. From the data obtained, there has been 195 (70.7%) of the respondents almost always used Internet for searching information for a lesson in class. Moreover, 211 (76.4%) respondents almost always used PowerPoint in their assignments and revision. Besides that, half of the respondents frequently used video in learning process (n= 138, 50%). Furthermore, there was about similar number of respondents who are frequently used online exercise for their revision and used email to communicate with other teachers and students which accounted for 101 (36.6%) and 100 (36.2%) respectively. In addition, there was 125 (45.3%) and 124 (44.9%) respondents who frequently used educational game (Kahoot) in class and used mannequin (physiko) in clinical learning respectively. On the other hand, about half of the respondents (n=140, 50.7%) "rarely" used forum or chat rooms to ask and discuss questions online while 24 (8.7%) of them never used this resource.

As depicted in Table 3, the participants used a four-point likert-type scale (i.e. 4=Strongly agree, 3=Agree, 2=Disagree and 1=Strongly disagree) to specify their attitude towards the use

of technology-based learning in education. 200 (72.5%) of the respondents strongly agreed that knowing how to use technology is a necessary skill for them and of those 276 respondents, 185 (67%) of them strongly agreed that they are really like using technology in learning. There were 162 (58.7%) of the respondents agreed that they are able to use technology. Moreover, they either strongly agreed or agreed that a task using technology would be very interesting (n=260, 94.2%).

In addition, the attitude of the respondents is very good when 175 (63.4%) of the respondents strongly agreed that they like to use TBL in their study. In addition, 254 (92%) of the respondents wish to continue using technology more frequently in learning with the response rate of either "agree" 104 (37.7%) or "strongly agree" 150 (54.3%). Besides that, 261 (94.6%) of the respondents believed that learning about technology is a worthwhile and a necessary skill for all students with the response rate of either "agree" was 115 (41.7%) or "strongly agree" was 146 (52.9%). In conjunction with that, there were 185 (67%) strongly agreed that it is important to know how to use technology in teaching and learning activities.

Table 3: Attitude of IIUM Nursing Students towards the Use of TBL

No.	Item	Strongly disagree	Disagree	Agree	Strongly agree
1	Learning technology is a necessary skill	0 (0.00%)	0 (0.00%)	76 (27.5%)	200 (27.5%)
2	I like using technology	0 (0.00%)	1 (0.4%)	90 (32.6%)	185 (67.0%)
3	Believe the ability to use technology	0 (0.00%)	8 (2.9%)	162 (58.7%)	106 (38.4%)
4	Nervous	18 (6.5%)	135(48.9%)	108 (39.1%)	15 (5.4%)
5	I use technology as student	0 (0.00%)	3 (1.1%)	125 (45.3%)	148 (53.6%)
6	Like to use technology in study	0 (0.00%)	2 (0.7%)	99 (35.9%)	175 (63.4%)
7	Wish to use technology frequently	1 (0.4%)	21 (7.6%)	104 (37.7%)	150 (54.3%)
8	Use technology makes feel stupid	103 (37.3%)	127(46.0%)	40 (14.5%)	6 (2.2%)
9	Interesting	4 (1.4%)	12 (4.3%)	150 (54.3%)	110 (39.9%)
10	Do not expect to use technology much in education	56 (20.3%)	151 (54.7%)	58 (21.0%)	11 (4.0%)
11	Not doing well with technology	48 (17.4%)	162 (58.7%)	61 (22.1%)	5 (1.8%)
12	Uncomfortable	59 (21.4%)	160 (58%)	49 (17.8%)	8 (2.9%)
13	Boring	90 (32.6%)	162 (58.7%)	20 (7.2%)	4 (1.4%)
14	Learning tech is worth	2 (0.7%)	13 (4.7%)	115 (41.7%)	146 (52.9%)
15	Important to know using technology in learning	1 (0.4%)	1 (0.4%)	89 (32.2%)	185 (67%)
16	I will do well if I work hard to learn technology	0 (0.0%)	12 (4.3%)	132 (47.8%)	132 (47.8%)
17	Will do well working with technology	0 (0.0%)	11 (4.0%)	168 (60.9%)	97 (35.1%)
18	Difficult use technology	68 (24.6%)	166 (60.1%)	38 (13.8%)	4 (1.4%)

