Message from the editor-in-chief

The Malaysian Online Journal of Educational Technology (MOJET) highlights the current issues in educational technology. MOJET is an international, professional refereed journal in the interdisciplinary fields sponsored by Faculty of Education, University of Malaya. This journal serves as a platform for presenting and discussing the emerging issues on educational technology for readers who share common interests in understanding the developments of the integration of technology in education. The journal is committed to providing access to quality researches ranging from original research, theoretical articles and concept papers in educational technology.

In order to produce high quality journal, extensive effort has been put in selecting valuable researches that contribute to the journal. I would like to take this opportunity to express my appreciation to editorial board, reviewers and researchers for their valuable contributions to make this journal a reality.

Professor Dr. Saedah Siraj
April 2016
Editor in chief

Message from the editor

The Malaysian Online Journal of Educational Technology (MOJET) is aimed at using technology in online teaching and learning through diffusing information from a community of researchers and scholars. The journal is published electronically four times a year.

The journal welcomes the original and qualified researches on all aspects of educational technology. Topics may include, but not limited to: use of multimedia to improve online learning; collaborative learning in online learning environment, innovative online teaching and learning; instructional design theory and application; use of technology in instruction; instructional design theory, evaluation of instructional design, and future development of instructional technology.

As editor of the journal, it is a great pleasure to see the success of this journal publication. On behalf of the editorial team of The Malaysian Online Journal of Educational Technology (MOJET), we would like to thank to all the authors and editors for their contribution to the development of the journal.

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April 2016
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Facebook Addiction Levels of Students in the Physical Education and Sport Department

Çetin YAMAN [1]

ABSTRACT

Time spent using various technological equipment increases every day with rapid technology development. Unfortunately, technology addiction is becoming an important issue. Especially with the development and ubiquity of mobile technologies, social media addiction is expanding. The aim of this study is to measure the Facebook addiction levels of 274 students at the Physical Education and Sports Teaching Department in a public university in Turkey and to examine their Facebook addiction levels against a number of variables. Descriptive method was used within the framework of the study and the "Facebook Addiction Survey" developed by Çam and İşbulan (2012) was used as the data collection instrument. The results of the study show the students had low levels of Facebook addiction. On the other hand, when the Facebook addiction level mean scores were compared, male students were seen to have higher scores than female students. Students in the 3rd grade had higher mean scores than those in the 1st and 2nd grades. Although Facebook addiction is not a problem among the students, proactive action is needed to enhance student awareness of the problem and ensure future teachers can be role models in an addiction-free academic environment.

Keywords: Facebook, addiction, social network, teacher candidates, sport education

INTRODUCTION

Addiction is defined by factors such as a person has attempted numerous times to withdraw the substance being used, increasing the amount of usage, facing withdrawal symptoms when ceasing the substance usage, continuing to use despite seeing the harmful effects and spending most of their time seeking the substance (Ögel, 2001). Individuals can be addicted to many substances such as cigarettes, alcohol or drugs. Other addictions independent of physical substances, such as food addiction based on behavior, game addiction, computer addiction, television addiction, shopping addiction and internet addiction also exist (Greenfield, 1999; Kim & Kim, 2002).

Nowadays, substance addiction is the first notion coming to mind while talking about addiction. However the notion of addiction includes different activities such as internet addiction (Young, 1998), gambling addiction (Griffiths, 1995), food addiction and video game addiction (Griffiths, 1993). With the technology developments in the 21st century, addictions such as internet addiction and social media addiction have taken their place within the list of important and frequently encountered addictions.

Internet addiction shares similar features with substance addiction. Here, internet usage reaches a pathological level as “technological addictions” (Young, 1996). Internet and technology addiction can be described as the situation where an individual cannot control the usage with their own willpower, cannot refrain from performing that act and feel withdrawal symptoms when unable to access the technological...
product causing the addiction. While technological addictions can occur in passive states such as watching TV, they can also be in active addiction form while performing other acts such as playing video games (Griffiths, 1995).

Another type of addiction discussed alongside internet addiction in recent years is social network addiction. Various definitions exist within the literature regarding social networks, such as: social interaction network (Çetin, 2009), informal learning environment (Stevenson & Liu, 2010), advertisement and public relations environment (Onat & Alikılıç, 2008), online human community (Buss and Strauss, 2009), marketing environment and the innovator phenomenon of the internet (Akar, 2010).

Social networks are websites where individuals can create their profiles in a registered system either publicly or semi-publicly, share links, see other people’s lists and see the relationship status of other people within the system while also allowing individuals in online groups to share their likes and activities and also share messages, e-mails, discussion groups, videos, audio chats and files (Boyd & Ellison, 2007). The most essential features of these environments include allowing the individuals to work with others and actively participate, give and receive feedback and customize their space in a comfortable environment, in a two-way communication process and interactive environment (Lee & McLoughlin, 2007). Thus a form of communication was born, where discussion and sharing are almost cost free and the individual is in the center.

One of the social networks allowing individuals to spend time in cyber space together with their loved ones, share information and have fun together is Facebook. This software, first developed by Mark Zuckerberg in 2004 at Harvard University for the university students, is now one of the most recognized and used social networks in the world (İşman & Albayrak, 2014; Yaman & Yaman, 2014).

The popular social networks such as Facebook, Twitter, Instagram, Google+, Snapchat and Whatsapp are followed and used actively by millions of people (Hergüner, 2011). Social network addiction has started to be observed with the increasing rate of use. While these social networking sites increased in usage, they brought positive results such as communication, interaction, sharing, collaboration and socializing for users, yet they can also cause problems such as anxiety of socializing (Şahin, İşleyen & Özdemir, 2012), decrease in face-to-face communication (Das & Sahoo, 2011; İşbulan, 2011), solitude (Sheldon, 2008, 2012), and addiction (Pelling & White, 2009; Wang, 2009; Wilson, Formasier, & White, 2010).

Social network addiction needs to be included in the internet addiction or technology addiction categories due to the messaging, online gaming and other interaction activities by the individuals and problematic internet usage by staying connected to the internet in carrying out these activities (Das & Sahoo, 2011; Karaíkos, Tzavellas, Balta, & Paparrigopoulos, 2010). Therefore, the internet usage ratings are expected to rise in proportion to the increase of social networking addiction among individuals.

The purpose of this study is to determine the Facebook addictions and the addiction levels of the students studying in the Sakarya University, Faculty of Sports Sciences, Physical Education and Sports Teaching Department, concerning the gender and class variables.

METHOD

Information regarding the findings related to the study, participants, data collection tool and the processes is given in this section.

Participants

Some 274 students of the Physical Education and Sports Teaching Department in the University of Sakarya participated in this study, which aimed at measuring the Facebook addiction levels of the students. Participant selection in the study was carried out through convenience sampling. By gender, 146 (53%) of the students are female while 128 (47%) are male. As for grade distribution, 65 (24%) of the students are in the 1st grade, while 69 (25%) are in the 2nd grade, 74 (27%) in the 3rd grade and 66 (24%) in the 4th grade.
Data Collection Tool

The “Facebook Addiction Scale” developed by Çam and İşbulan (2012) was used as the data collection instrument in this study in which the descriptive method is used. The Facebook Addiction Scale consists of a single factorial model. The load value of the 19 items on the factor vary between 0.57-0.73. The factor in the scale accounts for 43.86% of the total variance. As a result of the exploratory factor analysis, the scale was found to be consisting of 19 items and a single factor.

In the confirmatory factor analysis carried out afterwards, the weight of the factor varied between .55 and .77 for Facebook addiction. In the confirmatory factor analysis, the findings were as follows, chi square = 767.26, sd = 143.02 (p < 0.01), RMSEA = 0.054, NFI = 0.98, CFI = .99, SRMR = 0.035, and IFI = .99 AGFI = 0.93. The 19- item internal coefficient of consistence of the Facebook Addiction scale was found as Cronbach α .93. This value is seen as an acceptable value for the reliability level of the Facebook Addiction Scale.

Data Collection Process

The data of this study which aims to determine the Facebook addiction levels of the Physical Education and Sports Teaching Department students and examine the data in terms of various variables. The data was collected from 274 students who continue their studies in a public university, Sports Sciences Faculty, Physical Education and Sports Teaching Department in the fall semester of the 2015-2016 academic year, and through the application of the Facebook Addiction Scale. The data collection process lasted for approximately 2 weeks and special attention was paid to data collection from the volunteering students.

FINDINGS

In this section, the findings regarding the research are presented in terms of Facebook addiction levels, differences in the Facebook addiction levels in accordance with the gender and grade variables.

Table 1. The Facebook Addiction Levels of the Students

<table>
<thead>
<tr>
<th>Facebook Addiction Levels</th>
<th>X</th>
<th>Min</th>
<th>Max</th>
<th>sd</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook Addiction Levels</td>
<td>40.53</td>
<td>19</td>
<td>114</td>
<td>19.97</td>
<td>35</td>
</tr>
</tbody>
</table>

According to the analysis, the Facebook addiction levels of the students who participated in the study are around 35%. This represents the fact that the Facebook addiction of the group is at a low level.

Table 2. The Items Rated Highest and Lowest by the Students

<table>
<thead>
<tr>
<th>Items</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you choose to spend time on Facebook instead of going out with your friends?</td>
<td>1.83</td>
</tr>
<tr>
<td>How often do you feel yourself depressive, down or tense when you are not browsing Facebook?</td>
<td>1.86</td>
</tr>
<tr>
<td>How often do you find yourself trying to hide how much time you spend browsing Facebook?</td>
<td>1.85</td>
</tr>
<tr>
<td>How often do you check Facebook while having something else to do?</td>
<td>2.46</td>
</tr>
<tr>
<td>How often do you establish new connections with Facebook users?</td>
<td>2.49</td>
</tr>
<tr>
<td>How often do you choose to browse Facebook in order to get away from the negative thoughts in your life?</td>
<td>2.57</td>
</tr>
</tbody>
</table>
Analysis of the results suggests that students do not prefer to spend time on Facebook rather than going out with their friends; they were not feeling depressive, down or tense and not trying to hide their behavior while browsing Facebook. In addition, another conclusion was that the students sometimes checked Facebook while doing other things, established new connections with Facebook users and used Facebook in order to escape a negative occurrence in their life. The innovations and developing technologies bring a new and different dimension into the lives of the individuals while offering them different options (Karaman & Kurtoğlu, 2009). As can be seen, the results of the study reveal that even though they are not addicted to Facebook, the students choose from these options even if only occasionally.

Table 3. The Facebook Addiction Levels of the Students by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>(\bar{X})</th>
<th>sd</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>146</td>
<td>37.31</td>
<td>17.34</td>
<td>2.88</td>
<td>.005</td>
</tr>
<tr>
<td>Male</td>
<td>128</td>
<td>44.24</td>
<td>22.11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of the mean scores of the male students showed that their scores were significantly higher when compared to the scores of the female students. However, because the scores are still at low levels, the consideration is that the male students should not be qualified as Facebook addicts.

Table 4. The Facebook Addiction Levels of the Students by Grade

<table>
<thead>
<tr>
<th>Grade</th>
<th>N</th>
<th>(\bar{X})</th>
<th>sd</th>
<th>Source of Variance</th>
<th>df</th>
<th>Squares Mean</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter-group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facebook Addiction</td>
<td>1. Grade</td>
<td>65</td>
<td>38.0</td>
<td>17.9</td>
<td>3</td>
<td>1269.2</td>
<td>3.26</td>
<td>.022</td>
</tr>
<tr>
<td></td>
<td>2. Grade</td>
<td>69</td>
<td>36.9</td>
<td>19.8</td>
<td>Group Internals</td>
<td>267</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Grade</td>
<td>71</td>
<td>46.4</td>
<td>21.0</td>
<td>Total</td>
<td>270</td>
<td>389.25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Grade</td>
<td>66</td>
<td>40.4</td>
<td>19.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant differences with regards to the grade variable were found in the Facebook addiction levels of the students as a result of the analysis. LSD test was applied in order to identify between which groups the significant differences took place.

Table 5. Results of the LSD Test

<table>
<thead>
<tr>
<th>Grades</th>
<th>Mean Diff.</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook Addiction</td>
<td>3. Grade</td>
<td>1. Grade</td>
</tr>
<tr>
<td></td>
<td>3. Grade</td>
<td>2. Grade</td>
</tr>
</tbody>
</table>

According to the LSD Test results, the Facebook addiction levels of the students in the 3rd grade are higher than the levels of the students in the 1st and 2nd grades.

RESULTS AND SUGGESTIONS

The findings of the study indicate that the Facebook addiction levels of the students in the Physical Education and Sports Teaching Department at Sakarya University are not at a serious level. Although the addiction levels are low, significant differences were observed with regard to gender and grade variables among the participants. The male students achieved higher scores in the Facebook addiction scale when compared to the female students and the students in the 3rd grade obtained significantly higher scores in
the Facebook addiction scale in comparison to those in the 1st and 2nd grades.

The fact that the addiction levels of the group represent low levels can be described as a decent state. Facebook addiction has possible negative effects on the lives of individuals, as shown in many studies. This is because Facebook addicts may show behaviors such as feeling as if they are left behind when not using Facebook (Denti et al., 2012), hacking the Facebook accounts of their partners and keeping them under control (Abhijit, 2011).

Xu & Tan (2012) show that Facebook addiction may be causing loneliness and stress. In addition Facebook addiction has been identified as a cause of decreased sleep quality (Wolniczak et al., 2013). However, despite other studies, in this study the Physical Education and Sports Teaching students come into view as not being addicted to Facebook or having addictions at mild levels. Therefore, the students participating in this study are thought not to be carrying the symptoms of Facebook addiction.

To help prevent addiction, teachers need to be role models for the students in our schools. When the fact that these pre-service teachers will be the teachers in the near future is taken into consideration, this finding of the study can be considered to be reassuring. The pre-service teachers of the Physical Education department are considered to be promising role models. Namely, since a teacher who is addicted will not be able to recommend their students not to be addicted, they will also not be able to be a good role model.

Extension of computer and internet usage nowadays also increases the amount of time spent using the internet. Especially with the ability to access the internet service anytime anywhere through mobile technologies, addiction to Facebook is rising on a daily basis. Therefore, to prevent problematic internet use or increase in Facebook addiction levels, time spent on the internet and social media must be limited to certain levels. Moreover, it is important for educators to take further steps by holding events such as in-service training, seminars and briefings organized by the counsellors and teachers of IT, aimed at raising the awareness levels of the students, parents and other teachers regarding the dangers of social media addiction.

REFERENCES


Part-Time Undergraduate Nursing Students’ Perception and Attitude to ICT Supports for Distance Education in Nursing in Nigeria

Omolola Irinoye[1], Sunday Ayamolowo[2], Olawale Kazeem Tijani[3]

ABSTRACT

The increase in demand for university education remains unmet especially in developing countries; this has made adoption of distance education imperative in our educational system. Information and Communications Technology (ICT) has been identified as a tool for improving education quality especially in developing countries. The study examined attitudes and perceptions of nursing students toward using Information and Communications Technology supports in distance education. A researchers-designed and validated questionnaire with alpha coefficient of .82 was administered to 396 students of the Department of Nursing Science, Obafemi Awolowo University, Ile-Ife, Nigeria out of which 305 (70%) were returned. Findings of the study revealed that the majority of the nurses (83.3%) had never attended any online computer based training program, a majority (63.9%) had no formal computer training and do not possess personal computers, while 74.4% reported positive perception and attitudes toward using ICT supports in distance education. Lack of constant internet access was rated by the respondents (29.8%) as a major challenge to e-learning support. Gender and years of working experience had no significant influence on respondents’ attitudes and perceptions toward ICT supports.

Keywords: Distance Education, Information and Communications Technology supports, Open Distance Learning, Computer skills in nursing.

INTRODUCTION

According to Ilusiyan and Oyebade (2008), enrolment rates in African tertiary institutions trail those of other continents. More than 200 million adults in Africa are illiterate (33% of the adult population), with gross enrolment in sub-Saharan Africa being 73.1 per cent for primary school level, 23.1 per cent for secondary school, and only 3.3 per cent of 18 to 25-year-olds enrolling at tertiary level (Agyeman & Dadzie, 2010). Ilusiyan and Oyebade (2008) argued that while the United Nations expected African nations to increase their enrolment rates and university output, Nigeria is facing a paradox where increased demand for university education remains unmet, hence the challenge to adopt other modes of education to guarantee better access to university education.

Worldwide, distance learning is a growing phenomenon in higher education in the 21st century. According to Agyeman and Dadzie (2010), different countries have their peculiar reasons for adopting distance education. Among these are the need to provide opportunity for learners sidelined by the conventional education system who thus would benefit from the Open University (OU) system, and providing opportunity for learners to benefit from external studies developed outside the geographical and demographical peculiarities of such countries (Agyeman & Dadzie, 2010; Ogidan, 2010). In Nigeria, for example, distance education has been adopted to circumvent the vacuum created by inadequate formal
education systems. According to Olusola and Alaba (2011), Distance Education is a sure recipe to resolve the challenge of providing equitable access to quality education to the majority of qualified and interested persons (adults and youths) in Nigeria.

Using information and communications technology (ICT) in distance education has been described as a way to meet the goal of ‘Education for All’ (EFA) by 2015. Olusola and Alaba (2011) posit that one effective way to achieve the Millennium Development Goals (MDGs) related to education by the year 2015 is through the open and distance learning using technologically enhanced instruction. Nursing education, especially with the emerging trends in ICT has the potential to grow substantially over the next decades if nursing schools and training institutions can seek students from all walks of life through ICT driven distance learning programs.

The impact of ICT on every aspect of society seems inevitable and irreversible and nursing education cannot afford to remain static. According to Curtis et al. (2002), ICT is all pervasive such that almost our entire lives including economy, entertainment and quality of life depend on it. ICT has been identified as a vehicle for improving educational system quality and efficiency in developed and developing countries (Nwosu & Ogbomo, 2011). ICT has transformed medical education and practice in the last couple of decades (Houshyari, Bahadorani, Tootoonchi, Gardiner, Peña & Adibi, 2012). Medical schools around the world, especially in industrialized countries, have invested heavily in new computer technologies or are in the process of adapting to this technological revolution (Agyeman & Dadzie, 2010). This is not surprising given that ICT is often perceived as a catalyst for change in teaching styles, learning approaches and access to information (Khan, et al., 2011; Mikre, 2011).

