Message from the editor-in-chief

Malaysian Online Journal of Educational Technology (MOJET) highlights the current issues in educational technology. MOJET is an international, professional referred 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 raging 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 2017
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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ABSTRACT

The purpose of this study was to design a problem based collaborative learning environment supported by dynamic web technologies and to examine students’ views about this learning environment. The study was designed as a qualitative research. Some 36 students who took an Object Oriented Programming I-II course at the department of computer programming in a public university participated in the study. The Object Oriented Programming I-II course was designed by incorporating different dynamic web technologies (Edmodo, Google Services, and Mind42) and the collaborative problem solving method by Nelson (1999). For the implementation process, students worked on real problem scenarios and ultimately produced software. During this process students worked in a learning environment supported by dynamic web technologies in order to solve the problems. To determine students’ views on this learning environment a semi-structured interview form was prepared; this consisted of questions on the learning environment supported by dynamic web technologies where collaborative problem solving methods were implemented. At the end of the course, focus group interviews were conducted with collaborative learning groups. The interview data were analyzed through content analysis. The results showed that 4 themes emerged, namely: positive aspects of the learning environment, difficulties faced in the learning environment, advantages of the learning environment, and skills gained as a result of the project. The results suggest that problem based collaborative learning methods and dynamic web technologies can be used in the community college learning environment.

INTRODUCTION

Nowadays, community colleges have an important role in training individuals with the necessary skills and competencies needed in the business sector. This is because the main goal of these colleges is training individuals to meet business sector needs. Hence, according to the Higher Education Institution’s definition in Turkey, community colleges are institutions that concentrate on education directed toward a specific career (The Council of Higher Education, 1982).

In Turkey and around the world, vocational and technical education is regarded as a process to satisfy business sector needs and work in close connection with it to train individuals at both a national and international level, while considering both national and international standards in the curriculum (The Group of Restructuring Vocational Education, 2014). Hence, community colleges are tasked with instilling in individuals the abilities required for a career. In the 21st century, community colleges not only teach individuals the skills for a certain job, but also provide the qualifications and cognitive abilities needed to fulfill the requirements in a fast-changing business sector (Organisation for Economic Co-operation and Development [OECD], 2011).

In this regard, community colleges are maintaining their education according to changing conditions. However, many problems occur in the community college education process. These problems are expressed
by many groups in our country, and the chief concern is the students' lack of a proper foundation. Most community college students are accepted by open admission. Consequently, most students are unsuccessful in both vocational and general areas (Alkan, Suicmez, Aydinkal, & Sahin, 2014; Cetin, 2010; Kaya, 2014; Kayir & Kilic, 2008; Kulekci, 2010; Sahin & Fındik, 2008). This situation continues after students have graduated, as they do not show the skills needed to apply theoretical knowledge in the real world. Other issues are the traditional methods used in the learning environment (Sahin & Fındik, 2008), the limited number of practical courses (Adiguzel, 2014; Gokturk, Aktaș, & Gokturk, 2013), and differences between the community college curriculum and business sector requirements (Alkan, Suicmez, Aydinkal, & Sahin, 2014; Adiguzel, 2014; Binici & Ari, 2004; Ekinci, Sahinoglu, Calma, & Daştan, 2011; Kaya, 2014; Kayir & Kilic, 2008; Sahin & Fındik, 2008; Şencan, 2008). These problems may lead to inadequacies in satisfying business sector needs.

Educational technology can be used for solving these problems. The problems educational technology can resolve are those oriented around lack of information and skills. Educational technology is defined by the Association for Educational Communications and Technology (AECT, 2008) as the study and ethical practice of facilitating learning and improving learning and performance by creating, using, and managing appropriate technological processes and resources. Therefore, educational technology can be used in different areas for improving learning and performance. Educational technology aims at solving problems with educational solutions. Using lecture-based teaching methods in developing both theoretical and practical information in community colleges is insufficient. Instead, constructivist learning environments could be designed to help students develop both the abilities needed for the 21st Century business sector and lifelong learning skills.