19	Using technology makes me feel confused	74 (26.8%)	170 (61.6%)	28 (10.1%)	4 (1.4%)
20	Hard to stop using technology once started to use it	7 (2.5%)	59 (21.4%)	149 (54.0%)	61 (22.1%)

Moreover, 132 (47.8%) of them strongly agreed that they could do well when they learn using technology. Interestingly, most of the respondents disagreed that technology could make them feel stupid which account for 127 (46%) as well as could make them feel nervous when dealing with technology which account for 135 (48.9%). Furthermore, they disagreed that working with technology could make them uncomfortable (n=160, 58%) and boring (n=162, 58.7%). Most importantly, there were only a small number of respondents who strongly agreed to the items that using technology makes them feel confused and difficult to use which just account for 4 (1.4%) both. However, there were 149 (54.0%) of them agreed that once they start using technology, they will find it hard to stop.

As shown in the figure I, the participants used a four-point likert-type scale (i.e. 4=Strongly agree, 3=Agree, 2=Disagree and 1=Strongly disagree) to examine the effectiveness of TBL. Generally, it shows that most of the respondents are aware of the benefits and usefulness of TBL in learning process. The findings show that 157 (56.9%) of the respondents agreed while 108 (39.1%) strongly agreed that technology allows them to be more creative and imaginative. Moreover, there were 182 (65.9%) of them strongly agreed that the use of TBL helps them to find related knowledge and information for learning. Besides that, there were 127 (46.0%) of the respondents agreed that the use of technology could encourage them to communicate more with their classmates whereas 160 (58.0%) of the respondents agreed that technology could increase their confidence to participate actively in the learning process respectively.