Use of ICT has changed our conventional ways of learning and forced the need to rethink education (White, 2010). ICT can be used to find, develop, analyze and present information as well as to model situations and solve problems. It enables rapid access to ideas and experiences from a wide range of people, communities and cultures, and allows students to collaborate and exchange information on a wider scale. Idoju et al. (2003) defined ICT as one of the driving forces of globalization. To catch up with the rest of the world, the nursing profession in developing countries must research their options, design the necessary processes, and implement essential changes in adapting to the new broad spectrum of communication technologies. The purpose of this research therefore, was to examine nurses’ perception and attitude toward using ICT in Distance Education.

Research questions

The following questions were answered in this study:

1. What are the self-reported experiences of nurses concerning their personal and professional use of computers?
2. What is the perception of student nurses concerning the use of ICT supports in Distance Education?
3. What is the student nurses’ attitude toward using ICT supports in Distance Education?
4. What challenges do student nurses face in using ICT supports in Distance Education?

Research hypotheses

The following hypotheses were tested in the study:

H₀₁: There is no significant difference in the perception of male and female student nurses concerning the use of ICT supports in Distance Education.

H₀₂: There is no significant difference in the perception of student nurses concerning the use of ICT supports in Distance Education based on years of working experience.

H₀₃: There is no significant difference in the attitude of male and female student nurses concerning the use of ICT supports in Distance Education.
H04: There is no significant difference in the attitude of male and female student nurses concerning the use of ICT supports in Distance Education based on years of working experience.

METHODOLOGY

This is a descriptive research of the survey type; this design was adopted based on the purpose of the study which aimed at investigating nursing students’ perception and attitude toward ICT supports. The research design allows for data collection across a larger sample which in turn aids generalization of research findings. A questionnaire constructed by the researchers after rigorous and extensive literature search was used to gather data in the study. The instrument titled Nursing Students’ Attitude and Perception Questionnaire (NSAPQ) was divided into three sections. Section A covers questions on respondents’ demographics; section B drew upon students’ knowledge of ICT, while section C elicited students’ perception and attitude toward ICT support in distance education. To validate the instrument, it was pre-tested on 40 selected students sharing similar characteristics with the target population but who were not involved in the actual study. The results were analyzed and a Cronbach’s alpha reliability coefficient of .82 was achieved.

Because of the population size, all BNSc part-time nursing students from Part 1 to 4 (396 in total) enrolled at the Department of Nursing Science, Obafemi Awolowo University, Ile-Ife, Nigeria were involved in the study. At the time of this study, the BNSc part-time nursing program was just in its fifth year and preparations were already advanced in making the program purely online based. Out of 396 BNSc part-time nursing students, only 305 actually participated in the study, representing a 70% response rate. All subjects were undertaking a five-year BNSc program in Nursing and are qualified nurses registered with the Nursing and Midwifery Council of Nigeria.

The respondents were visited at different times in their lecture halls during the semester; after being given proper briefing about the purpose of the research and informed of their rights not to participate, the respondents were then assured of the confidentiality of their responses. Then the researchers and two assistants administered the instrument and retrieved the responses immediately after completion. All subjects’ responses were precoded to facilitate data entry into an Excel spreadsheet and then uploaded onto SPSS version 19.0 after error correction. Specifically, research questions one to four were answered with frequency counts and percentages while hypotheses one and three were tested with independent t-test. Similarly, hypotheses two and four were tested with Analysis of Variance (ANOVA).

RESULTS

Table 1 presents the demographic characteristics of the sample.

As seen in Table 1, the respondents numbered 305 (74%) with the majority being female (85.2%). Some 206 (67.5%) of the respondents were 21-30 years old while 21(6.9%) were between 41-50 years. The majority of the respondents were in the nursing officer professional cadre (80.7%) while 4.9% belonged to the chief nursing officer’s cadre. Also, 70.8% of the respondents reported that they have between 0-5 years’ experience while 13.1% have worked for more than 11 years.
Table 1. Socio-demographic characteristics of the Nurses

<table>
<thead>
<tr>
<th>Variables</th>
<th>N(%)</th>
<th>X(SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age categories (yrs.)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-30</td>
<td>206</td>
<td>(67.5)</td>
<td></td>
</tr>
<tr>
<td>31-40</td>
<td>78</td>
<td>(25.6)</td>
<td></td>
</tr>
<tr>
<td>41-50</td>
<td>21</td>
<td>(6.9)</td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>45</td>
<td>(14.8)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>260</td>
<td>(85.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Professional Designation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing Officer</td>
<td>246</td>
<td>(80.7)</td>
<td></td>
</tr>
<tr>
<td>Senior Nursing Officer</td>
<td>44</td>
<td>(14.4)</td>
<td></td>
</tr>
<tr>
<td>Chief Nursing Officer</td>
<td>15</td>
<td>(4.9)</td>
<td></td>
</tr>
<tr>
<td><strong>Years of Work Experience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>216</td>
<td>(70.8)</td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td>49</td>
<td>(16.1)</td>
<td></td>
</tr>
<tr>
<td>&gt;11</td>
<td>40</td>
<td>(13.1)</td>
<td></td>
</tr>
</tbody>
</table>

Research question 1: What are the self-reported experiences of student nurses concerning their personal and professional use of computers?

In this section, respondents were asked to rate their level of computer skill based on a five-point Likert scale (Poor, Fair, Good, Very good, Excellent). Table 2 shows the responses for experience in using ICT supports among the respondents.

Table 2. Distribution of respondents by experience with the use of Information and Communication Technology supports

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How skillful are you in the use of computer?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>24</td>
<td>7.9</td>
</tr>
<tr>
<td>Fair</td>
<td>143</td>
<td>46.9</td>
</tr>
<tr>
<td>Good</td>
<td>103</td>
<td>33.8</td>
</tr>
<tr>
<td>Very good</td>
<td>31</td>
<td>10.2</td>
</tr>
<tr>
<td>Excellent</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>How often do you surf the internet?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Everyday</td>
<td>11</td>
<td>3.6</td>
</tr>
<tr>
<td>Twice a week</td>
<td>15</td>
<td>4.9</td>
</tr>
<tr>
<td>Weekly</td>
<td>37</td>
<td>12.1</td>
</tr>
<tr>
<td>Sometimes</td>
<td>213</td>
<td>69.8</td>
</tr>
<tr>
<td>Not at all</td>
<td>29</td>
<td>9.5</td>
</tr>
<tr>
<td><strong>Do you have a personal computer or laptop?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>87</td>
<td>28.5</td>
</tr>
<tr>
<td>No</td>
<td>218</td>
<td>71.5</td>
</tr>
<tr>
<td><strong>Have you had any formal computer training with certificate?</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Variables | Frequency | %
---|---|---
Yes | 110 | 36.1
No | 195 | 63.9

**Have you ever been engaged in any online computer based training programme?**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>36</td>
<td>11.8</td>
</tr>
<tr>
<td>No</td>
<td>254</td>
<td>83.3</td>
</tr>
</tbody>
</table>

**Which of these applications software can you use very well?**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft word</td>
<td>168</td>
<td>55.1</td>
</tr>
<tr>
<td>Microsoft Excel</td>
<td>9</td>
<td>3.0</td>
</tr>
<tr>
<td>Microsoft power point</td>
<td>7</td>
<td>2.3</td>
</tr>
<tr>
<td>None</td>
<td>64</td>
<td>21.0</td>
</tr>
<tr>
<td>Others</td>
<td>15</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Result indicated that few respondents reported having Excellent skill in using ICT (1.3%), 143 (46.9%, n = 305) reported fair skill, 103 (33.8%) reported good skill and 24 (7.9%) reported poor skill with computers. In response to the question on frequency of internet surfing, only 11 (3.6%) of the sample surf the internet daily, the majority (69.8%) surf the internet sometimes, while 29 respondents (9.5%) reported they do not surf the internet at all.

On personal computer or laptop ownership, most reported that they do not possess personal computers or laptops (71.5%), while only 28.5% reported having personal computers or laptops. Some 195 (63.9%) of them had no formal computer training while 110 (36.1%) had some formal computer training. An overwhelming majority (83.3%) of the nurses had never been engaged in any on-line computer based training program while a few respondents (11.8%) reported previous involvement in such training programs.

The respondents were also asked to indicate computer application software that they can use very well. Results revealed that more than half of the nurses can use Microsoft Word (55.1%), only 7 (2.3%) can use Microsoft PowerPoint presentation software and 64 (21.0%) cannot use any computer application software very well.

**Research question 2:** What is the perception of student nurses concerning the use of ICT supports in Distance Education?

A five-point Likert scale ranging from strongly disagree to strongly agree was used to assess how nurses perceived the use of ICT supports in Distance Education. Respondents were asked to indicate their degree of agreement with the statements. Respondents were then grouped into three categories (Strongly Agree/Agree, Undecided, and Disagree/Strongly Disagree). Table 3 displays the results for perception of student nurses concerning the use of ICT supports in Distance Education.
Table 3. Distribution of respondents’ perception of the use of ICT supports in distance education

<table>
<thead>
<tr>
<th>Variables</th>
<th>Strongly Agree/Agree f (%)</th>
<th>Undecided f (%)</th>
<th>Disagree/Strongly Disagree f (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All students must be ICT compliant</td>
<td>292 (95.7)</td>
<td>13 (4.3)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Laptop support scheme with affordable payment plan should be provided for students</td>
<td>279 (91.5)</td>
<td>24 (7.9)</td>
<td>2 (0.7)</td>
</tr>
<tr>
<td>Application of e-learning in Part-Time Nursing program will improve students performances and professional competence</td>
<td>254 (83.3)</td>
<td>26 (8.5)</td>
<td>25 (8.2)</td>
</tr>
<tr>
<td>Online e-learning program will save students travel time and expenses</td>
<td>269 (89.1)</td>
<td>22 (7.2)</td>
<td>11 (3.6)</td>
</tr>
<tr>
<td>e-learning study centre should be established in students’ neighboring states with provision of student support services</td>
<td>262 (85.9)</td>
<td>26 (8.5)</td>
<td>17 (5.6)</td>
</tr>
</tbody>
</table>

Results revealed that 95.7% of respondents reported that they strongly agree/agree that all students embarking on distance education must be ICT compliant while the remaining 13 (4.3%) were undecided. The majority of respondents, 279 (91.5%) Strongly Agree/Agree that Laptop support scheme with affordable payment plan should be provided for students, while only 2 (0.7%) Disagree/strongly disagree with this statement.

For the item Application of e-learning in Part-Time Nursing program will improve students’ performances and professional competence, majority of respondents, 254 (83.3%) strongly agree/agree with this statement. Only 25 (8.2%) respondents disagree/strongly disagree. Some 269 (89.1%) respondents strongly agree/agree that online e-learning program will save students travel time and expenses, 11 (3.6%) disagree/strongly disagree with this assertion.

Most respondents strongly agree/agree (262 or 85.9%) that E-learning study centre should be established in students’ neighbouring states with provision of student support services, while 17 (5.6%) disagree/strongly disagree with this statement.

Research question 3: What is the student nurses’ attitude toward the use of ICT supports in Distance Education?

Table 4 gives the distribution for the variable student nurses’ attitude to using ICT supports in distance education.
Table 4. Statistical distribution of respondents’ attitudes to the use of ICT supports in Distance Education

<table>
<thead>
<tr>
<th>Variables</th>
<th>Strongly Agree/ Agree (%)</th>
<th>Undecided (%)</th>
<th>Disagree/ Strongly Disagree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online e-learning will not help students in the Part-Time Nursing program</td>
<td>62 (20.3)</td>
<td>81 (26.5)</td>
<td>162 (53.1)</td>
</tr>
<tr>
<td>Face to face lectures enhance students understanding than virtual online classroom</td>
<td>245 (80.3)</td>
<td>25 (8.2)</td>
<td>35 (11.5)</td>
</tr>
<tr>
<td>Application of e-learning in Part-Time Nursing program will be an extra burden of stress and expenses for students</td>
<td>86 (28.2)</td>
<td>81 (26.5)</td>
<td>138 (45.3)</td>
</tr>
<tr>
<td>Application of online computer based training will help fill the gap of personnel shortage in Nursing Education</td>
<td>195 (63.9)</td>
<td>72 (23.6)</td>
<td>38 (12.5)</td>
</tr>
<tr>
<td>e-Learning supports will improve the quality of content and delivery of Nursing Education</td>
<td>227 (74.4)</td>
<td>41 (13.4)</td>
<td>37 (12.1)</td>
</tr>
<tr>
<td>Application of online computer based training will produce computer-dependent dummy nurses</td>
<td>106 (34.8)</td>
<td>60 (19.7)</td>
<td>139 (45.6)</td>
</tr>
</tbody>
</table>

A five-point Likert scale ranging from strongly disagree to strongly agree was used to assess the perception of the use of ICT supports in Distance Education. This scale contained both positive and negative statements which were presented in mixed order. Respondents were asked to indicate their degree of agreement with the statements. They were then grouped into three categories (Strongly Agree/ Agree, Undecided, and Disagree/ Strongly Disagree).

Results revealed that 162 (53.1%) of respondents reported that they strongly disagreed/disagreed that Online e-learning will not help students in the Part-Time Nursing program, 62 (20.3%) were undecided while the remaining 62 (20.3%) agreed/strongly agreed with the statement. The majority of respondents, 245 (80.3) however agreed/strongly agreed that face to face lectures enhance student understanding than virtual online classroom and only 35 (11.5%) Strongly disagreed/disagreed with this statement.

Application of e-learning in Part-Time Nursing program will be an extra burden of stress and expenses for students. Close to half of respondents, 138 (45.3%) Strongly disagreed/agreed with this statement. Only 86 (28.2%) respondents agreed/strongly agreed with this. A total of 195 (63.9%) respondents strongly agreed/agreed that application of online computer based training will help fill the gap of personnel shortage in Nursing Education, while only 38 (12.5%) respondents disagreed/strongly disagreed with this assertion.

For E-learning supports will improve the quality of content and delivery of Nursing Education, most respondents or 227 (74.4%) Strongly agreed/agreed while 37 (12.1%) disagreed/strongly disagreed with this statement. When asked to comment on the statement application of online computer based training will produce computer-dependent dummy nurses, the result revealed that 139 (45.6%) respondents strongly disagreed/disagreed. However, a sizeable number of respondents or 106 (34.8%) agreed/strongly agreed while the remaining 60 (19.7%) were undecided.

Research question 4: What challenges do student nurses face in the course of using ICT supports in Distance Education?
Figure 1 represents the responses for the challenges faced by nurses in the course of using ICT supports in distance education.

![Graph showing personal challenges of e-learning supports in Distance Education]

**Figure 1: Challenges to application of ICT supports in nursing distance education program.**

The personal challenges of the respondents in applying ICT supports in Nursing Distance Education were explored. The results as shown in Figure 1 revealed that 91 (29.8%) of respondents identified lack of constant internet access as a personal challenge, 80 (28.2%) cited lack of a personal computer as their main challenge. This was closely followed by those who reported poor computer knowledge (23.6%) as their main challenge. Furthermore, 37 (12.1%) reported lack of constant power supply and the remaining 25 (8.2%) claimed they did not have any personal challenge in the application of ICT supports in Nursing Distance Education.

**Hypotheses Testing**

**H₀**: There is no significant difference between the perception of male and female student nurses concerning the use of ICT supports in Distance Education.

**Table 5. Student Nurses’ Perception of ICT Supports in Distance Education Based on Gender**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>X</th>
<th>SD</th>
<th>df</th>
<th>t</th>
<th>Sig.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>45</td>
<td>13.64444</td>
<td>1.568954</td>
<td></td>
<td>-0.8474</td>
<td>0.8013</td>
<td>accepted</td>
</tr>
<tr>
<td>Female</td>
<td>260</td>
<td>13.35</td>
<td>2.236187</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5 revealed that there was no significant difference, between the perception of male and female student nurses concerning the use of ICT supports in Distance Education. This was reflected in the result: \( t (303) = -0.8474, p >.05 \). Thus, the null hypothesis was accepted. This implies that there was no significant difference between the perception of male and female student nurses about the use of ICT supports in Distance education at the .05 alpha level. The perception of the male student nurses was not different significantly from that of their female counterparts.
**H₀**: There is no significant difference in the perception of student nurses concerning the use of ICT supports in Distance Education based on years of working experience.

**Table 6. Student Nurses’ Perception of ICT Supports in Distance Education Based on Years of Working Experience**

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>.808862</td>
<td>2</td>
<td>.404</td>
<td>0.09</td>
<td>0.9168</td>
<td>accepted</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1405.97802</td>
<td>302</td>
<td>4.655</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1406.78689</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 showed that $F(2, 302) = 0.09, p > 0.05$, for student nurses’ perception concerning the use of ICT supports in Distance Education based on years of working experience. This was found not to be significant, meaning that there was no significant difference in the way student nurses perceived the use of ICT supports in distance education regardless of their years of working experience. Since it was established that there was no significant difference in the student nurses’ perception of ICT supports in distance education, therefore the hypothesis was accepted.

**H₀**: There is no significant difference between the attitude of male and female student nurses concerning the use of ICT supports in Distance Education.

**Table 7. Student Nurses’ Attitude to ICT supports in Distance Education Based on Gender**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>X</th>
<th>SD</th>
<th>df</th>
<th>t</th>
<th>Sig.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>45</td>
<td>10.667</td>
<td>4.351</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>303</td>
<td>-2.476</td>
<td>0.993</td>
<td></td>
<td></td>
<td></td>
<td>accepted</td>
</tr>
<tr>
<td>Female</td>
<td>260</td>
<td>9.088</td>
<td>4.464</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From Table 7, it could be deduced that there was no significant difference, between the male and female student nurses’ attitude to ICT supports in Distance Education. This was reflected in the result: $t (303) = -2.4758, p > .05$. Thus, the hypothesis was accepted. This implies that there was no significant difference between male and female student nurses’ attitude to ICT supports in Distance Education at the 0.05 alpha level. The attitude of male student nurses does not differ significantly from that of their female counterparts.