Teaching methods based on constructivist learning are the most appropriate approach to instill in students the skills demanded by the business sector (Ertmer & Newby, 1993). Hence, this study was conducted in the department of computer programming at the community college in a public university. This department has a two-year program to meet the needs of qualified technical staff in the department of information technologies of institutions by equipping students with both theoretical and practical knowledge in computer programming. The graduates of this department are known as computer programmers and are employed in the business or government sector (Afyon Kocatepe University Bologna Information System, 2017). As students should gain programming skills to graduate and to meet the needs of qualified technical staff in the institutions after graduation, Object Oriented Programming course can be considered important for the department of computer programming. Therefore at the beginning of the course, ill structured problems can be given to students and at the end of the course they can solve that problem by designing and developing software. On the other hand, students can not only learn by doing the programming and but also develop their skills such as problem solving, critical thinking, individual learning skills and lifelong learning skills during the problem solving process.

The Bologna Process is related to skill development at international level. Some 48 countries including Turkey have collaborated to enhance their higher education system through the Bologna Process. The aim of this process is to implement reforms in higher education and adapt the higher education system to make it more compatible with respect to various quality control mechanisms. To achieve this aim, stakeholders such as policy makers, business sector, students and graduates should participate in the process. Therefore, the higher education system can be more useful besides meeting international needs of the business sector (The Council of Higher Education, 2010). In this regard, students at the department of computer programming in Turkey should gain skills in programming to meet the needs of both national and international institutions. Especially students can learn computer programming and the other skills needed in the 21st century by solving ill structured problems in the Object Oriented Programming Course. Furthermore, dynamic web technologies can be integrated into the problem solving process to make students more active in their learning by allowing them to collaborate, interact and participate actively in learning given the features of dynamic web technologies. Among the educational benefits of dynamic web technologies, the foremost are: success, active learning, motivation, collaborative learning (Gulen & Cakir, 2012), communication and interaction, and improvement of thinking skills (problem solving, critical thinking, etc.) (Karaman, Yildirim, & Kaban, 2008). Consequently, a study on designing a learning environment with ill structured problems and incorporating dynamic web technologies in an Object Oriented Programming Course is well worth conducting.
LITERATURE REVIEW

Constructivism and Constructivist Learning Environments

According to constructivism, learning is defined as obtaining knowledge through an active process, and teaching as the support of that process through exploration and dialog (Duffy & Cunningham, 1996). Learning is paramount, and student centered approaches are used (Ertmer & Newby, 1993). A constructivist learning environment is defined as a place where learners work together and support each other as they use a variety of tools and information sources in their guided pursuit of learning goals and problem-solving activities (Wilson, 1996). As apparent from the definition, a constructivist learning environment emphasizes the learning instead of the teaching. Also, flexibility is at the forefront in this learning environment. Ill structured problems must be used instead of structured problems. The instructor’s role in guiding, counselling, and giving students the necessary support is emphasized (Jonassen, 1999; Wilson, 1996). Researchers have advanced different methods related to the constructivist learning environment. In most of these, students are given a problem to solve; in this way, they improve both their knowledge and cognitive skills.

The problem based learning (PBL) approach based on constructivism has been used in the learning and teaching process. Problem based learning is a process that ends up with solving a problem (Barrows, 1996). The learning process takes place by solving a real life problem. In other words, during the learning process, the students are actively involved with solving the problem given and are therefore responsible for their own process (Hmelo-Silver, 2004). The collaborative learning approach based on constructivism is an in-class method where students work in groups and are rewarded according to their performance (Slavin, 1980). Students generally work with two or more classmates on researching a certain topic, finding a solution to a problem, or preparing a project (Smith & MacGregor, 1992). The collaborative problem solving is also used in designing constructivist learning environments. In the collaborative problem solving approach, students learn collaboratively, and involve in activities such as improving group skills, creating groups, showing effort during the problem solving process, and evaluation at the end of the process (Nelson, 1999).