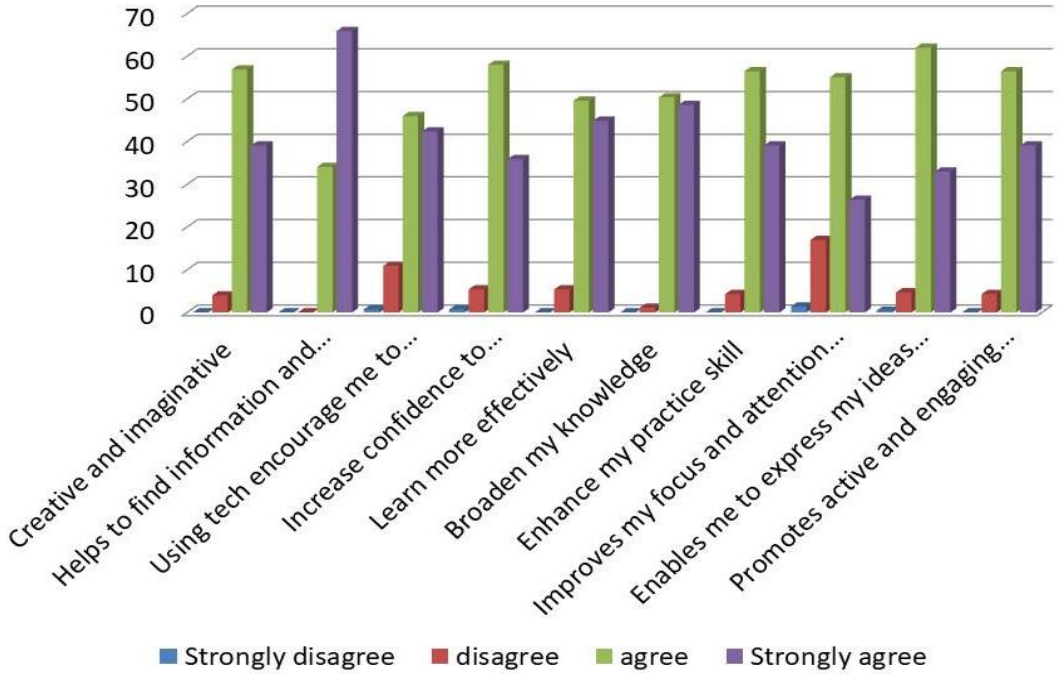

Figure I: Effectiveness of the Use of TBL

Other than that, there were 137 (49.6%) of participants who agreed that they can learn effectively with technology whereas 139 (50.4%) agreed that their knowledge would be broadened when using TBL. In addition, there were a similar number of participants who agreed to the items that the use of technology could help in enhancing the practical skills and technology could promote active and engaging lesson for the best learning experience which accounted for 156 (56.5%). In another item, there were 152 (55.1%) agreed that TBL could improve focus and attention during lecture time. Furthermore, more than half of the respondents (n=171, 62%) agreed that the use of TBL enables the students to express their ideas and thoughts better.

The result in Table 4 shows that majority of the respondents have positive attitude towards the TBL which accounted for 265 (96%), and only 11 (4%) respondents have negative attitude towards the TBL. As depicted in Table 6, most of the respondents agreed that the TBL implementation is effective as the percentage covered 87%, while just 13% of the respondents said that the TBL is ineffective.

Table 4: Students' Attitude towards TBL

Attitude	Frequency (n)	Percentage (%)
1-2 (Negative attitude)	11	4.0
3-4 (Positive attitude)	265	96.0

Table 5: Effectiveness of TBL

Effectiveness	Frequency (n)	Percentage (%)
1-2 (Not effective)	36	13.0
3-4 (Effective)	240	87.0

In addition, this relationship was measured using Fisher Exact test as the assumption for Chi-Square is not met. Based on the data, the p-value appears 0.007 ($p < 0.05$) which shows that the result is significant. Thus, the null hypothesis is rejected. There is relationship between the attitude toward the use of technology and the effectiveness in learning among IIUM nursing students ($p = 0.007$).

Discussions

Based on the findings, technology users were high in number and they frequently used Power Point to do the revision. It is in accordance with the study of (Wai and Seng, 2015) that there were 93 % of students in Malaysia used slides in Power Point to do the revision. In a survey regarding the experiences of pharmacy student with educational technology, it was also reported that 86.9% of students almost always used electronic class presentations (Stolte *et al*., 2011). This is because Power Points usually provides simple and understandable notes. Students opt to read notes through the Power Point as it eases them in understanding the subject briefly. Furthermore, this method gives them chance to study on their own path and it facilitates them to get access to the lecture notes.

Moreover, the study reported that majority of the respondents showed positive attitudes when dealing with technology in learning. This is consistent with a study among undergraduate Bachelor of Science in Nursing students that revealed that most of the participants showed a

positive attitude towards technology and there were 78.3% of students demonstrated that they are more well-prepared for the skills in clinical practice when they watch related-videos (Kelly *et al*., 2009). It is because by watching any related nursing skills through videos, students can manage to catch up the procedure step-by step correctly. It gives opportunity for them to get more preparation for the clinical examination. Nonetheless, a study among Psychology students found that there was 67% of the students get distracted when they use laptop while learning (Fried, 2007). The lecturers need to pay concerned in this situation by making the learning process more interesting so that the students did not get distracted in using the technology during teaching-learning process.

In addition, the use of technology could help create active participation and improve the skills of students as technology is flexible and it allows students to have access to it anytime and anywhere (Horiuchi, 2009). It suggests that the use of technology in learning could be an effective learning tool in the classroom. A study to assess the impact of e-learning among nursing students found that technology allows students to access resources, participate in activities and communicate and interact with teaching staff and fellow students remotely (Moore, 2012). Since students can develop the confidence to have better communication and able to express their thoughts and ideas, TBL helps students to be more creative and imaginative as their knowledge paradigm expand. Furthermore, the use technology gives the outcomes of knowledge increase, enhanced communication skills, increased confidence, improved satisfaction, decreased anxiety, and increased critical thinking and clinical reasoning (Hall, 2017). This created satisfaction to the students, and they are more likely to stay engaged with the technology because it helps the teaching and learning process more meaningful than without experiencing such opportunities.