**H₀**: There is no significant difference in the attitude of student nurses concerning the use of ICT supports in Distance Education based on years of working experience.

**Table 8. Student Nurses’ Attitude to ICT supports in Distance Education Based on Years of Working Experiences**

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>18.9628998</td>
<td>2</td>
<td>9.48144988</td>
<td>0.47</td>
<td>0.6258</td>
<td>accepted</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6098.4994</td>
<td>302</td>
<td>20.1937066</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6117.4623</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8 revealed $F(2, 302) = 0.47, p > 0.05$, for student nurses’ attitude to ICT supports in Distance Education based on years of experience. This was found not to be significant, meaning that there was no
significant difference in the student nurses’ attitude to ICT supports in Distance Education regardless of their year of experience. Since it was established that there was no significant difference in the student nurses’ attitude to ICT supports in Distance Education based on years of experience, it implies that student nurses attitude does not differ, therefore the hypothesis was accepted.

CONCLUSION

Discussion of findings

This article has reported on the perception and attitude of part-time Bachelor of Nursing Science Degree Programme students to the use of ICT supports in Distance Education.

Demographics

Nurses in this study were predominantly females (85.2%) and they fall within the age range of 21-30 years (70.8%). These categories of respondents are in the nursing officer cadre and possessed between 0-5 years working experience. This is not surprising considering that younger nurses will probably possess the requisite qualifications for a university degree in nursing education and at same time have the impetus and time for a distance education program.

Research question 1: What are the self-reported experiences of student nurses concerning their personal and professional use of computers?

Findings of this study revealed that an overwhelming majority (63.9%) of the nurses had never been engaged in any online computer based training program, the majority of respondents (83.3%) had no formal computer training, while a sizeable number (71.5%) do not possess a personal computer nor laptop. These may probably explain the poor skill with computers and computer application software reported by the respondents. This finding agrees with Ozoemelem (2010) who revealed that low level of skilfulness in the use of ICT is prevalent among Nigerian university students.

The poor ICT experience of the respondents in this study reflects the lack of ICT supports in nursing distance education and is a strong indication of the need to integrate ICTs training into the nursing undergraduate program in Nigeria. Students will have to possess adequate IT competency and have access to adequate IT infrastructure to operate effectively in an IT enhanced learning environment. Given the strong emphasis on eLearning and technology based approaches as the future direction for education, appropriate and adequate computer experience is essential.

Research question 2: What is the perception of student nurses concerning the use of ICT supports in Distance Education?

One of the key findings of this study is that the majority of respondents reported positive perception about using ICT supports in Distance Education. Most respondents (95.7%) strongly agreed/agreed that all students embarking on distance education must be ICT compliant. The majority of respondents (83.3%) agreed /strongly agreed “Application of e-learning in Part-Time Nursing programme will improve students’ performances and professional competence”. According to Keogh (2003), many students take Open and Distance Learning (ODL) programs because there is no other option available to them because of their life stage, domestic circumstances or location. Limitations such as these which erect further barriers to participation will undermine the pioneering work of ODL in extending access to education to a wide range of the population on a lifelong learning basis.

Research question 3: What is the student nurses’ attitude toward the use of ICT supports in Distance Education?

A positive relationship exists between perception and attitudes towards the use of ICT supports in Distance Education among the respondents. The results agree with Valasidou and Bousiou-Makridou (2008) which pointed out that students have positive attitudes toward information technology. The study revealed more than half of the respondents strongly disagreed or disagreed that online e-learning will not help students in the part-time nursing program; very few respondents felt that application of e-learning in part-
time nursing program will be an extra burden on the students. The positive attitude reported in this study agrees with the report of Curtis et al. (2002) which also found a positive attitude to computers among nursing students.

However, the majority of respondents agreed or strongly agreed that face to face lectures enhance student understanding than virtual online classroom. It is apparent in this study that most respondents also felt that that applying online computer based training will help fill the gap of personnel shortage in Nursing Education. Most respondents strongly agreed or agreed that E-learning supports will improve the quality of contents and delivery of nursing education.

**Research question 4:** *What challenges do student nurses face in the course of using ICT supports in Distance Education?*

The personal challenges of the respondents when applying ICT supports in nursing distance education were explored. Major challenges as indicated by respondents include lack of constant internet access (29.8%), lack of a personal computer (28.2%) poor computer knowledge (23.6%) and lack of constant power supply (12.1%).

**Hypothesis one:** *There is no significant difference between the perception of male and female student nurses concerning the use of ICT supports in Distance Education.*

The perception of student nurses regardless of their gender did not differ; both male and female student nurses perceived ICT supports as that which could have far reaching implications on their academic pursuits. This finding aligned with those of Levett-Jones, Kenny, Van der Riet, Hazelton, Kable, Bourgeois, and Luxford (2009) who had reported no gender influence on perception of student nurses toward ICT. However, it was in contrast to the study of Adeleke, Salami, Achinbee, Anamah, Zakari, and Wasagi (2014) reporting that gender had significant influence on student nurses’ perception towards ICT use.

**Hypothesis two:** *There is no significant difference in the perception of student nurses concerning the use of ICT supports in Distance Education based on years of working experience.*

The number of years of working experience was found to have no significant influence on the perception of respondents. Although the majority of respondents joined the nursing profession less than six years ago and must have had active engagement with digitized learning environments, their perceptions of ICT supports in Distance Education were not significantly different from other respondents who had spent longer years in service and may have not had much interaction with ICT in the earlier stages of their formal education.

**Hypothesis three:** *There is no significant difference between the attitude of male and female student nurses concerning the use of ICT supports in Distance Education.*

Even though the nursing profession is largely dominated by female practitioners, the attitude of male and female student nurses concerning the use of ICT supports in Distance education were found not be significantly different. This was in consonance with the finding of Kipturgo, Kivuti-Bitok, Kirani, and Muiva (2014) who reported no significant impact of gender on the attitude of nurses toward ICT.

**Hypothesis four:** *There is no significant difference in the attitude of student nurses concerning the use of ICT supports in Distance Education based on years of working experience.*

The attitudes of the respondents toward ICT supports in Distance Education were not different on the basis of working experience. Although the majority of the student nurses had spent less than six years in the nursing profession, their attitude was not different from those who had spent six years and above. This finding was consistent with the finding of Kipturgo et al. (2014) who reported no significant impact of gender on student nurses’ attitude to ICT. The finding of this study is however at variance with those of Kivuti and Chepchirchir (2011) who reported significant impact of years of experience on student nurses’ attitude toward ICT.
Implications for ODL

Given the essential role of ICT supports in determining the efficiency, effectiveness and sustainability of ODL programs through meeting the goal of ‘Education for All’ (EFA), which broadly seeks to meet the learning needs of children, youth, and adults by 2015, it is important for ODL programs to initiate and integrate computer training programs into their curriculum and make adequate provisions for other requisite tools that will increase the skill and access of students to ICT supports in such programs.

In order to catch up with the rest of the world, it is also important for ODL programs in developing countries to research their options, design the necessary process, and implement essential changes in adapting to new broad spectrum of communication technologies that will be effective for educational programs in the developing world.

Recommendations

Students will have to possess adequate ICT competency to operate effectively in an ICT enhanced learning environment. They need adequate computer skills, access to ICT support tools and infrastructure and improvement in the ODL delivery mode that will be supportive of efficient performance by the ODL program and in turn have a positive impact on the educational system and outcomes is of paramount importance if the goal of EFA by 2015 are to be guaranteed in the developing countries.

Policy makers in the education sector of developing countries must work with higher institutions with ODL programs to adopt strategies to increase access to and use of information technology particularly in the technology starved rural environments to widen access of all learners to education. Based on the findings of this study, we recommend that:

1. ODL management should encourage potentials students to acquire necessary ICT skills before getting into the program by making it a program prerequisite.
2. Since the student nurses reported positive attitude to ICT supports in ODL, all efforts should be geared towards making maximum use of available ICT platforms to sustain the students’ perception.
3. Exercises that can further reinforce student nurses’ positive attitude towards ICT supports should also be put in place by ODL management.
4. It is also important for ODL stakeholders to continue to strive towards making cheaper and affordable interment access available to their students to solve the challenge of lack of access as revealed in the study.

Authors’ contributions

- Dr Omolola Irinoye was responsible for the conception of this paper, did part of the literature review, provided guide to sequencing of the discussion of findings and also contributed to editing the final paper.
- Mr. Sunday Ayamolowo was responsible for the study design, data gathering and data analysis.
- Mr. Olawale Tijani took responsibility for the literature review with one of the authors, reviewed analyzed data and did the final write-up and discussion of the findings.
REFERENCES


Rethinking Conventional Teaching In Language Learning And Proposing Edmodo As Intervention: A Qualitative Analysis

Farha Alia Mokhtar [1]

ABSTRACT

In recent times, educators are urged to transform the techniques in conducting language learning by incorporating technological tools because new technologies stimulate an explosion of new methods for teaching and learning. This article emphasizes the conventional teaching pedagogy and the urgency to rethink its practice in language learning while proposing a possible platform for learners’ and teachers’ needs. I outline the perceptions of future teachers on conventional teaching, shifting of teaching style from conventional to digital designs and the possibility of implementing Edmodo to curb the concerns arising. The argument forward is regarding conventional teaching that hinders potentials of students, followed by participants’ hopes for teaching approaches and the likelihood of implementing Edmodo to assist in the language learning classroom with grammar, vocabulary, self-efficacy and target language and practice.

Keywords: Edmodo, Conventional teaching, English language learning, perceptions and TESL (Teaching English as Second Language).

INTRODUCTION

Conventional teaching’s limitations

Teaching today’s generation calls for a change in education approach from conventional to a more comprehensive, communicative and technological way. Conventional teaching methods make students uninterested in class, discouraged, bored, stop trying in accomplishing tasks given, and do poorly in tests (Felder & Silverman, 1988; Godleski, 1984; Oxford, 1990; Smith & Renzulli, 1984). In the language acquisition classroom, the focus is typically on form, practice and repetition of structure (Elley & Mangubhai, 1983). In many conventional classes students have been asked to memorize English grammar rules and vocabulary and apply their translation skills (Wang, 2001). Hinkel and Fotos (2002) both claim that grammar teaching has been an issue among teachers, educators, ESL/EFL professionals and methodologists. Grammar should not be taught in a-stand-alone lesson as students are unable to apply its rules when speaking or writing spontaneously (Ellis, 1997; Al-Mekhlafi & Nagaratnam, 2011).

Moreover, conventional teaching forces students to demonstrate knowledge and content mastery via a test which can be jeopardizing to their learning because they only have minimal control over this matter (Teemant, 2010); this is because what they produce will not be what they know about the language, rather it will be what they memorize. Planned, restricted, gradual and artificial are the types of exposure to second language learning (Elley & Mangubhai, 1983). Instead of permitting students to acquire target language using natural and communicative approach, teachers emphasize teaching of sounds where the goal of instruction is to acquire native like pronunciation. Krashen (1989) argues that the best language learning pedagogy is not when lessons are grammatically sequenced and provided abundantly; rather the input supplied should
be arousing, comprehensible, relevant and accessible. In his republished book, Krashen (2009) maintains his stance but adds that students should be made aware of the language acquisition process in order to continue improving on their own. Taking what Krashen said into consideration, we need to allow second language learners to access and experience the target language in a natural manner, particularly by utilizing technology which has been progressing rapidly to facilitate the learning process (Stracker, 2011). In this way, students are subconsciously learning and knowledge learned will be retained over longer periods.

Researchers have urged educators to transform their classroom teaching to be more student-centered and inculcate collaborative learning. Ozden, Erturk, and Sanli (2004) posit that technology integration requires close collaboration between academicians and the technical units (institution, government, parents and other stakeholders). However, incorporating technology in teaching is not a popular option in Malaysian schools as teachers still prefer the old fashioned way of teaching (Hedberg, 2003). Raman and Yamat (2014) also revealed teachers’ hesitancy in integrating ICT is due to heavy workload, lack of time, teaching experience and age and lack of ICT skills. Consequently, the common adopted pedagogy in today’s language learning remains the same; through conventional approaches. Beyond doubt, no technique is superior to another. Nevertheless one ought to realize the limitations of practising solely conventional teaching methods. There has also been paucity of research in discovering through which channels learners and instructors engaging in a virtual classroom; email, social network, official university website or any e-learning tool?

As Malaysia wishes to advance in becoming a developed country, the Malaysian Ministry of Education has formulated three policies for ICT, namely: 1) using ICT as an enabler to reduce the digital gap between rural and urban schools, 2) emphasize the role and function of ICT in education as a teaching and learning tool, 3) using ICT to increase school management system productivity, effectiveness and efficiency (Chan, 2002). Another initiative is the establishment of Malaysian Smart Schools which can be defined as “a learning institution that has been systematically reinvented in a sense of teaching-learning practices and school management to equip children for Information Age” (Ministry of Education, 1997). Additionally, virtual universities and courses offered by numerous public universities have been booming in recent years. Despite these initiatives, application of the frameworks concerning technology use in the classroom has not been encouraging (Hedberg, 2003; Raman & Yamat, 2014) because of persistent execution of conventional approaches. Therefore, we must first rethink the limitations and effects of conventional pedagogy and propose a possible solution in language learning. This article illuminates the perceptions of future language teachers on the weaknesses of conventional teaching and discusses the possibility of assisting language learners via an e-learning platform called Edmodo.

What is Edmodo?

Edmodo is a social learning platform dubbed as ‘Facebook for schools’ or ‘Facebook lookalike’ by teachers, parents and students alike. Edmodo was founded in 2008 and according to MALCat (2016), a website housing literary works conducted by researchers in Malaysia, there is a paucity of studies pertaining to Edmodo as a learning platform. Meanwhile, according to an internet site overview by Alexa Internet, the United States triumphed to rank in first in having the most number of users on Edmodo (Alexa Internet, 2015). As of 2015, Edmodo has over 52 million users worldwide and counting.

Redman and Trapani (2012) claim that Edmodo is a portal presenting information in an engaging and motivating way which in turn becomes a controlled environment suitable for peer tutoring. Through Edmodo, students will be working with peers and inevitably required to collaborate with others (Buescher, 2010); regardless of whether doing pair work, small group work or within the class. It has the ability to cultivate skills, empathies and attitudes needed for online civic involvement (Crowe & McDonald, 2013). Via Edmodo, students are able to make use of the information they are learning and discuss with others to make connections to interrelated subjects and situations beyond the classroom (Buescher, 2010); for example, debates on world crises, current issues, human rights, global warming, religious views and others. On another note with regard to making personal and worldly connections through Edmodo; novelties of tasks, interactivity of the site and platform friendliness are some of the key points students prefer when completing assignments online (Pop, 2013) which later may draw them in to be more involved and connected.
What is more, the social learning platform emphasizes student collaboration, sharing and learning (Chandler & Redman, 2013; Lu & Churchill, 2013) that subsequently results in becoming a catalyst for teaching strategy. Pop (2013) posits that Edmodo caters for pools, alerts, quizzes, homework, grammar sheets, reading materials and sub-groups where all of these can be done effortlessly and be accessed by students at any time. Students are capable of developing higher order thinking skills to analyze and respond to tasks posted on Edmodo while teachers facilitate the process (Buescher, 2010). In retrospect to the present state of affairs, it is imperative to propose a platform that will help to assist teachers with teaching-learning delivery. Consequently, this study also seeks to discover possible connections between previous studies and participants’ perceptions.

**METHODOLOGY STRATEGY**

The study stems from the curiosity of discovering views and concerns regarding conventional teaching which consequently triggered an interest in exploring an intervention scheme for English language learning. The article focuses on perceptions of future teachers pertaining to conventional teaching and potentials of implementing Edmodo in a language classroom. Crotty (1998) states that in constructivism meaning is not discovered but constructed and people derive meanings differently despite being exposed to the same phenomenon; which consents participants to eloquently make meaning out of their own experience with Edmodo. In this sense, they are encouraged to freely express perceptions without any prior expectations or predetermined views. Meanwhile, hermeneutics (Crotty, 1998) is participative and cannot be produced by the researcher. Hermeneutics as one of the theoretical background permits participants to project their own thoughts on Edmodo through their works, comments and encounters on the platform which later are gathered for analysis. Symbolic interactionism on the other hand focuses on interpretations of environments through actions (Crotty, 1998); that allows me to catch the process of interpretations on the subject matter through which the participants construct their actions (i.e., body language, facial expressions and gestures). All of these theoretical frameworks are suitable for the purpose of this study in disclosing meanings and perceptions of participants via interviews, projection of thoughts on Edmodo and interpretations by means of actions.

Purposive sampling is employed in order to yield the best understanding of this study (Fraenkel & Wallen, 2003). Therefore, four 3rd Year TESL students namely; Rose, Fatin, Farah and Emme from the Faculty of Education, University of Malaya are selected as participants. The research draws heavily on qualitative study that focuses on examining perceptions of participants. Spielmann and Radnofsky’s (2001) qualitative study found that students’ overall positive perception of the learning experience was due to the prospects to reinvent themselves effectively in the target language. In addition, Yan and Horwitz (2008) stated that few studies dedicated to studying anxiety from the learners’ perspective, which later encouraged them to interview students in order to establish a connection between learners’ perceptions and levels of anxiety. Furthermore, researchers are advised to conduct interviews to gather qualitative data because perceptions collected in quantitative representations do not clearly ascertain students’ reasons for their beliefs (Gamble et al., 2013).

The instruments are: researcher (Yin, 2011), interview protocols (Jacob & Ferguson, 2012) that serves as a mental framework and consists of open questions and photographs (Dzakiria, 2008) which encompasses hermeneutics theoretical background. Interview protocols are illustrated as follows:
<table>
<thead>
<tr>
<th>Scaffolding:</th>
<th>After experiencing Edmodo:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How do you define online/e-learning?</td>
<td>1. What do you think about using Edmodo as a channel to do assessments?</td>
</tr>
<tr>
<td>2. Have you ever enrolled for an online course?</td>
<td>2. Where and when did you manage to access Edmodo? How was your exploration on Edmodo?</td>
</tr>
<tr>
<td>3. What do you feel about online education?</td>
<td>3. Why do you think Edmodo is an effective/ineffective platform?</td>
</tr>
<tr>
<td>4. Have you faced any problems with online discussion?</td>
<td>4. How is it any different than what you did in schools or university?</td>
</tr>
<tr>
<td>5. Where and when have you experienced e-learning?</td>
<td>5. How can Edmodo be used as a platform in the teaching and learning process?</td>
</tr>
<tr>
<td>7. Share your experiences regarding this topic.</td>
<td>7. What are the drawbacks of Edmodo?</td>
</tr>
<tr>
<td>8. Share your thoughts on traditional approach and current teaching practices.</td>
<td></td>
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</tbody>
</table>

*Figure 1. Interview protocols for the study.*

This study looks into the subject matter with interpretive and naturalistic approach in order to explore the participants’ views in the most natural manner. I employ the use of inductive logic that will allow issues, categories and themes to emerge from the experiences of participants in this study (Dzakiria, 2004). It is crucial to approach the phenomenon in a natural setting, without any presumptions to ensure neutrality in reporting the data. In order to comprehend participants’ views better, qualitative research provides the appropriate approach to tap into the subject matter. Further, Creswell (1998) comments on qualitative study as an inquiry process of understanding that explores an area of study.

The study executed open coding to identify the emerging themes, axial coding which focused on finding the themes’ consistency and selective coding whereby core categories are selected in order to explain the Edmodo phenomenon (Strauss & Corbin, 1990). Open coding is a process involving naming and categorizing a phenomenon via intense examination of the data (Strauss & Corbin, 1990, p. 62). As this study includes photographs, I skimmed through the data and roughly categorized it into possible main points that would connect it to the interviews’ central ideas. The next advancement in data classification is known as axial coding, where I attempted to make all the categories fit together nicely. According to the highlighted main concepts found during open coding, I triangulate the data to confirm the interrelationships and consistency. This process is similar to open coding but with more details and attempts to narrow down the categories, sub-categories and their properties (Strauss & Corbin, 1990, p. 97). Selective coding is an action of choosing core categories that would represent the related smaller categories and sub-categories. These core categories in which each has its own smaller elements and central ideas have the ability to answer all the research questions and accomplish the objectives of this study (Strauss & Corbin, 1990).

Throughout the process of perusing the data and findings, I adopted interpretive method (Walsham, 1993) that allows me to read between the lines while revealing multiple realities of the participants involved. Interpretive perspective lies on the notion that qualitative research should reveal multiple realities of the people involved, as opposed to capturing the objective reality. This is because objective reality can never be captured (Denzin, 2010). In order to establish stronger validity and reliability of the study, I cross checked the emergent themes with the participants by inquiring if my analyses and interpretations reflect their perceived views on the subject matter. Below is the confirmation for triangulation;
Figure 2. Confirmation on Results Produced

Narrative approach becomes the technique in conveying information, ensuring factuality that mirrors upon the participants’ point of views (Lauritzen & Jaegar, 1997).

RESULTS

Why are we rethinking conventional teaching?

In light of the emerging theme on mismatched learning and teaching styles, participants are noticeably apprehensive when the value of learning relies merely on securing excellent grades in language assessments and face to face interaction becomes the main approach in teaching while students of this age need a newer platform with different learning strategy. Both Farah and Rose believe that when students learn for the sake of securing good grades, the value of education becomes meaningless. Farah additionally asserts that teachers will be pressured, consequently causing them to focus on teaching students how to score in examinations instead of imparting practical skills and knowledge. Meanwhile, Fatin comments on impractical dependency on face to face interaction as students these days require the latest platforms to support their learning curve.

“Conventional approach normally puts focus on examination results but I think it should not be merely on academic achievements at the end of schooling, particularly when English is concerned. When that becomes the focus, teachers will be evaluated based on how many A’s their students manage to get and indirectly [this]influences how teachers teach. Some teaching strategies can be effective but unfortunately are not getting implemented in schools.”

Farah/SCAFFOLDING/Interview
“Education has to be meaningful; this is the missing crux in the process of teaching and learning in Malaysia. The depth of education itself is an issue; as in are the students learning to obtain A’s for English tests or to acquire knowledge for [their] own benefits? The delivery of the lesson has to change because if students have any interest in it, that’ll change the way of how the students view the lessons.”

Rose/SCAFFOLDING/Interview

“Face to face interaction is important but not all of us can meet after classes because maybe some students have other commitments or something else to do. Hence, I think conventional approach alone where face to face interaction is essential may present some hindrances and thus demands for a newer platform or method for students to discuss about their group’s task wherever they are.”

Fatin/EDMODO 1/Interview

Fatin later highlighted the issue on activities and lesson plans that are teacher-centered rather than student-centered in her response;

“Problem is that some teachers are not focussing on their students. Lessons are more teacher-centered, that is why the lesson can be boring and students are not paying attention in class.”

Fatin/EDMODO 2/Interview

Further, I probed for pressing issues regarding English language learning resulting from conventional pedagogies which have been executed for decades. The emphasized problem they set forth is pertaining to the inability of Malaysian students to converse in the target language, English. According to them, university students refuse to speak in English publicly owing to many internal and external factors.

“There’s a reason why Malaysian students are very shy when they want to speak in English, it started when they don’t get much chance to speak in the language, be it in class or outside. The issue is whatever vocabularies and input you’ve learned so far, you need to apply those. In the scope of language learning, the point of learning it is to be able to use it.”

Farah/SCAFFOLDING/Interview

“The problem is students cannot speak well in English and I’m not sure if it is due to the lack of confidence or something else entirely. In terms of knowledge, they have the capability to understand the language but less practice and exposure have made them unable to speak in English fluently. Students are commonly receptive towards anything explained and delivered by teachers, but if teachers just provide the knowledge and students are supposed to be like [a] sponge and take everything in, how can students learn effectively?”

Emme/SCAFFOLDING/Interview

Memorizing contents cannot be adequate for students to apply in real life situations. In many English language classrooms, students learn the language through a conventional lecture that ends with question-and-answer format and during the lecture, the teacher writes on the blackboard and students simply jot down whatever is written on it (Markee, 2002). Such practice is unhealthy and thwarts the learning outcomes. Participants of this study and social scientists in the language field agree that we need to adopt changes to teaching pedagogies or else students will still face the lack of fluency, errors in grammar and inability to converse in the language learnt (Ellis, 2008; Goh & Chapman, 2006; MacGowan-Gilhooly, 1991; Ortega, 2009).

In some cases where corrective feedback is applied, Thomas (2010) postulates, students usually do not read the corrective feedback left by teachers because they only care about submitting assignments successfully. On the contrary, teachers should be addressing the mistakes made by students instead of circling grammar errors, missing punctuation and others. Explaining what they have done wrong will help them to rectify their mistakes and improve the learning experience (Al-Mekhlafi & Nagaratnam, 2011). Similarly, students who are not proficient should be encouraged to invest more efforts in learning; in all
probability the teacher could apply communicative teaching involving e-learning tools, quizzes, role plays, presentations and discussions. Gradually, learners will be more engrossed in the lessons and acquire additional vocabulary items along with skills needed in language learning. Because of its limitations conventional teaching practice must be reevaluated.

**From conventional to digital teaching designs**

Comprehending issues related to conventional approach and English language learning helps us to curb the concerns set forth between the former and the latter. I believe it is sensible to tap into the hopes that participants have on current and future teaching-learning delivery. By looking into their expectations, we will be able to learn from suggestions they make and their relevance to the concerns previously discussed. I asked them to share, as future English teachers, what their hopes are for future teaching pedagogies that might work for this generation and the next.

“It is important for students to have their opinion taken into consideration as usually they have [their] own views on particular topics or poems taught in classrooms. Students have to be able to think and learn independently.”

Rose/SCAFFOLDING/Interview

“Language is not learnt through memorizing; it requires skills that you have to obtain it progressively and applying what you have learned is crucial too. Therefore, students need to be given more chances to speak up and teachers must put in more effort in designing appropriate lessons”

Emme/SCAFFOLDING/Interview

As the conventional approach becomes the main teaching approach in schools, teachers think that the most appropriate and efficient approach for English language learning is by repeating language items in drills (Tang, Eunice, John, Chun, & Cecilia, 2012). Participants evidently disagreed to these methods and shared the same ideas on acquiring proper language skills and allowing students to utilize the knowledge learnt instead of drilling students during English lessons. Contrary to such practices, learners should be equipped with input and subsequently be permitted to conduct their own discovery learning, produce new information and have more chances to use the language in daily life/lessons.

“Students must be given a chance to take control of [their] own education. I wish to teach by having the whole process still be facilitated by me and I get to see how well they’re doing, but the outcomes and the processes will depend on their efforts.”

Farah/SCAFFOLDING/Interview

Farah aspired to teach through facilitation while leaving her students to make efforts; her aspiration is a condition described by Little (2007) as a development of language learning comprising deliberate effort and conscious reflection. When asked what type of method will work for students and how it can change the environment of a physical classroom, Farah and Fatin suggested student-centered approaches in the following replies:

“Teaching-learning process should be a mixture between communicative approach along with reading and writing assessments, for instance, role plays and application of the language itself.”

Farah/SCAFFOLDING/Interview

“Collaborative learning will be most effective. When students interact with their friends, they have more opinions and ideas on the subject matter, instead of being spoon fed.”

Fatin/SCAFFOLDING/Interview

Farah stated that besides reading and writing assessments, students should be given tasks involving communication where they may use the target language. Likewise, Fatin proposed collaborative learning which mainly encompasses application of the language learnt as students communicate and express their opinions with peers on the topics assigned.
What could be the medium in tackling the concerns set forth? As argued by Emme, she strongly believes that digital teaching designs help students keep pace with recent technology progress, parallel with the needs of today’s learners:

“Youths and teenagers alike prefer to go on the internet rather than go to school. Therefore, we need to rethink the system in education that we have now as we cannot rely only on teaching of reading and writing skills and just drill students. We need to incorporate technology in education in one way or another.”

Emme/SCAFFOLDING/Interview

Proposing Edmodo as an intervention

The participants were assigned with tasks related to the four skills in language learning (namely speaking, listening, reading and writing) while the process simultaneously led them to discover the features on the platform. Regarding one of the features of Edmodo, participants explored the use of ‘backpack/library’ that allows extended storage on the site (i.e., documents, files, images and others). Besides storage, the participants found other applications such as quiz, poll, assessments and quick buttons as useful in enhancing students’ learning experience.

“Students can find information or links and keep it in ‘backpack’ and when it is time to submit or when they are done with the assessment/task, they can put up the link or whatever they found as a reference.”

Fatin/EDMODO 1/Interview

“I can store my assignments in ‘backpack’ as a backup file.”

Rose/EDMODO 1/Interview

“Backpack is convenient especially now there’s a virus issue affecting technological devices. It also makes lessons easier for teachers and students. Learners get to learn more materials compared to in classroom where teachers alone provide materials. Students too can suggest materials they found online by sharing it.”

Emme/EDMODO 2/Interview

“You can post questions for poll, quizzes, audio clips, reading assessments and fun learning using songs. Learning takes a new level as it uses different methods than in conventional class.”

Farah/EDMODO 2/Interview

“Learning in class alone might present limited methods and materials during lessons, or some schools might not have proper facilities (projector in class) or there may be other constraints, but by using Edmodo teachers can create tasks to overcome these issues in [the] physical classroom.”

Fatin/EDMODO 2/Interview
“Quizzes help make learning interactive. You (the researcher) gave us the fill-in-the-blank task, I think such assessment gives an exciting new experience while at the end of the task they’ll also know about their overall performance.”

Fatin/EDMODO 2/Interview

“Quizzes added new experience to the learning curve and the ‘poll’ feature is also noteworthy because you can get quick opinions just by voting.”

Farah/EDMODO 2/Interview

Earlier, the participants commented on mismatched teaching and learning styles whereby the focus of conventional teaching is to prepare students for examinations while students of this digital age need different learning strategy to retain information longer. Therefore, in terms of language learning enhancement through the use of Edmodo, the participants found several ways for the platform to assist.

“On Edmodo, you have to answer questions given to you or you will not be given marks. This way, students are more responsible with [their] own learning process. By using Edmodo it makes learning more attractive to students because it’s student-centered while teachers only facilitate, observe and assess; I like that the most about Edmodo. Students are in charge of what they do on Edmodo.”

Emme/EDMODO 2/Interview

Contrary to rote learning, Edmodo provides a plausible solution by enhancing learners’ learning curve and offering diverse options in assigning tasks while maintaining the focus and aims of the lessons through content analysis, grammar and vocabulary improvement and students’ self-efficacy.

“My proficiency in English can be enhanced by giving me more chances to be exposed to English materials (audio, video, authentic materials, websites, quizzes and others). Directly or indirectly, I’m learning the language. Definitely Edmodo may help in time, mainly because of the materials and learning experience.”

Rose/EDMODO 2/Interview

“I think Edmodo is good in indirectly acquiring knowledge about grammar and sentence structure because these things shouldn’t be taught in class by memorizing and drilling, for example before I answer the questions you (researcher) posted on Edmodo, I read others’ replies to see how they write their responses, how they use grammar items and finally I try to apply what I’ve read in my reply. In a way, I am learning grammar and vocabularies by looking at other comments.”

Emme/EDMODO 2/Interview

“It strengthens English acquisition through writing and reading, because you can do tasks assigned effectively on the portal. I think the fact that everyone will be able to see your answer/response makes you more cautious and give extra attention to it, for example I don’t want to commit grammar mistakes so it makes me more careful of my replies. You will want to write the best that you can because of the competitive situation. My vocabulary can also be improved as I get to read other comments and learn new words from
them. I can learn from peers at the same time.”

Farah/EDMODO 2/Interview

Formerly, participants shared the importance of applying knowledge learned and execution of approaches where students have to interact and utilize the target language to be better speakers and users of the language. In review after experiencing Edmodo, will the platform and its features be able to help them attain their aspirations? Does it stand a chance to be implemented in Malaysia?

“I think Edmodo is very appropriate to be used for [the] teaching process outside the classroom because it gives the opportunity for the teachers and the students to discuss.”

Rose/EDMODO 1/Interview

“There’s a huge possibility that I will implement Edmodo. I will make use of the features I have discovered, for instance quizzes, fill in the blanks, poll, discussions, content sharing and others. If I have finished teaching in class and I would like to know how much have they learned and understood, instead of conducting assessments in the next class, I can post a quiz on Edmodo because it gives immediate feedback/results. By looking at the immediate results of assessments, I too can do a reflection to evaluate how my teaching strategy has worked on them.”

Farah/EDMODO 2/Interview

“I think it’s beneficial because it’s an online site. Students can learn English not only by doing tasks or assessments on this site but also find their resources online. If it’s in class they need to rely on limited sources, face issues relating to time constraint and sometimes depend on their friends’ ideas.”

Fatin/EDMODO 1/Interview

Further, the participants posited that Edmodo’s features may help in teaching-learning processes while in many ways support their aspiration for future teaching strategies and outcomes. Fatin added that implementation of Edmodo might not be difficult as students are already proficient users of technological devices. Emme further proposed that Edmodo needs to be introduced gradually to the educators in Malaysia if its execution was to take place in a bigger context. Introducing this site and demonstrating its features are important if educators wish to weigh the pros and cons and later decide whether they want to implement it in their classrooms.
“Students today are more technology savvy and good at handling technology, therefore they will be more comfortable to learn using a platform such as Edmodo. It will attract them to use it because of familiarity and learning preference.”

Fatin/EDMODO 2/Interview

“Edmodo is a good platform for teachers and students because of the abundance [of] materials that can be obtained from around the world, especially when teachers can connect and exchange ideas on the site. I think if we were to use Edmodo in [the] Malaysian classroom, we need to first and foremost, introduce the site to [a] bigger audience; teachers, parents and students.”

Emme/EDMODO 2/Interview

According to the views and results in this study, Edmodo as an intervention has the potential to produce promising results on students’ self-efficacy. We need to look into all options available for the students of today because 21st century skills need to be cultivated in shaping future world citizens. Participants manifested their support after experiencing first-hand what Edmodo can do.

DISCUSSIONS

Keeping up in this information age is essential for our very own survival; teachers need to make rapid changes in the curriculum to cope with the different needs of learners and complex classroom conditions (Cirocki, Tennekoon, & Calvo, 2014). Edmodo inverts the conventional practice of rote learning through its collaborative effort in empowering students to undertake discovery learning autonomously (Wallace, 2013). Through the use of features and functional buttons such as quiz, poll, multiple choice questions, fill in the blanks and others (Buescher, 2010), these assessments become an engaging alternative to hand-writing homework questions (Wallace, 2013).

As postulated by participants, students may get out-of-class learning experience by practicing English on Edmodo. Proper approaches to learners’ education ensures enhancement of language skills and critical thinking (Pr, 2012). Chandler and Redman (2013) similarly agreed that Edmodo extends discussions when time in class is limited, therefore allowing learners to be connected to their language education. Digital methods such as Edmodo serves as a ‘social’ space that fosters interaction and cooperation among students (Crowe & McDonald, 2013) which can be difficult to achieve in a physical classroom. Dobler (2012) asserts that learners are keen to participate in the learning process when they are allowed to explore the multimedia resources.

As photographs and interview transcriptions have conveyed, we can observe how the participants carefully wrote and replied on the thread by applying proper spelling and proper language items. Language learning can be enhanced through Edmodo, especially in the aspect of grammar, vocabulary and practice of the target language. Teachers on the other hand can facilitate and conduct student-centered activities (Buescher, 2010), which are recommended by multiple scholars in order to enhance self-efficacy in language acquisition.