Conclusion

Technology indeed provides them a very good channel and platform in facilitating them searching information and getting knowledge. Moreover, it provides interactive learning environment for the students and lecturers. The students play their best role in dealing with the technology during learning and the TBL itself is effective in helping the students in their education. Hence, the implementation of TBL in institutions in Malaysia should be effectively delivered to students to make sure they achieve the target of Ministry of Education (MOE) in conducting TBL in education system.

This study examined the impact of the use of TBL in education, their attitude and effectiveness of it among IIUM nursing students. It provided better clarification on the effects of the usage of TBL among the nursing students. From all the discussions mentioned above, it is hoped that the results of this study will be served as an input to educators, the university management and the administrators with the use of technology in delivering knowledge and improving teaching quality by applying better strategy, budgeting and producing a better integration of it into the educational system. Furthermore, the research findings can lead to a new learning paradigm in the higher institutions as educators continue to explore and expand the technology usage in education. The impact developed from this study may contribute to the adjustment and enhancement of TBL in nursing education so that the result of students' performance in academic will further be improved and it goes in line with the growing world technology.

References

Abuatiq, A., Fike, G., Davis, C., Boren, D. & Menke, R. (2017). E-learning in Nursing: Literature Review. *International Journal of Nursing Education*. 9 (2). 81-86. DOI Number: 10.5958/0974-9357.2017.00041.1.

Agbatogun, A. O. (2013). Interactive digital technologies' use in Southwest Nigerian universities. *Education Tech Research Dev*. 61. 333–357. DOI 10.1007/s11423-012-9282-1

Al-Hariri, Mohammed & Al-Hattami, Abdulghani. (2017). Impact of students' use of technology on their learning achievements in physiology courses at the University of Dammam. *Journal of Taibah University Medical Sciences*. 12. 82–85. DOI: 10.1016/j.jtumed.2016.07.004.

Anand, R. & Saxena, S. (2012). E-Learning and Its Impact on Rural Areas. *I.J.Modern Education and Computer Science*. Volume 5. 46-52. DOI: 10.5815/ijmecs.2012.05.07.

Clark, R. C. & Mayer, R. E. (2016). E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning. Retrieved from https://www.learnlab.org/research/wiki/images/d/d3/Ch1-4th_edition.pdf

Costley, K.C. (2014). The positive effect of technology on teaching and student learning, Arkansas Tech University, retrieved from https://files.eric.ed.gov/fulltext/ED554557.pdf

National Council of Educational Research and Training (NCERT). (2014). *Basics in Education*. New Delhi: Sri Aurobindo Marg.

Feng, J., Chang, Y., Chang, H., Erdley, W. S., Lin, C. & Chang, Y. (2013). Systematic Review of Effectiveness of Situated E-Learning on Medical and Nursing Education. *Worldviews on Evidence-Based Nursing*. 10(3). 174–183. doi: 10.1111/wvn.12005.

Fried, C. B. (2007). In-class laptop use and its effects on student learning. *Computers & Education.* doi: 10.1016/j.compedu.2006.09.006.

Gulbahar, Y.& Guven, I. (2008). A Survey on ICT usage and the perceptions of social studies teachers in Turkey. *Educational Technology & Society*, 11 (3). https://www.jstor.org/stable/jeductechsoci.11.3.37

Hall, K. (2017). Simulation-based learning in australian undergraduate mental health nursing curricula: A literature review. Clinical Simulation in Nursing, 13 (8), 380-389. http://dx.doi.org/10.1016/j.ecns.2017.04.002

Harandi, S. R. (2015). Effects of e-learning on students' motivation. *Procedia - Social and Behavioral Sciences 181*. 423 – 430. https://doi.org/10.1016/j.sbspro.2015.04.905

Horiuchi, S. Yaju, Y., Koyo, M., Sakyo, Y. & Nakayama, K. (2009). Evaluation of a web-based graduate continuing nursing education program in Japan: A randomized controlled trial. *Nurse Education Today*. 29(2):140-9. doi: 10.1016/j.nedt.2008.08.009.