Moreover, applications available on Edmodo as elucidated by the participants are able to facilitate collaboration and virtual teamwork among students to accelerate the learning process, making students proficient in handling tasks online (Edmodo, 2014). Supplementing a face-to-face instruction with web-based activities will also increase interaction and creativity among students while leading to self-learning (Amrein-Beardsley & Toth, 2007; Vernadakis, 2012). In light of the insights shared by participants, we can conclude that Edmodo may assist in language learning as it inverts the practice of conventional teaching.

CONCLUDING POINTS

Generally, every tool and platform designed for the teaching-learning process is worthy to be examined and scrutinized so that we may learn from its weaknesses and strengths as well as implement those digital designs in classrooms if proven suitable. Ravenscroft (2001, p. 134) aptly asserts that:
“we cannot truly transform educational practice for the better through implementation of new technologies unless we examine the roles that computers can play in stimulating, supporting, favouring innovative learning interactions that are linked to conceptual development and improvements in understanding”.

Every classroom has diverse and dissimilar environments, facilities and students with their own pace of learning; thus a tool might work excellently in one class but cannot be an efficient instrument in another. Regardless, I am proposing the use of Edmodo in the language learning classroom as intervention to overcome the limitations of conventional teaching.

Thus far, we have established the notion that the conventional approach is not the most relevant teaching strategy for implementation because researchers proposed technology incorporation does have a tremendous relation to students’ learning style preferences hence enhancing academic performance (Ahmad, Mohamad, & Saat, 2004; Dille & Mezack, 1991; Simuth & Sarmany-Schuller, 2014). Another compelling reason to consider students’ preferred learning styles is that students are most likely to learn under apt educational conditions (Pasch, Langer, Gardner, Starko & Moody, 1995). Edmodo converts teaching and learning into a more interactive, innovative and creative experience. Through the course of experiences participants are urged to rethink conventional teaching methodology in language learning and later posited Edmodo to be a one of the suitable platforms for 21st century learners.

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Teaching and Learning with ICT Tools: Issues and Challenges from Teachers’ Perceptions

Simin Ghavifekr[1], Thanusha Kunjappan[2], Logeswary Ramasamy [3], Annreetha Anthony [4]

ABSTRACT

In this digital era, ICT use in the classroom is important for giving students opportunities to learn and apply the required 21st century skills. Hence studying the issues and challenges related to ICT use in teaching and learning can assist teachers in overcoming the obstacles and become successful technology users. Therefore, the main purpose of this study is to analyze teachers’ perceptions of the challenges faced in using ICT tools in classrooms. A quantitative research design was used to collect the data randomly from a sample of 100 secondary school teachers in the state of Melaka, Malaysia. Evidence has been collected through distribution of a modified-adopted survey questionnaire. Overall, the key issues and challenges found to be significant in using ICT tools by teachers were: limited accessibility and network connection, limited technical support, lack of effective training, limited time and lack of teachers’ competency. Moreover, the results from independent t-test show that use of ICT tools by male teachers (M =2.08, SD = .997) in the classroom is higher compared to female teachers (M = 2.04, SD = .992). It is hoped that the outcome of this research provides proper information and recommendation to those responsible for integrating new technologies into the school teaching and learning process.

Keywords: ICT Tools, Teaching & Learning, Technology Issues & Challenges, Education, Malaysia

INTRODUCTION

Information and communications technology (ICT) is an important part of most organizations these days (Zhang & Aikman, 2007). Computers began to be used in schools in the early 1980s, and several scholars suggest that ICT will be an important part of education for the next generation (Bransford, Brown, & Cocking, 2000; Grimus, 2000; Yelland, 2001). Up-to-date technology offers many methods of enhancing classroom teaching and learning (Ghavifekr et al., 2014; Lefebvre, Deaudelin & Loiselle, 2006). Dawes (2001) stated that new technologies have the potential to upkeep education across the curriculum and deliver opportunities for efficient student-teacher communication in ways not possible before. ICT in education has the potential to transform teaching. However, this potential may not easily be realized, as Dawes (2001) underlined when he stated, “problems arise when teachers are expected to implement changes in what may well be adverse circumstances” (p. 61).

Due to ICT’s importance in society as well as in the future of education, identifying the possible challenges to integrating these technologies in schools would be an important step in improving the quality of teaching and learning. Balanskat, Blamire, and Kefala (2006) argue that although teachers appear to acknowledge the value of ICT in schools, they continue encountering obstacles during the processes of adopting these technologies into their teaching and learning.
However, despite the Ministry of Education, Malaysia having embarked on the project “1Bestarinet” in providing a virtual learning platform in schools to enhance ICT usage among teachers, ICT has not been fully adopted in the teaching and learning process in most schools in the country. Only a few teachers are using ICT as teaching and learning tools (MoCT, 2003). This is because the challenges outweigh the benefits (Bingimlas, 2009). Therefore, this study is expected to generate information on the teachers’ perceptions and challenges of integrating ICT tools in the teaching and learning process. With changes in modern technologies learners need to be equipped with updated knowledge that will help them adapt to the changing world. Such knowledge leads to better communication and increased 21st century skills as a result of e-Commerce and self-employment in the ICT sector.

Many studies have been conducted to investigate the challenges to technology integration in education (Al-Alwani, 2005; Ghavifekr, Afshari & Amla, 2012; Gomes, 2005; Osborne & Hennessy, 2003; Özden, 2007). This study provides teachers’ perception and perceived barriers to the use of technology tools in classroom’s teaching and learning process. Therefore, the main objectives of this study are as follow:

I) To identify school teachers’ perceptions in implementing ICT tools in teaching and learning in classroom.

II) To determine the challenges of using ICT tools in teaching and learning in the classroom among school teachers.

III) To identify that to what extent do teachers use ICT tools in teaching and learning in the classroom.

However, in this paper ICT tools refers to the common technology-based tools that are using in schools such as computer, Laptop, LCD, digital photocopy machine, digital Audio and Video devices, digital camera, scanner, DVD player and multimedia projector.

**Background of Study**

The Malaysia smart school initiative was launched in 1999. The Ministry of Education Malaysia (1997) defined Malaysian Smart School or locally known as “Sekolah Bestari” as a learning institution that has been systematically reinvented in terms of teaching-learning practices where school management prepare children for the Information Age as well as to promote the goals of the National Philosophy of Education. It is the 7th shift in the recent Malaysia Education Blueprint (2013 – 2025), which states the Ministry’s intention in leveraging ICT to scale up quality learning across Malaysia. It acts as a platform for the Ministry of Education to produce a technologically literate, critically thinking work force, which is prepared to participate fully in the global economy of the 21st century (Ghavifekr & Mohammed Sani, 2015). It also acts as a spur to achieve the Malaysian’s Vision 2020 to make Malaysia a leader in information and communications technology internationally. The Ministry also intends to expand 1Bestari (Wi-Fi) to all schools. The Smart School project was built based on international best practices in both the primary and secondary education (MoE, 1997).

Besides that, the Malaysian Ministry of Education is encouraging other schools to equip themselves with appropriate levels of technology according to their means and capacities. Schools are encouraged on their own initiative to seek assistance from various stakeholders, parents, community and private sector organizations as the MoE can only provide technology to schools in stages (Ghavifekr, 2012; Khalid Abdullah, 2009). Under the Smart School project, about 8,000 schools will be equipped with computer facilities by the end of 2005. By 2010, it is projected that about 10,000 primary and secondary schools will have computer facilities. More schools will obtain computers with Internet connection and teachers will be encouraged to use them in their classroom teaching (MoE, 1997). In 2004, Malaysia had more than 4000 schools with computer laboratories and two years later about 9,200 schools had been equipped with broadband Internet access (MoE, 2006).
THEORETICAL FRAMEWORK

Previously, Davis, Bagozzi and Warshaw (1989) developed a theory of 'action relating to reasons' so called Technology Acceptance Model (TAM). Later based on their work, Venkatesh and Davis (2000) investigated the reasons some people use computers and their attitudes towards them that called TAM 2. The model, shown in Figure 1, links the perceived usefulness and ease of use with attitude towards using ICT and actual use (system use). They tested this model with 107 adult users, who had been using a managerial system for 14 weeks. They found that people’s computer use was predicted by their intentions to use the computer and that perceived usefulness was also strongly linked to these intentions.

According to Venkatesh and Davis (2000) when teachers are presented with a new technology, two key factors would influence their decision from the extended variables around them about how and when they will use it:

- **External Variables** – It represents the challenges that teachers face that come from outside their sphere of control when integrating a new technology in their teaching and learning process. These challenges include:
  - Limited accessibility and network connection
  - Schools with limited ICT facilities
  - Lack of effective training
  - Limited time
  - Lack of teachers’ competency

- **Perceived usefulness (PU)** – It represents the degree to which they believe that using a particular technology would enhance their job performance. If teachers feel there is no need to question or
change their professional practice then, according to studies, they are unlikely to adopt the use of ICT tools. However, if they perceive ICT to be useful to them, their teaching and their pupils’ learning, then according to the empirical evidence of previous studies (Cox, Preston & Cox, 1999) they are more likely to have a positive attitude to using ICT in the classroom. The following factors have been identified as key elements to teachers’ perceived usefulness of ICT tools:

- Work more quickly
- Job performance
- Increased productivity
- Effectiveness
- Useful

- **Perceived ease-of-use (PEOU)** – It represents the degree to which they believe that using a particular system would be free from effort. Previous studies have identified a number of factors relating to the perceived ease of use of ICT, in study on experienced practicing ICT users. The Impact project (Watson, 1993) and other studies identified a wide range of skills and competencies which teachers felt they needed in order to find ICT easy to use. Some of these are:
  - Easy to learn
  - Clear and understandable
  - Easy to use
  - Controllable
  - Easy to remember

- **Attitude toward use** – teacher’s positive or negative feeling about performing the target behavior (e.g., using a system). Basically, teachers’ attitudes too many of these factors will depend upon how easy they perceive using ICT tools to be on a personal level as well as for teaching in the classroom.

- **Behavioral intention** - The degree to which the teacher has formulated conscious plans to perform or not perform some specified future behavior.

- **Social influence processes** (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use) as determinants of perceived usefulness and usage intentions.

  Basically, the updated version of TAM 2 consists of additional determinants that are social influence process and cognitive instrumental processes of perceived usefulness and usage intentions.

**LITERATURE REVIEW**

**Challenges in using ICT in teaching and learning**

Integrating ICT into teaching and learning is a complex process and one that may encounter a number of difficulties. These difficulties are known as “challenges” (Schoepp, 2005). A challenge is defined as “any condition that makes it difficult to make progress or to achieve an objective” (WordNet, 1997, as cited in Schoepp, 2005, p. 2). The following are some of the key challenges that have been identified in the literature regarding teachers’ use of ICT tools in classroom.

- **Limited accessibility and network connection**

Several research studies indicate that lack of access to resources, including home access, is another complex challenge that prevent teachers from integrating new technologies into education.
Various research studies indicated several reasons for the lack of access to technology. In Sicilia’s study (2005), teachers complained about how difficult it was to always have access to computers. The author gave reasons like “computers had to be booked in advance and the teachers would forget to do so, or they could not book them for several periods in a row when they wanted to work on several projects with the students” (p. 50). In other words, a teacher would have no access to ICT materials because most of these were shared with other teachers. According to Becta (2004), the inaccessibility of ICT resources is not always merely due to the non-availability of the hardware and software or other ICT materials within the school. It may be the result of one of a number of factors such as poor resource organization, poor quality hardware, inappropriate software, or lack of personal access for teachers (Becta, 2004).

The challenges related to the accessibility of new technologies for teachers are widespread and differ from country to country. Empirica’s (2006) European study found that lack of access is the largest barrier and that different challenges to using ICT in teaching were reported by teachers, for example a lack of computers and a lack of adequate material. Similarly, Korte and Hüsing (2007, p. 4) found that in European schools there are some infrastructure barriers such as broadband access not yet being available. They concluded that one third of European schools still lack broadband Internet access. Pelgrum (2001) explored practitioners’ views from 26 countries on the main obstacles to ICT implementation in schools. He concluded that four of the top ten barriers were related to the accessibility of ICT. These barriers were insufficient unit of computers, insufficient peripherals, insufficient numbers of copies of software, and insufficient immediate Internet access. Toprakci (2006) found that low numbers of computers, oldness or slowness of ICT systems, and scarcity of educational software in the school were barriers to the successful ICT implementation in Turkish schools. Similarly, Al-Alwani (2005) found that having no access to the Internet during the school day and lack of hardware were hampering technology integration in Saudi schools. Recent research on Syrian schools indicated that insufficient computer resources were one of the greatest impediments to technology integration in the classroom (Albirini, 2006).

ii) School with limited technical support

Without both good technical support in the classroom and whole-school resources, teachers cannot be expected to overcome the obstacles preventing them from using ICT (Lewis, 2003). Pelgrum (2001) found that in the view of primary and secondary teachers, one of the top barriers to ICT use in education was lack of technical assistance.

In Sicilia’s study (2005), technical problems were found to be a major barrier for teachers. These technical barriers included waiting for websites to open, failing to connect to the Internet, printers not printing, malfunctioning computers, and teachers having to work on old computers. “Technical barriers impeded the smooth delivery of the lesson or the natural flow of the classroom activity” (Sicilia, 2005, p. 43).

Korte and Hüsing (2007) argued that ICT support or maintenance contracts in schools help teachers to use ICT in teaching without losing time fixing software and hardware problems. The Becta (2004) report stated “if there is a lack of technical support available in a school, then it is likely that technical maintenance will not be carried out regularly, resulting in a higher risk of technical breakdowns” (p. 16). Many of the respondents to Becta’s survey (2004) indicated that technical faults might discourage them from using ICT in their teaching because of the fear of equipment breaking down during a lesson. In teaching, several studies indicated that lack of technical support is a main barrier to using technologies. According to Gomes (2005), ICT integration in teaching needs a technician and if one is unavailable the lack of technical support can be an obstacle. In Turkey, Toprakci (2006) found that the lack of technical support was one of two significant barriers to ICT integration in science education in schools and might be considered “serious”. In Saudi Arabia, science teachers would agree to introduce computers into teaching, except that they believe they will encounter problems such as technical service or hardware problems (Almoahaisin, 2006). Sicilia (2005) argued that whatever kind of technical support and access teaching staff have and whether they have twenty years of experience or are novices to the profession, technical problems generate barriers to the smooth lesson delivery by teachers.

iii) Lack of effective training

The challenge most frequently referred to in the literature is lack of effective training (Albirini, 2006;
Balanskat et al., 2006; Beggs, 2000; Özden, 2007; Schoepp, 2005; Sicilia, 2005; Topракci, 2006; Ghavifehr & Wan Athirah, 2015. One finding of Pelgrum’s (2001) study was that there were not enough training opportunities for teachers in using ICTs in a classroom environment. Similarly, Beggs (2000) found that one of the top three barriers to teachers’ use of ICT in teaching was the lack of training. Recent research in Turkey found that the main problem with implementing new ICT in education was the insufficient amount of in-service training for teachers (Özden, 2007), and Topракci (2006) concluded that limited teacher training in ICT use in Turkish schools is an obstacle.

According to Becta (2004), the issue of training is certainly complex because it is important to consider several components to ensure training effectiveness. These were time for training, pedagogical training, skills training, and an ICT use in initial teacher training. Correspondingly, recent research by Gomes (2005) relating to various subjects concluded that lack of training in digital literacy, lack of pedagogic and didactic training in how to use ICT in the classroom and lack of training concerning technology use in specific subject areas were obstacles to using new technologies in classroom practice. Some of the Saudi Arabian studies reported similar reasons for failures in using educational technology: the weakness of teacher training in the use of computers, the use of a “delivery” teaching style instead of investment in modern technology (Alhamd, Alotaib, Motwaly, & Zyyah, 2004), as well as the shortage of teachers qualified to use the technology confidently (Sager, 2001).

Providing pedagogical training for teachers, rather than simply training them to use ICT tools, is an important issue (Becta, 2004). Cox et al. (1999a) argue that if teachers are to be convinced of the value of using ICT in their teaching, their training should focus on the pedagogical issues. The results of the research by Cox et al. (1999a) showed that after teachers had attended professional development courses in ICT they still did not know how to use ICT in their classrooms; instead they just knew how to run a computer and set up a printer. They explained that this is because the courses only focused on teachers acquiring basic ICT skills and did not often teach teachers how to develop the pedagogical aspects of ICT. In line with the research by Cox et al. (1999a), Balanskat et al. (2006) indicated that inappropriate teacher training is not helping teachers to use ICT in their classrooms and in preparing lessons. They assert that this is because training programs do not focus on teachers’ pedagogical practices in relation to ICT but on developing ICT skills.

Fundamentally, when there are new tools and approaches to teaching, teacher training is essential (Osborne & Hennessy, 2003) if they are to integrate these into their teaching. However, according to Balanskat et al. (2006), inadequate or inappropriate training leads to teachers being neither sufficiently prepared nor sufficiently confident to carry out full integration of ICT in the classroom. Newhouse (2002) stated “teachers need to not only be computer literate but they also need to develop skills in integrating computer use into their teaching/learning programmes” (p. 45).

iv) Limited time

Several recent studies indicate that many teachers have competence and confidence in using computers in the classroom, but they still make little use of technologies because they lack the time. A significant number of researchers identified time limitations and the difficulty in scheduling enough computer time for classes as a barrier to teachers’ use of ICT in their teaching (Al-Alwani, 2005; Becta, 2004; Beggs, 2000; Schoepp, 2005; Sicilia, 2005). According to Sicilia (2005), the most common challenge reported by all the teachers was the lack of time they had to plan technology lessons, explore the different Internet sites, or look at various aspects of educational software.

Becta’s study (2004) found that the problem of lack of time exists for teachers in many aspects of their work as it affects their ability to complete tasks, with some of the participant teachers specifically stating which aspects of ICT require more time. These include the time needed to locate Internet advice, prepare lessons, explore and practise using the technology, deal with technical problems, and receive adequate training.

v) Lack of teachers’ competency

Another challenge directly related to teacher confidence is teachers’ competence in integrating ICT into pedagogical practice (Becta, 2004). In Australian research, Newhouse (2002) found that many teachers lacked the knowledge and skills to use computers and were unenthusiastic about the changes and
integration of supplementary learning associated with bringing computers into their teaching practices.

Current research has shown that the level of this barrier differs from country to country. In the developing countries, research reported that teachers’ lack of technological competence is a main barrier to their acceptance and adoption of ICT (Pelgrum, 2001; Al-Oteawi, 2002). In Syria, for example, teachers’ lack of technological competence has been cited as the main barrier (Albirini, 2006). Likewise, in Saudi Arabia, a lack of ICT skills is a serious obstacle to integration of technologies into science education (Al-Alwani, 2005; Almohaissin, 2006). Empirica (2006) produced a report on ICT use in European schools. The data used for the report came from the Head Teachers and Classroom Teachers Survey carried out in 27 European countries. The findings show that teachers who do not use computers in classrooms claim that “lack of skills” are a constraining factor preventing them from using ICT for teaching. Another worldwide survey conducted by Pelgrum (2001), of nationally representative samples of schools from 26 countries, found that teachers’ lack of knowledge and skills is a serious obstacle to using ICT in primary and secondary schools. The results of a study conducted by Balanskat et al. (2006) have shown that “in Denmark ... many teachers still chose not to use ICT and media in teaching situations because of their lack of ICT skills rather than for pedagogical/didactics reasons” while “in the Netherlands ... teachers’ ICT knowledge and skills is not regarded any more as the main barrier to ICT use” (p. 50). Hence, lack of teacher competence may be one of the strong barriers to integration of technology into education. It may also be one of the factors involved in resistance to change.

METHODOLOGY

Research Design

In this research, quantitative methodology was used to collect and analyze the data obtained from all the respondents. A questionnaire was self-developed and finalized by the researchers before being distributed to the targeted group of respondents. The questionnaire was designed specifically to address research objectives with regard to teachers’ perception on use of ICT tools in public secondary schools in Melaka.

Instrumentation & Sampling

A self-developed cross-sectional survey questionnaire consisting of 7 sections and 114 items was tested among respondents. The questionnaire was based on 5-point Likert Scale ranging from: 5 = always, 4 = often, 3 = sometimes, 2 = rarely and 1 = never. A total of 100 secondary school teachers in the state of Melaka were selected randomly as the sample for the study. The sample responded to the statements given and chose their answers based on their perceptions. The survey was distributed by hand to the respondents. The various sections of the questionnaire included: (A) Personal Details, (B) Experience with ICT for Teaching, (C) ICT access for teaching, (D) Support for teachers for ICT use, (E) Challenges of using ICT tools in teaching and learning, (F) Teachers’ ICT skills, (G) Teachers’ opinion about ICT use impact on students’ learning outcome.

Data Collection Procedures

Data collection defines the procedure for collecting data by the researcher. The questionnaire has been distributed to 120 teachers randomly. They were given one week to fill in the questionnaire and return it to the researcher. All of the participants volunteered themselves in the research. Some questionnaires were with missing information that the details could not be used as a contribution in this research. Finally 100 questionnaires were returned to the researchers for data analysis.
Data Analysis Process

The data collected from the respondents were gathered together to be analyzed using the Statistical Packages for the Social Sciences (SPSS) version 22. The analysis includes both descriptive and inferential analysis. The researchers used descriptive analysis to analyze the frequency and percentage of the overall population in the demographic background. Besides, it is also used to determine the mean, standard deviation, frequency and percentage. Inferential statistics (t-test) were also used to analyze the research findings.

Validity & Reliability

Internal consistency is measured in this research using the Cronbach’s coefficient alpha (α). This method is used to identify the correlation between scores of each item in the test and the total score for all items in the test or is known as test index score. Items with high correlation with the test index score have high reliability, and those with low correlation values with the test index score have low reliability and will be deleted from the test. Based on the findings, the Cronbach’s alpha value for this study shows .817 which is satisfactory (between .65 – .95). The alpha value shows that the instrument is reliable. In fact, all items in the instrument have α level of more than .7. The highest alpha level is .847 and the lowest is .799.

FINDINGS

Demographic Factors of the Respondents

The following Table 1 give the demographic background of the research participants.

Table 1 shows the demographic finding where the age category under 25 is frequency 4 and percentage is 4%, age 26-35 is frequency 64 and percentage is 64%, age 36-45 is frequency 27 and percentage is 27%, age 46-55 is frequency 3 and percentage is 3%, and age 55+ is frequency 2 and percentage is 2%.

The gender finding shows male as frequency 25 and percentage is 25% and female is frequency 75 and percentage is 75%. The experience based on the years of experience by the sample is less than 1 year frequency is 5 and the percentage is 5%, 1-4 years frequency is 25 and the percentage is 25%, 5-10 years frequency is 16 and the percentage is 16%, 10-20 years frequency is 16 and the percentage is 16%, and 20+ years frequency is 1 and the percentage is 1%.

Ethnicity analysis shows that Malay frequency is 37 (37%), Chinese frequency is 19 and the percentage is 19%, Indian frequency is 44 and the percentage is 44% and Others frequency is 0. The subjects taught by the respondents are: Language (frequency is 38 and percentage is 38%), Mathematics (f = 36 or 36%), Science subjects (f = 22 or 22%) and Other (f = 4 or percentage 4%). Based on the data obtained, most of the participants in this research are aged between 36-45 years, the majority are female and have 5-10 years of experience.
Table 1: Demographic finding on sample

<table>
<thead>
<tr>
<th>Factors</th>
<th>Category</th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Under 25</td>
<td>4</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>26-35</td>
<td>64</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>36-45</td>
<td>27</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>46-55</td>
<td>3</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>55+</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>25</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>75</td>
<td>75%</td>
</tr>
<tr>
<td>Experience</td>
<td>Less than 1 year</td>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>1-4 years</td>
<td>25</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>5-10 years</td>
<td>53</td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td>10-20 years</td>
<td>16</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>20 years +</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Malay</td>
<td>37</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>Chinese</td>
<td>19</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Indian</td>
<td>44</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Subject Taught</td>
<td>Language</td>
<td>38</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>Mathematic</td>
<td>36</td>
<td>36%</td>
</tr>
<tr>
<td></td>
<td>Sciences</td>
<td>22</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>4</td>
<td>4%</td>
</tr>
</tbody>
</table>

Research Questions

1) What are the perceptions in implementing ICT tools in teaching and learning in the classroom among school teachers?

The following Table 2 shows the descriptive statistics about the perceptions in implementing ICT tools in teaching and learning in the classroom among school teachers.
Table 2: Teachers’ Perceptions on implementing ICT tools in teaching and learning

<table>
<thead>
<tr>
<th>Items</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Students concentrate more on their learning</td>
<td>38 (38%)</td>
<td>27 (27%)</td>
<td>30 (30%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>2.02</td>
<td>.943</td>
</tr>
<tr>
<td>2 Students try harder in what they are learning</td>
<td>40 (40%)</td>
<td>29 (29%)</td>
<td>26 (26%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>1.96</td>
<td>.931</td>
</tr>
<tr>
<td>Students feel more autonomous in their learning (they can repeat exercises if needed, explore in more detail topics that they are interested in, etc.)</td>
<td>39 (39%)</td>
<td>24 (24%)</td>
<td>30 (30%)</td>
<td>7 (7%)</td>
<td>0 (0%)</td>
<td>2.05</td>
<td>.989</td>
</tr>
<tr>
<td>4 Students understand more easily what they learn</td>
<td>26 (26%)</td>
<td>26 (26%)</td>
<td>38 (38%)</td>
<td>10 (10%)</td>
<td>0 (0%)</td>
<td>2.32</td>
<td>.973</td>
</tr>
<tr>
<td>5 Students remember more easily what they have learnt</td>
<td>38 (38%)</td>
<td>27 (27%)</td>
<td>30 (30%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>2.02</td>
<td>.943</td>
</tr>
<tr>
<td>6 ICT facilitates collaborative work between students</td>
<td>32 (32%)</td>
<td>41 (41%)</td>
<td>25 (25%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>1.97</td>
<td>.810</td>
</tr>
<tr>
<td>7 ICT improves the class climate (students more engaged, less disturbing)</td>
<td>32 (32%)</td>
<td>41 (41%)</td>
<td>25 (25%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>1.97</td>
<td>.810</td>
</tr>
<tr>
<td>Overall mean</td>
<td>2.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to Table 2, the entire disclosures mean showed a moderate level. For the statement “Students concentrate more on their learning” (M = 2.02, SD = .943), 38% respondents always, 27% often, 30% sometimes, 5% rarely and 0% never. For the statement of “Students try harder in what they are learning” (M = 1.96, SD = 0.931), 40% respondent always, 29% often, 26% sometimes, 5% rarely and 0% never. “Students feel more autonomous in their learning (they can repeat exercises if needed, explore in more detail topics that they are interested in, etc.)” (M = 2.05, SD = 0.989), 39% respondent always, 24% often, 30% sometimes, 7% rarely and 0% never. “Students understand more easily what they learn” (M = 2.32, SD = 0.973), 26% respondent always, 26% often, 38% sometimes, 10% rarely and 0% never. “Students understand more easily what they learn Students remember more easily what they’ve learnt” (M = 2.02, SD = 0.943), 38% respondent always, 27% often, 30% sometimes, 5% rarely and 0% never. “ICT facilitates collaborative work between students” (M = 1.97, SD = 0.810), 32% respondent always, 41% often, 25% sometimes, 2% rarely and 0% never. Finally, “ICT improves the class climate (students more engage, less disturbing)” (M = 1.97, SD = 0.810), 32% respondent always, 41% often, 25% sometimes, 2% rarely and 0% never. The mean level of expression statement was in between 1.96 to 2.32. While overall mean constraints is M = 2.04, SD = .914 which is at a moderate level.

2) What are the challenges of implementing ICT tools in teaching and learning in the classroom among school teachers?

Table 3 shows the descriptive statistics about the perceptions in implementing ICT tools in teaching and learning in the classroom among schoolteachers.
Table 3: Challenges in using ICT tools in Teaching & Learning

<table>
<thead>
<tr>
<th>Items</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient number of computers</td>
<td>36 (36%)</td>
<td>30 (30%)</td>
<td>29 (29%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>2.03</td>
<td>.926</td>
</tr>
<tr>
<td>Insufficient number of internet-connected computers</td>
<td>35 (35%)</td>
<td>33 (33%)</td>
<td>26 (26%)</td>
<td>6 (6%)</td>
<td>0 (0%)</td>
<td>2.03</td>
<td>.926</td>
</tr>
<tr>
<td>Insufficient bandwidth or speed</td>
<td>33 (32.7%)</td>
<td>35 (34.7%)</td>
<td>29 (28.7%)</td>
<td>3 (3%)</td>
<td>0 (0%)</td>
<td>2.02</td>
<td>.864</td>
</tr>
<tr>
<td>Insufficient number of interactive whiteboards</td>
<td>30 (30%)</td>
<td>32 (32%)</td>
<td>21 (21%)</td>
<td>9 (9%)</td>
<td>8 (8%)</td>
<td>2.33</td>
<td>1.223</td>
</tr>
<tr>
<td>Insufficient number of laptops/notebooks</td>
<td>0 (0%)</td>
<td>6 (6%)</td>
<td>9 (9%)</td>
<td>51 (51%)</td>
<td>34 (34%)</td>
<td>4.13</td>
<td>.812</td>
</tr>
<tr>
<td>School computers out of data and/or needing repair</td>
<td>9 (9%)</td>
<td>19 (19%)</td>
<td>22 (22%)</td>
<td>29 (29%)</td>
<td>21 (21%)</td>
<td>3.34</td>
<td>1.257</td>
</tr>
<tr>
<td>Lack of adequate skills of teachers</td>
<td>1 (1%)</td>
<td>10 (10%)</td>
<td>14 (14%)</td>
<td>43 (43%)</td>
<td>32 (32%)</td>
<td>3.95</td>
<td>.978</td>
</tr>
<tr>
<td>Insufficient technical support for teachers</td>
<td>30 (30%)</td>
<td>44 (44%)</td>
<td>25 (25%)</td>
<td>1 (1%)</td>
<td>0 (0%)</td>
<td>1.97</td>
<td>.771</td>
</tr>
<tr>
<td>Insufficient pedagogical support for teachers</td>
<td>25 (25%)</td>
<td>47 (47%)</td>
<td>26 (26%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>2.05</td>
<td>.770</td>
</tr>
<tr>
<td>Lack of adequate content/material for teaching</td>
<td>10 (10%)</td>
<td>15 (15%)</td>
<td>15 (15%)</td>
<td>31 (31%)</td>
<td>29 (29%)</td>
<td>3.54</td>
<td>1.321</td>
</tr>
<tr>
<td>Lack of content in national language</td>
<td>17 (17%)</td>
<td>31 (31%)</td>
<td>18 (18%)</td>
<td>19 (19%)</td>
<td>15 (15%)</td>
<td>2.84</td>
<td>1.331</td>
</tr>
<tr>
<td>Too difficult to integrate in ICT use into curriculum</td>
<td>11 (11%)</td>
<td>23 (23%)</td>
<td>16 (16%)</td>
<td>27 (27%)</td>
<td>23 (23%)</td>
<td>3.28</td>
<td>1.341</td>
</tr>
<tr>
<td>Lack of pedagogical models on how to use ICT for learning</td>
<td>0 (0%)</td>
<td>6 (6%)</td>
<td>9 (9%)</td>
<td>51 (51%)</td>
<td>34 (34%)</td>
<td>4.13</td>
<td>.812</td>
</tr>
<tr>
<td>School time organization (fixed lesson time, etc.)</td>
<td>11 (11%)</td>
<td>23 (23%)</td>
<td>16 (16%)</td>
<td>27 (27%)</td>
<td>23 (23%)</td>
<td>3.28</td>
<td>1.341</td>
</tr>
<tr>
<td>School space organization (classroom size and furniture etc.)</td>
<td>10 (10%)</td>
<td>15 (15%)</td>
<td>15 (15%)</td>
<td>31 (31%)</td>
<td>29 (29%)</td>
<td>3.54</td>
<td>1.321</td>
</tr>
<tr>
<td>Pressure to prepare students for exam and tests</td>
<td>10 (10%)</td>
<td>15 (15%)</td>
<td>15 (15%)</td>
<td>31 (31%)</td>
<td>29 (29%)</td>
<td>3.54</td>
<td>1.321</td>
</tr>
<tr>
<td>Most parents not in favor of using ICT in school</td>
<td>5 (5%)</td>
<td>10 (10%)</td>
<td>11 (11%)</td>
<td>42 (42%)</td>
<td>32 (32%)</td>
<td>3.86</td>
<td>1.128</td>
</tr>
<tr>
<td>Most teachers not in favor of using ICT in school</td>
<td>10 (10%)</td>
<td>15 (15%)</td>
<td>15 (15%)</td>
<td>31 (31%)</td>
<td>29 (29%)</td>
<td>3.54</td>
<td>1.321</td>
</tr>
<tr>
<td>Lack of interest in teachers</td>
<td>11 (11%)</td>
<td>23 (23%)</td>
<td>16 (16%)</td>
<td>27 (27%)</td>
<td>23 (23%)</td>
<td>3.28</td>
<td>1.341</td>
</tr>
<tr>
<td>No or unclear benefit to use ICT for teaching</td>
<td>10 (10%)</td>
<td>15 (15%)</td>
<td>15 (15%)</td>
<td>31 (31%)</td>
<td>29 (29%)</td>
<td>3.54</td>
<td>1.321</td>
</tr>
<tr>
<td>Using ICT in teaching and learning not being a goal in our school</td>
<td>24 (24%)</td>
<td>50 (50%)</td>
<td>23 (23%)</td>
<td>2 (2%)</td>
<td>1 (1%)</td>
<td>2.06</td>
<td>.802</td>
</tr>
<tr>
<td><strong>Overall mean</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>3.06</strong></td>
<td><strong>1.106</strong></td>
</tr>
</tbody>
</table>
According to Table 3, the entire disclosures mean showed a moderate level. For the statement “Insufficient number of computers” (M=2.03, SD=.926), 38% respondent always, 27% often, 30% sometimes, 5% rarely and 0% never. For the statement of “Insufficient number of internet-connected computers” (M=2.03, SD=.926), 35% respondent always, 33% often, 26% sometimes, 6% rarely and 0% never. “Insufficient bandwidth or speed” (M=2.02, SD=.864), 33% respondent always, 35% often, 29% sometimes, 3% rarely and 0% never. “Insufficient number of interactive whiteboards” (M=2.02, SD=.864), 30 respondent always, 32% often, 21% sometimes, 9% rarely and 8% never. “Insufficient number of laptops/notebooks” (M=4.13, SD=.812), 0% respondent always, 6% often, 9% sometimes, 51% rarely and 34% never. “School computers out of data and/or needing repair” (M=3.34, SD=1.257), 9% respondent always, 19% often, 22% sometimes, 29% rarely and 21% never. “Lack of adequate skills of teachers” (M=3.95, SD=.978), 1% respondent always, 10% often, 14% sometimes, 43% rarely and 32% never. “Insufficient technical support for teachers” (M=1.97, SD=.771), 30% respondent always, 44% often, 25% sometimes, 1% rarely and 0% never. “Insufficient pedagogical support for teachers” (M=2.05, SD=.770), 25 respondent always, 47% often, 26% sometimes, 2% rarely and 0% never. “Lack of adequate content/material for teaching” (M=3.54, SD=1.321), 10% respondent always, 15% often, 15% sometimes, 31% rarely and 29% never. “Lack of content in national language” (M=2.84, SD=1.331), 17% respondent always, 31% often, 18% sometimes, 19% rarely and 15% never. “Too difficult to integrate in ICT use into curriculum” (M=3.28, SD=1.341), 11% respondent always, 23% often, 16% sometimes, 27% rarely and 23% never. “Lack of pedagogical models on how to use ICT for learning” (M=4.13, SD=.812), 0% respondent always, 6% often, 9% sometimes, 51% rarely and 34% never. “School time organization (fixed lesson time, etc)” (M=3.28, SD=1.341), 30 respondent always, 32% often, 21% sometimes, 9% rarely and 8% never.