Hsu, Y., Ning, H., Ho, J., Tsai, G., Hwang, G., Wang, C. & Chen, N. (2012). Research Trends in Technology- based Learning from 2000 to 2009: A content Analysis of Publications in Selected Journals. *Educational Technology & Society*. 15 (2). 354–370. https://eric.ed.gov/?id=EJ988474

Kelly, M., Lyng, C., McGrath, M., and Cannon, G. (2009). A multi-method study to determine the effectiveness of, and student attitudes to, online instructional videos for teaching clinical nursing skills. *Nurse Education Today.* 29(3).292-300. Retrieved from https://www.clinicalkey.com/service/content/pdf/watermarked/1-s2.0 S0260691708001779.pdf?locale=en_US

Koller, V., Harvey, S., & Magnotta, M. (2006). Technology-Based Learning Strategies. Social Policy Research Associates Inc. Retrieved from https://www.doleta.gov/reports/papers/tbl_paper_final.pdf

Manochehri, N. & Young, J. I. (2006). The Impact of Student Learning Styles with Web-Based Learning or Instructor-Based Learning on Student Knowledge and Satisfaction. Vol. 7(3). 313-316.

Mawhirter, D. A. & Garofalo, P. F. (2016). Expect the Unexpected: Simulation Games as a Teaching Strategy. *Clinical Simulation in Nursing*. 12(4). 132-136. http://dx.doi.org/10.1016/ j. ecns.2015.12.009

McFarlane, T. A., Hoffman, E. R., & Green, K. E. (1997). Teachers' Attitudes toward Technology: Psychometric Evaluation of the Technology Attitude Survey. Retrieved from ERIC database (ED411279).

Monaghan, M. S., Cain, J. J., Malone, P. M., Chapman, T. A., Walters, R. W., Thompson, D. C., & Riedl, S. T. (2011). Educational technology use among US colleges and schools of pharmacy. *American journal of pharmaceutical education*, *75*(5), 87. doi: 10.5688/ajpe75587

Ministry of Education (MOE). (2012). Education Development Blueprint 2013-2025. Kuala Lumpur: Ministry of Education. Retrieved from https://www.moe.gov.my/images/dasar-kpm/articlefile_file_003108.pdf

Moore, S. (2012). Improving Nurses' Skills Through E-Learning. *Cancer Nursing Practice*. 11(1). 14-19. Retrieved from https://search.proquest.com/docview/928761216?pq-origsite=gscholar

OECD. (2018), The future of education and skills education 20130, Organization for Economic Co-operation and Development (OECD) publication, http://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf

Paduraru, M. E. & Mihaila, A. R. (2017). Current Trends in the Use of ICT in Teaching. Case Study – Bucharest University of Economic Studies. pp. 136-144.

Reime, M. H., Harris, A., Aksnes, J. & Mikkelsen, J. (2008). The most successful method in teaching nursing students infection control – E-learning or lecture? *Nurse Education Today*. 28. Pp. 798–806.

Rosa, D. & Obillos, J. P. (2016). Experiences, perceptions and attitudes on ICT integration: A case study among novice and experienced language teachers in the Philippines John Paul Obillos Dela Rosa. *International Journal of Education and Development using Information and Communication Technology*. Vol. 12, Issue 3, pp. 37-57.

Stolte, S. K., Richard, C., Rahman, A., & Kidd, R. S. (2011). Student Pharmacists' Use and Perceived Impact of Educational Technologies. *American Journal of Pharmaceutical Education*. 75(5). 92. http://doi.org/10.5688/ajpe75592

Song, H. (2012). Evaluating the Impacts of ICT Use: A Multi-Level Analysis with Hierarchical Linear Modeling. *The Turkish Online Journal of Educational Technology*. Vol 11(4). pp 132-141.

Umar, Irfan & Sazali Abu Hassan, Amat. (2015). Malaysian Teachers' Levels of ICT Integration and Its Perceived Impact on Teaching and Learning. Procedia - Social and Behavioral Sciences. 197. 2015-2021. 10.1016/j.sbspro.2015.07.586.

Wai, C. C. & Seng, E. L. K. (2015). Measuring the effectiveness of blended learning environment: A case study in Malaysia. *Education & Information Technol*. 20. 429–443. DOI 10.1007/s10639-013-9293-5.