“The insufficient number of laptops/notebooks” (M=4.13, SD=.812), 11% respondent always, 23% often, 16% sometimes, 27% rarely and 23% never. “School space organization (classroom size and furniture, etc)” (M=3.54, SD=1.321), 10% respondent always, 15% often, 15% sometimes, 31% rarely and 29% never. “Pressure to prepare students for exam and tests” (M=3.54, SD=1.321), 10% respondent always, 15% often, 15% sometimes, 31% rarely and 29% never. “Most parents not in favor of using ICT in school” (M=3.86, SD=1.128), 5% respondent always, 10% often, 11% sometimes, 42% rarely and 32% never. “Most teachers not in favor of using ICT in school” (M=3.54, SD=1.321), 10% respondent always, 15% often, 15% sometimes, 31% rarely and 29% never. “Lack of interest in teachers” (M=3.28, SD=1.341), 11% respondent always, 23% often, 16% sometimes, 27% rarely and 23% never. “No or unclear benefit to use ICT for teaching” (M=3.54, SD=1.321), 10% respondent always, 15% often, 15% sometimes, 31% rarely and 29% never. Finally, “Using ICT in teaching and learning not being a goal in our school” (M=2.06, SD=.802), 24% respondent always, 50% often, 23% sometimes, 2% rarely and 1% never.

The mean level of expression statement was in between 1.97 to 4.13. While overall mean constraints is M = 3.06, SD = 1.106 which is at a high level.

3) To what extent do teachers use ICT tools in teaching and learning in the classroom?

Table 4 shows the descriptive statistics about the extent do teachers use ICT tools in teaching and learning in the classroom.

According to Table 4, the entire disclosures mean showed a moderate level. For the statement “Produces a text using a word processing program” (M = 2.05, SD = .989), 39% respondent always, 24% often, 30% sometimes, 7% rarely and 0% never. For the statement of “Use emails to communicate with other” (M = 2.32, SD = .973), 26% respondent always, 26% often, 38% sometimes, 10% rarely and 0% never. “Capture and edit digital photos, movies or other graphics” (M = 2.05, SD = .989), 39% respondent always, 24% often, 30% sometimes, 7% rarely and 0% never. “Edit text online containing internet links and images” (M = 2.32, SD = .973), 26 respondent always, 26% often, 38% sometimes, 10% rarely and 8% never. “Create a database” (M = 2.02, SD = 0.943), 38% respondent always, 27% often, 30% sometimes, 5% rarely and 0% never. “Edit a questionnaire online” (M = 1.97, SD = .810), 32% respondent always, 41% often, 25% sometimes, 2% rarely and 0% never. “Email a file to someone, another student or teacher” (M = 1.97, SD = .810), 32% respondent always, 41% often, 25% sometimes, 2% rarely and 0% never. “Organize computer files in folders and subfolders” (M = 2.38, SD = .801), 15% respondent always, 37% often, 43% sometimes, 5% rarely and 0% never. “Use a spread sheet” (M = 2.32, SD = 0.777), 14 respondent always, 45% often, 36% sometimes, 5%
rarely and 0% never.

Table 4: Use of ICT tools in classroom

<table>
<thead>
<tr>
<th>Items</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Produces a text using a word processing program</td>
<td>39 (39%)</td>
<td>24 (24%)</td>
<td>30 (30%)</td>
<td>7 (7%)</td>
<td>0 (0%)</td>
<td>2.05</td>
<td>.989</td>
</tr>
<tr>
<td>2 Use emails to communicate with other</td>
<td>26 (26%)</td>
<td>26 (26%)</td>
<td>38 (38%)</td>
<td>10 (10%)</td>
<td>0 (0%)</td>
<td>2.32</td>
<td>.973</td>
</tr>
<tr>
<td>3 Capture and edit digital photos, movies or other graphics</td>
<td>39 (39%)</td>
<td>24 (24%)</td>
<td>30 (30%)</td>
<td>7 (7%)</td>
<td>0 (0%)</td>
<td>2.05</td>
<td>.989</td>
</tr>
<tr>
<td>4 Edit text online containing internet links and images</td>
<td>26 (26%)</td>
<td>26 (26%)</td>
<td>38 (38%)</td>
<td>10 (10%)</td>
<td>0 (0%)</td>
<td>2.32</td>
<td>.973</td>
</tr>
<tr>
<td>5 Create a database</td>
<td>38 (38%)</td>
<td>27 (27%)</td>
<td>30 (30%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>2.02</td>
<td>.943</td>
</tr>
<tr>
<td>6 Edit a questionnaire online</td>
<td>32 (32%)</td>
<td>41 (41%)</td>
<td>25 (25%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>1.97</td>
<td>.810</td>
</tr>
<tr>
<td>7 Email a file to someone, another student or teacher</td>
<td>32 (32%)</td>
<td>41 (41%)</td>
<td>25 (25%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>1.97</td>
<td>.810</td>
</tr>
<tr>
<td>8 Organize computer files in folders and subfolders</td>
<td>15 (15%)</td>
<td>37 (37%)</td>
<td>43 (43%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>2.38</td>
<td>.801</td>
</tr>
<tr>
<td>9 Use a spread sheet</td>
<td>14 (14%)</td>
<td>45 (45%)</td>
<td>36 (36%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>2.32</td>
<td>.777</td>
</tr>
<tr>
<td>10 Use a spread sheet to plot a graph</td>
<td>20 (20%)</td>
<td>37 (37%)</td>
<td>37 (37%)</td>
<td>5 (5%)</td>
<td>1 (1%)</td>
<td>2.30</td>
<td>.882</td>
</tr>
<tr>
<td>11 Create a presentation with simple animation functions</td>
<td>30 (30%)</td>
<td>40 (40%)</td>
<td>28 (28%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>2.02</td>
<td>.816</td>
</tr>
<tr>
<td>12 Create a presentation with video or audio clips</td>
<td>36 (36%)</td>
<td>34 (34%)</td>
<td>29 (29%)</td>
<td>0 (0%)</td>
<td>1 (1%)</td>
<td>1.96</td>
<td>.864</td>
</tr>
<tr>
<td>13 Participate in a discussion forum on the internet</td>
<td>32 (32%)</td>
<td>41 (41%)</td>
<td>25 (25%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>1.97</td>
<td>.810</td>
</tr>
<tr>
<td>14 Create and maintain blogs or web sites</td>
<td>30 (30%)</td>
<td>40 (40%)</td>
<td>28 (28%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>2.02</td>
<td>.816</td>
</tr>
<tr>
<td>15 Participate in social networks</td>
<td>14 (14%)</td>
<td>45 (45%)</td>
<td>36 (36%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>2.32</td>
<td>.777</td>
</tr>
<tr>
<td>16 Download and install software in computer</td>
<td>30 (30%)</td>
<td>40 (40%)</td>
<td>28 (28%)</td>
<td>2 (2%)</td>
<td>0 (0%)</td>
<td>2.02</td>
<td>.816</td>
</tr>
</tbody>
</table>
Download or upload curriculum resources from/to website or learning platforms for students to use

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>17</td>
<td>14 (14%)</td>
<td>45 (45%)</td>
<td>36 (36%)</td>
<td>5 (5%)</td>
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Teach students how to behave safely online

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<tbody>
<tr>
<td>18</td>
<td>32 (32%)</td>
<td>41 (41%)</td>
<td>25 (25%)</td>
<td>2 (2%)</td>
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Teach students how to behave ethically online

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<tbody>
<tr>
<td>19</td>
<td>14 (14%)</td>
<td>45 (45%)</td>
<td>36 (36%)</td>
<td>5 (5%)</td>
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</table>

Prepare materials to use with an interactive whiteboard

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<tbody>
<tr>
<td>20</td>
<td>0 (0%)</td>
<td>1 (1%)</td>
<td>3 (3%)</td>
<td>20 (20%)</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

Overall mean

<p>| | |</p>
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<tr>
<th></th>
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<tbody>
<tr>
<td>20</td>
<td>2.27</td>
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</tbody>
</table>

For the item “Use a spread sheet to plot a graph” (M = 2.30, SD = .882), 20% respondents always, 37% often, 37% sometimes, 5% rarely and 1% never. “Create a presentation with simple animation functions” (M=2.02, SD=.816), 30% respondent always, 40% often, 28% sometimes, 2% rarely and 0% never. “Create a presentation with video or audio clips” (M=1.96, SD=.864), 36% respondent always, 34% often, 29% sometimes, 0% rarely and 1% never. “Participate in a discussion forum on the internet” (M=1.97, SD=0.810), 32% respondent always, 41% often, 25% sometimes, 2% rarely and 0% never. “Create and maintain blogs or web sites” (M=2.02, SD=.816), 30 respondent always, 40% often, 28% sometimes, 2% rarely and 0% never. “Participate in social networks” (M=2.32, SD=0.777), 14% respondent always, 45% often, 36% sometimes, 5% rarely and 0% never. “Download and install software in computer” (M=2.02, SD=.816), 30% respondent always, 40% often, 28% sometimes, 2% rarely and 0% never. “Download or upload curriculum resources from/to website or learning platforms for students to use” (M=2.32, SD=.777), 14% respondent always, 45% often, 36% sometimes, 5% rarely and 0% never. “Teach students how to behave safely online” (M=1.97, SD=.810), 32% respondent always, 41% often, 25% sometimes, 2% rarely and 0% never. “Teach students how to behave ethically online” (M=3.32, SD=.777), 14% respondent always, 45% often, 36% sometimes, 5% rarely and 0% never. “Prepare materials to use with an interactive whiteboard” (M=4.71, SD=.547), 0% respondent always, 1% often, 3% sometimes, 20% rarely and 76% never. The mean level of expression statement was in between 1.96 to 4.71. While overall mean constraints is M = 2.27, SD = .839 which is at a moderate level.

**Hypothesis Testing**

H₀ : There is no relationship between gender and the use of ICT tools to support teaching and learning in the classroom.

H₁ : There is a significant relationship between gender and the use of ICT tools to support teaching and learning in the classroom.
Table 5: Independent Samples Test

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>.055</td>
<td>.815</td>
</tr>
<tr>
<td>G3</td>
<td>Equal variances not assumed</td>
<td>.174</td>
</tr>
</tbody>
</table>

Table 6: Group Statistics

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>25</td>
<td>2.08</td>
<td>.997</td>
<td>.199</td>
</tr>
<tr>
<td>Female</td>
<td>75</td>
<td>2.04</td>
<td>.992</td>
<td>.115</td>
</tr>
</tbody>
</table>

From the independent $t$-test means in Table 5, the results show that the use of ICT tools in teaching and learning in the classroom of the male ($M = 2.08, SD = .997$) is higher than the use of ICT tools in teaching and learning in the classroom learning of the female ($M = 2.04, SD = .992$) was insignificant, $t = .174$, d.f. = 98, $p = .815$, however, since the $p < .05$ so the null hypothesis is rejected and alternate hypothesis is accepted, and the means of the two groups are significantly different from each other. Thus, the data provide sufficient evidence to conclude that the uses of ICT in teaching and learning in the classroom by males are higher than among the females.

$H_{02}$: There is no relationship between the teachers years of teaching experience and the use of ICT tools to support teaching and learning in the classroom.

$H_{2}$: There is significant relationship between the teachers years of teaching experience and the use of ICT tools to support teaching and learning in the classroom.

Table 7: Independent Samples Test

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$F$</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>.526</td>
<td>.474</td>
</tr>
</tbody>
</table>
Table 8: Group Statistics

<table>
<thead>
<tr>
<th>Experience</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>5</td>
<td>2.00</td>
<td>.707</td>
<td>.316</td>
</tr>
<tr>
<td>1-4 years</td>
<td>25</td>
<td>1.88</td>
<td>.726</td>
<td>.145</td>
</tr>
</tbody>
</table>

From the independent t-test in Table 7, the results show that the use of ICT tools in teaching and learning in the classroom of the less than 1 year ($M = 2.00$, $SD = .707$) is higher than the use of ICT tools in teaching and learning in the classroom learning of the 1-4 years ($M = 1.88$, $SD = .726$) was insignificant, $t = .339$, d.f. = 28, $p = .0005$, however, since the $p < .05$ the null hypothesis is rejected and alternate hypothesis is accepted, and the means of the two groups are significantly different from each other. Thus, the data provide sufficient evidence to conclude that the uses of ICT of less than 1 year are adequate in use of ICT tools in teaching and learning in the classroom than the 1-4 years’ experience; therefore there is a relationship between use of ICT tools and years of experience.

DISCUSSION & CONCLUSION

This study is more related to identifying the perceptions in implementing ICT tools in teaching and learning in the classroom among school teachers. Furthermore, it examines the challenges of using ICT tools in teaching and learning in the classroom among school teachers and recognizes the effectiveness of the extent of ICT tools in supporting classroom teaching and learning. Based on the study the findings indicate that average level of the perceptions in implementing ICT tools in teaching and learning in the classroom among school teachers, high level of challenges of using ICT tools in teaching and learning in the classroom among school teachers and recognizing the effectiveness of the extent of ICT tools in supporting teaching and learning in the classroom.

With the advent of Information and Communications Technologies (ICT) in education, teachers form their own beliefs about the role of ICT as a teaching tool, the value of ICT for student learning outcomes and their own personal confidence and competency (Prestridge, 2007). Barriers exist in integrating ICT in teaching and learning (Ertmer, 2005). The barriers are extrinsic to the teacher and include lack of resources, time, access and technical support. Findings of this research suggest that teachers were still giving comment on the barriers in implementing ICT tools at school in teaching and learning.

Results of the Cachia and Ferrari (2010) study showed that teachers do combine different resources in their teaching, as well as utilizing various modes of ICT with almost two-thirds claiming to use technologies (63%) and website (62%). Anyway, it is also evident that textbooks are still considered fundamental in the educational systems. Nearly two thirds of our respondents (64%) always or often follow textbooks in their teaching.

Important technologies for learning such as computers (98%) and educational software (93%) were ranked as the top technologies by the respondents of Cachia and Ferrari’s (2010) research. On the other hand, our research showed that the rate of ICT use among teachers in school is average. However, the finding shows that more teachers used computer with teaching software in the classroom to present or demonstrate examples to students. They also like to use the computer to access students’ results and keep track of their progress.

Despite the current efforts in ICT integration in schools, many families specifically in rural areas still do not know how to use ICT tools in their daily life. They even did not know how to check their children’s results in the existing systems. Not all houses have computers and Internet facilities to use daily. In this regard, the main challenge is to provide appropriate ICT tools to both urban and rural areas efficiently.

This study will offer priceless information to the school administration as well as to educational policy.
makers regarding the nature of ICT contribution to the teaching-learning process. Since the attitude and perceptions of the teachers are critical to how effectively an innovation is implemented, it is important to gauge how teachers perceive this innovation and its efficacy as a tool for enhanced teaching and learning. It is also hoped that this study will contribute to the growing knowledge base and 21st century generation regarding the use of ICT in education in Malaysia.

In future studies more focus should be given on management strategies and policies to address the barriers faced by teachers in using ICT tools in teaching and learning. If the barriers faced by teachers can be overcome, it is a step forward to enhance our students’ learning outcome. The studies done with the same gender distribution could give more appropriate analysis whereby the gender perceptions could be analyzed.

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Teacher Questionnaire Retrieved from [http://essie.eun.org/c/document_library/get_file?uuid=fd33ffa6-a8c1-478f-a01b-6664c7db380d&groupId=21279](http://essie.eun.org/c/document_library/get_file?uuid=fd33ffa6-a8c1-478f-a01b-6664c7db380d&groupId=21279)


Toprakci, E. (2006). Obstacles at integration of schools into information and communication technologies by taking into consideration the opinions of the teachers and principals of primary and secondary schools in Turkey. *Journal of Instructional Science and Technology (e-JIST)*, 9(1), 1-16.


Tablet Computer Literacy Levels of the Physical Education and Sports Department Students

Gülsen HERGÜNER [1]

ABSTRACT

Education systems are being affected in parallel by newly emerging hardware and new developments occurring in technology daily. Tablet usage especially is becoming ubiquitous in the teaching-learning processes in recent years. Therefore, using the tablets effectively, managing them and having a high level of tablet literacy play an important role within the education system. This study aimed at determining the tablet literacy levels of students in the Physical Education and Sports Teaching department at Sakarya University in Turkey, and examining this data with regard to various variables. Some 276 students participated in the study. Findings of the study suggest that the sample has a high tablet literacy level. While no significant difference was found in the tablet literacy by gender, the students in the 2nd grade are noted to have higher levels of tablet literacy compared to the students in 3rd and 4th grades and tablet owners are more tablet literate when compared to non-owners. A significant but low level correlation was found between the tablet usage time and tablet literacy.

Keywords: tablet computer, tablet computer literacy, sport education, teacher candidates.

INTRODUCTION

The rapid development of information and communications technology affects education processes and the countries following this process closely are adapting their education systems accordingly. It is undeniable that technology use by students and teachers will facilitate the education process. Therefore integrating correctly configured technology into the education process is increasingly important.

Many countries and particularly developed countries, are systematically integrating technology into their education systems. Technology is being integrated into education programs in Turkey with the FATİH Project (Movement of Enhancing the Opportunities in Education and Improving the Technology).

The FATİH Project in education is designed to allow effective use of information technology tools in the classrooms with the aim of ensuring equal opportunities in education and improving technology in schools. The aim is to provide 570,000 classrooms in all levels of pre, primary and middle schools with interactive white boards with LCD panel and internet infrastructure. Under this project, every student and teacher is provided with a tablet computer. To ensure effective use of the IT hardware installed in the classrooms, teachers will undergo in-service training. In this process, the education programs are being rendered suitable for the IT assisted education and educational e-content is being created. Within this scope, the FATİH project consists of five main components, namely:
• Providing the Hardware and Software Substructure
• Providing and Managing the Educational e-Content.
• Effective IT use in Education Programs
• In-Service Training of the Teachers
• Ensuring the Conscious, Secure, Manageable and Measurable IT usage (MEB, 2016)

One of the technological hardware distributed with the FATiH Project is the tablet computer. Tablet computers can be described as portable devices having a small touch screen, internet access, and data storage capability. These features make tablet computers one of the most used devices in recent years. Having internet access, the ability to play sounds, send e-mails, watch and record videos and read e-books are some features contributing to the increasing popularity of tablets (Shurtz, Halling, & Mckay, 2011).

Although tablet computers are similar to other computers, their advantages include functionality, ease of use, interaction and touch screen friendly applications; they also have disadvantages in terms of the ability to use the productivity tools (Mock, 2004). However, tablet computer benefits are visible in many studies in terms of improving students’ problem solving abilities (Gök, 2012); student performance (Enriques, 2010; Pryor & Bauer, 2008) and enhancing students’ problem solving abilities (Ellington, Wilson, & Nugent, 2011). Other studies show that tablet computers increase interaction (Koile & Singer, 2006) and communication (Galligan, Hobohm, & Loch, 2012; Jones & Sinclair, 2011; Sneller, 2007).

The literacy term however, in its most basic sense, can be described as the individual ability to sustain life within the society they live in, being able to read to a certain extent that is enough for them to communicate with society, while also being able to write and solve basic arithmetic operations (Karunaratne, 2000). Willem et al. (2006) state that the literacy term is not a basic notion that has only one accepted description; nor is there a universal definition or a standard for the notion. Ginsburg and Creger (2003) state that the new notion of literacy consists of the ability to live in the 21st century; it does not only represent reading, writing and solving basic mathematical operations but also includes the ability to manage the types of information appearing in different shapes and forms throughout daily life. Blackall (2005), on the other hand, states that 21st century literacy can be described as the overlap of verbal, visual and numerical literacy, skills and talents. Therefore, technological literacy is necessary as part of the 21st century literacies emerging for the teachers who are key players in the education system.

Holland (2004) emphasizes that students need to be raised as individuals who are able to adopt technological innovations, able to describe and solve problems, while also having the potential to affect their lives and future, and make appropriate decisions. Individuals who can make conscious decisions about technology can be described as technology literate. Technology literacy can be described as having the appropriate skills, information and behavior for using, applying, designing and changing the technology (Wang, 2003). Therefore, our teachers who possess the competences of 21st century teachers, especially nowadays when the FATiH Project is topical, are expected to be able to use the tablet computers that are one of the main components of the FATiH Project, actively and effectively. This is only feasible if teachers are tablet computer literate.

Tablet computer literacy, while being one of the new literacy notions, can be described as being aware of the tablet computer features and having the skills to use the tablet computers at normal and advanced levels. This study is aimed at determining the tablet literacy levels of the students of the Physical Education and Sports Teaching department, who are the teachers of the future, and examining this data in terms of various variables.
METHOD

The purpose of this section is to provide information regarding the findings, participants, data collection tool and data collection process of the study.

Participants

Some 276 students of the University of Sakarya, Faculty of Sports Sciences, Physical Education and Sports Teaching Department participated in this study, which aimed at measuring the tablet computer literacy levels of the Physical Education and Sports Teaching students. Participant selection for the study was conducted through convenience sampling. Some 117 (42%) of the participants are female and 159 (58%) are male students. Their age group is 18-34 years. The majority of the students are 21 years old. In addition, 64 (23%) of the participants are students in the 1st grade, while 66 (24%) are in 2nd grade, 62 (22%) in 3rd grade and 84 (31%) in 4th grade. A total of 123 students (45%) own a tablet computer while 153 (55%) do not own one. The time of usage of the students owning tablets varies between 1 and 13 years. The highest frequency of usage is 3 years.

Data Collection Tool

The data collection tool used in the framework of this study is the “Teacher Candidates Tablet Computer Usage and Literacy Scale” developed by Kiyici, Kirksekiz, Kiper, and Işbulan (2014). The scale features 33 items and is in the 3-factor structure.

There are 15 items in the first factor. The load values of these items vary between 0.56 - 0.88. This factor which accounts for the 29.82% of the total variance of the scale, is named as “Tablet Computer Basic Level Usage Competence”. There are a total of 9 items in the second factor of the scale (with load values varying between 0.62 - 0.74). This factor accounting for 15.60% of the total variance of the scale, is named the “Tablet Computer Feature Awareness”. The third factor of the scale involves 9 items. The load values of these items vary between 0.74 - 0.46. This factor which accounts for 14.84% of the total variance of the scale is named the “Tablet Computer Advanced (Expert) Level Usage Competence”.

Internal consistency coefficients are found as the following: .96 for the “Tablet Computer Basic Level Usage Competence” factor, .88 for the “Tablet Computer Feature Awareness” factor and .89 for the “Tablet Computer Advanced (Expert) Level Usage Competence” factor. These internal consistency coefficient values are considered to be acceptable values for the reliability level of the tablet computer literacy competence scale. Hence the overall “Teacher Candidates Tablet Computer Usage and Literacy Scale” can be used in the study.

Data Collection Process

In this study aimed at measuring the tablet computer literacy levels of students in the Physical Education and Sports Teaching Department and examine this data in terms of various variables, the data were collected by applying the Tablet Computer Usage and Literacy Scale on the 276 students in the University of Sakarya, Sports Sciences Faculty, Physical Education and Sports Teaching Department in the Fall Term of the 2015-2016 Academic Year. The data collection process took approximately 2 weeks and special attention was paid in order to ensure the data collection to be from the volunteer students.

FINDINGS

In this section, the findings regarding the study are given in terms of the tablet computer literacy level, gender, age, grade, tablet computer ownership and the period of owning a tablet computer.
Table 1. The Tablet Computer Literacy Levels of the Students

<table>
<thead>
<tr>
<th></th>
<th>Mean ((\bar{x}))</th>
<th>Max</th>
<th>SD</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablet Computer Usage Competences</td>
<td>64.41</td>
<td>75</td>
<td>13.26</td>
<td>%86</td>
</tr>
<tr>
<td>Tablet Computer Feature Awareness</td>
<td>35.73</td>
<td>45</td>
<td>7.63</td>
<td>%79</td>
</tr>
<tr>
<td>Tablet Computer Advanced Level Usage Competences</td>
<td>36.91</td>
<td>45</td>
<td>8.05</td>
<td>%82</td>
</tr>
<tr>
<td>Tablet Computer Literacy</td>
<td>137.06</td>
<td>165</td>
<td>26.77</td>
<td>%83</td>
</tr>
</tbody>
</table>

According to the findings, the students’ total scores for “Tablet Computer Usage Competences”, “Tablet Computer Feature Awareness”, “Tablet Computer Advanced Level Usage Competences” and “Tablet Literacy” are at high levels. According to these findings, it can be said that the tablet literacy skill of the Physical Education and Sports Teaching Department students is at high level.

Table 2. The Tablet Computer Literacy Levels of the Students in terms of the Gender Variable

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>N</th>
<th>Mean ((\bar{x}))</th>
<th>SD</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablet Computer Usage Competences</td>
<td>Female</td>
<td>117</td>
<td>64.68</td>
<td>12.10</td>
<td>.285</td>
<td>.776</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>158</td>
<td>64.22</td>
<td>14.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet Computer Feature Awareness</td>
<td>Female</td>
<td>117</td>
<td>35.02</td>
<td>7.65</td>
<td>1.32</td>
<td>.188</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>158</td>
<td>36.25</td>
<td>7.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet Computer Advanced Level Usage Competences</td>
<td>Female</td>
<td>117</td>
<td>36.63</td>
<td>7.84</td>
<td>.496</td>
<td>.620</td>
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<tr>
<td></td>
<td>Male</td>
<td>158</td>
<td>37.11</td>
<td>8.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet Computer Literacy</td>
<td>Female</td>
<td>117</td>
<td>136.34</td>
<td>25.31</td>
<td>.387</td>
<td>.699</td>
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<tr>
<td></td>
<td>Male</td>
<td>158</td>
<td>137.60</td>
<td>27.86</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The findings suggest no significant differences were found for the students’ total scores for “Tablet Computer Usage Competences”, “Tablet Computer Feature Awareness”, “Tablet Computer Advanced Level Usage Competences” and “Tablet Literacy” in terms of the gender variable.

Table 3. The Tablet Computer Literacy Levels of the Students in terms of the Grade Variable

<table>
<thead>
<tr>
<th>Grade</th>
<th>N</th>
<th>Mean ((\bar{x}))</th>
<th>SD</th>
<th>Source of Variance</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablet Computer Usage Competences</td>
<td>1. Grade</td>
<td>64</td>
<td>62.0</td>
<td>13.5</td>
<td>Inter-group</td>
<td>3</td>
<td>6.65</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>2. Grade</td>
<td>66</td>
<td>67.8</td>
<td>11.6</td>
<td>Intra-group</td>
<td>271</td>
<td>1102.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Grade</td>
<td>62</td>
<td>68.4</td>
<td>9.38</td>
<td>Total</td>
<td>274</td>
<td>165.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Grade</td>
<td>84</td>
<td>60.6</td>
<td>15.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet Computer Feature Awareness</td>
<td>1. Grade</td>
<td>64</td>
<td>34.2</td>
<td>8.04</td>
<td>Inter-group</td>
<td>3</td>
<td>2.64</td>
<td>.049</td>
</tr>
<tr>
<td></td>
<td>2. Grade</td>
<td>66</td>
<td>36.9</td>
<td>7.37</td>
<td>Intra-group</td>
<td>272</td>
<td>151.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Grade</td>
<td>62</td>
<td>37.2</td>
<td>5.95</td>
<td>Total</td>
<td>275</td>
<td>57.24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Grade</td>
<td>84</td>
<td>34.7</td>
<td>8.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet Computer Advanced Level Usage Competences</td>
<td>1. Grade</td>
<td>64</td>
<td>35.5</td>
<td>8.44</td>
<td>Inter-group</td>
<td>3</td>
<td>3.19</td>
<td>.024</td>
</tr>
<tr>
<td></td>
<td>2. Grade</td>
<td>66</td>
<td>38.4</td>
<td>7.08</td>
<td>Intra-group</td>
<td>272</td>
<td>202.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Grade</td>
<td>62</td>
<td>38.5</td>
<td>5.57</td>
<td>Total</td>
<td>275</td>
<td>63.36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Grade</td>
<td>84</td>
<td>35.5</td>
<td>9.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet Computer Literacy</td>
<td>1. Grade</td>
<td>64</td>
<td>131</td>
<td>28.4</td>
<td>Inter-group</td>
<td>3</td>
<td>5.14</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>2. Grade</td>
<td>66</td>
<td>143</td>
<td>24.1</td>
<td>Intra-group</td>
<td>271</td>
<td>3527</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Grade</td>
<td>62</td>
<td>144</td>
<td>18.8</td>
<td>Total</td>
<td>274</td>
<td>685</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Grade</td>
<td>84</td>
<td>130</td>
<td>30.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As a result of the analysis, significant differences were found in the tablet computer literacy levels of the students in terms of the grade variable. Scheffe Test was applied in order to identify between in which groups these significant differences occurred.
Table 4. Results of the Scheffe Test

<table>
<thead>
<tr>
<th>Tablets Usage Competence</th>
<th>Grades</th>
<th>Mean Diff.</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablet Computer Usage</td>
<td>2. Grade</td>
<td>7.18</td>
<td>.011</td>
</tr>
<tr>
<td>Competence</td>
<td>4. Grade</td>
<td>7.81</td>
<td>.005</td>
</tr>
<tr>
<td>Tablet Computer Literacy</td>
<td>2. Grade</td>
<td>12.36</td>
<td>.045</td>
</tr>
<tr>
<td></td>
<td>4. Grade</td>
<td>13.26</td>
<td>.029</td>
</tr>
</tbody>
</table>

As a result of the Scheffe Test, the tablet computer usage competence and tablet computer literacy levels of the students in the 2nd and 3rd grades were found superior to that of students in the 4th grade.

Table 5. The Tablet Computer Literacy Levels of the Students in terms of the Owning a Tablet Variable

<table>
<thead>
<tr>
<th>Tablets</th>
<th>Owning</th>
<th>N</th>
<th>X</th>
<th>SD</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Usage Competences</td>
<td>Yes</td>
<td>123</td>
<td>66.52</td>
<td>11.48</td>
<td>2.39</td>
<td>.017</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>152</td>
<td>62.71</td>
<td>14.35</td>
<td></td>
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</tr>
<tr>
<td>Computer Feature Awareness</td>
<td>Yes</td>
<td>123</td>
<td>36.82</td>
<td>6.78</td>
<td>2.15</td>
<td>.032</td>
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<tr>
<td></td>
<td>No</td>
<td>152</td>
<td>34.84</td>
<td>8.16</td>
<td></td>
<td></td>
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<tr>
<td>Computer Advanced Level Usage Competences</td>
<td>Yes</td>
<td>123</td>
<td>38.18</td>
<td>7.19</td>
<td>2.37</td>
<td>.018</td>
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<tr>
<td></td>
<td>No</td>
<td>152</td>
<td>35.88</td>
<td>8.56</td>
<td></td>
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<tr>
<td>Literacy</td>
<td>Yes</td>
<td>123</td>
<td>141.54</td>
<td>23.24</td>
<td>2.51</td>
<td>.012</td>
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<td></td>
<td>No</td>
<td>152</td>
<td>133.44</td>
<td>28.88</td>
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<td></td>
</tr>
</tbody>
</table>

According to the findings, significant differences were found for the students’ total scores of “Tablet Computer Usage Competences”, “Tablet Computer Feature Awareness”, “Tablet Computer Advanced Level Usage Competences” and “Tablet Literacy” in terms of tablet computer ownership. In accordance with these differences, the scores of the students who own a tablet are higher in comparison to the scores of the students who do not own a tablet in terms of “Tablet Computer Usage Competences”, “Tablet Computer Feature Awareness”, “Tablet Computer Advanced Level Usage Competences” and “Tablet Literacy”.

Table 6. The Relation of Age, Grade and Amount of Time Spent Using Tablet Computers with Tablet Computer Literacy

<table>
<thead>
<tr>
<th></th>
<th>Tablet Comp.</th>
<th>Tablet Aware.</th>
<th>Tablet Advanced Level</th>
<th>Tablet Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.042</td>
<td>.009</td>
<td>.017</td>
<td>-.013</td>
</tr>
<tr>
<td>Grade</td>
<td>-.057</td>
<td>.011</td>
<td>-.016</td>
<td>-.030</td>
</tr>
<tr>
<td>Tablet Usg. Year</td>
<td>.138*</td>
<td>.138*</td>
<td>.128*</td>
<td>.146*</td>
</tr>
</tbody>
</table>

According to the analysis, a significant but low-level relationship was found between the tablet computer literacy subdimensions and tablet computer literacy variables only on the beam with amount of time spent using a tablet computer. Hence it can be said that with the increase in time spent using a tablet, the scores of “Tablet Computer Usage Competences”, “Tablet Computer Feature Awareness”, “Tablet Computer Advanced Level Usage Competences” and “Tablet Literacy” are increased.

RESULTS AND DISCUSSION

Currently, technology plays an effective and active role in every aspect of life. Technological devices are changing every day and technology is used by teachers as a tool to answer every need in the educational environments, just as in daily life (Alkan, 2005; Akpinar, 2005; Deniz, 2000; İşbulan, 2011; Van Wyk & Louw, 2008). The use of technological products in education facilitates students in listening for longer periods and comprehending the topic deeply, compared to the conventional methods. With the technology being used in education, besides internalizing information, individuals also gain the competences in terms of how and
where the information will be used.

Every passing day, the technological devices integrated into the education systems bring different perspectives to education. With the FATİH Project, the education processes supported with technology hold an important position in the Turkish education system. One of the most important building blocks of this process is the tablet computer distributed to the students and teachers.

Tablet computers which can ease the teaching and learning process also raise many problems. Although the order of importance of the encountered problems in tablet computer use in the teaching-learning process vary between teachers and students, many problems are common. Misuse of tablets in the teaching-learning process are concerns such as being often used especially by students to play games, listen to music and watch films, hence affecting the classroom learning environment negatively, while also affecting in-class participation and interaction. Other problems include causing waste of time, not being suitable for operation, and tablet computers having a negative effect on interest in printed material (Çetinkaya & Keser, 2014). Despite these concerns, tablets continue to take their place within the education systems with the development of technology. Therefore, the teachers who will sustain the education process with the tablet computers are expected to be tablet literate and able to use the tablets in their daily lives and classrooms effectively.

Findings of our study show that the tablet computer literacy levels of the Sakarya University Sports Sciences Faculty Physical Education and Sports Teaching Department students are observed to be at a high level. Considering the fact that the group consists of students who can be described as digital natives, this is an expected result. In addition, the tablet computer literacy skills and sub dimensions were compared in terms of various variables. As a result of the analyses, while no difference could be found in terms of gender, significant differences were found in terms of the grade and tablet ownership variables. While the difference caused by the grade variables is thought to be caused by the characteristic of the group, the fact that the students who own a tablet have higher literacy skills than the students who do not own a tablet, is an expected result. The tablet computer literacy skills of the students were observed to be increasing in proportion to the increase of tablet computer usage time.

Previous research showsthat including tablets within the class processes and correct use of tablets plays an important role in increasing the student success rate (Cant & Cooper, 2014; McDermott & While, 2013; Farmer et al., 2014). The fact that tablet literacy of the students in this study is at high level can be an indicator that their effectiveness in education will increase when they become teachers in future. At the same time, high tablet literacy levels can result in favor of the students in terms of adopting new technologies (Boticki, Baksa, Seow&Looi, 2015; Lu, Meng,& Tam, 2014).

In conclusion, results of the study suggest that tablet literacy skills are related to tablet ownership and increase in proportion to the time spent using the tablet computer. Therefore, the priority of tablet distribution to teachers within the scope of the FATİH Project will enable teachers to support the tablet with various educational applications. The completion of content suitable for the tablets will play an important role in the success of this project. Renewal of tablet hardware and software, the preparation of a guide for effective tablet use and regular updates for this guide are recommended.

REFERENCES