Studies have been conducted on educational contributions of these constructivist learning environments. It has been found that learning environments designed based on problem based learning and collaborative learning methods increase academic success (Arıcı & Kidim, 2007; Gürsul & Keser, 2009; Hou, Yu, Wu, Sung, & Chang, 2016; Hwang & Kim, 2006; Karami, Karami, & Attaran, 2013; Korucu, 2013; McParland, Noble, & Livingston, 2004; Nuutila, Törmä, & Malmi, 2005; Podges, Kommers, Winnips, & Joolingen, 2014; Ribeiro & Mizukami, 2005; Tsai, Lee, & Shen, 2013); improve problem solving, critical thinking, individual learning skills and lifelong learning skills (Gu, Chen, Zhu, & Lin, 2015; Hung, Jonassen, & Liu, 2008; Kadir, Abdullah, Anthony, Salleh, & Karamarin, 2016; Özürk, Karayagız-Muslu, & Dicle, 2008; Sungur & Tekkaya, 2006; Şendağ & Odabaşı, 2009; Yin, Abdullah, & Alazidiyen, 2011); and develop students’ attitudes toward the course (Batt, 2014; Demirel & Dağyar, 2016; Toraman & Demir, 2016). Therefore, these methods can be used effectively in community colleges.

Constructivist Learning Environments and Technology

In the constructivist learning environment, technology is an important factor in terms of access to learning sources, communication with other students, and cognitive tools usage. Technology refers to cognitive tools such as computers and other related technologies as indicated by Jonassen and Reeves (1996). According to constructivism, technology is not solely used for preparing and presenting a pre-planned layout. This is because constructivism requires various technologies in tasks such as researching information, presenting, communicating, support, and collaboration during the problem solving process. With this approach, technology is not only for presenting information as in traditional use, but it is also used for assisting students in finding, interpreting, organizing, sharing, and presenting the information (Jonassen & Reeves, 1996). As such, technology should be for the learner, not for the teacher. Dynamic web technologies have the potential to develop students’ skills concerning problem solving, collaboration, critical thinking, and self-regulated learning skills.

O’Reilly (2005) states that dynamic web technologies have services that can be controlled by the user.
Dynamic technologies are web based applications that bring a new dimension to interaction. They allow users to create content, share it, and collaborate with other users (Franklin & Van Harmelen, 2007). With dynamic technologies, users are not passively accessing information, but actively using, creating, and sharing it (Yükseltürk & Top, 2013). In literature, these dynamic web technologies are known as “read/write” technologies (Albion, 2008). Because of opportunities dynamic web technologies provide, communication, interaction, collaboration, and active participation between users have further increased. As a result, dynamic technologies have been noticed by researchers who have conducted studies on them. Dynamic web technologies in the learning environment have been found to increase success (AlJeraisy, Mohammad, Fayyoumi, & Alrashideh, 2015; Arslan & Şahin-Kızıl, 2010; Chou & Chen, 2008; El Tantawi, 2008; Hou, Yu, Wu, Sung, & Chang, 2016; Korucu, 2013; Lavonen, Meisalo, & Lattu, 2002; Malhiwsky, 2010). Similarly, Hew and Cheung (2013) compiled studies on how dynamic web technologies affected learning and concluded that the general effect was that dynamic web technologies in K-12 and universities increased students’ success. Thus, constructivist learning environments can be supported by dynamic technologies in primary, secondary, and even higher education.

A problem based collaborative learning environment may also benefit by solving educational problems faced by community colleges. This is because in a problem based collaborative learning environment, students exert themselves to find solutions to real problems, use different technological tools to find the necessary sources, collaborate with classmates, receive instructor support and come up with a solution. In the literature, studies conducted on solving problems faced in learning environments in Turkey, community colleges in particular, are very limited. From this point, a study on designing problem based collaborative learning environment supported by dynamic web technologies in community colleges is well worth conducting. In this regard, Object Oriented Programming I-II courses at the department of computer programming are suitable for this design. In the programming courses, students can solve the ill structured problems given to them. Thus, they can learn programming and improve 21st century and lifelong learning skills within the problem solving process as stated in similar studies. Studies conducted on computer programming activities also show us how they reflect on students’ cognitive abilities positively (Akpınar & Altun, 2014; İsmail, Ngah, & Umar, 2010; Liao & Bright, 1991). A problem based collaborative learning environment supported with dynamic web technologies may be useful to equip students with those skills. Within these parameters, the main problem of this study is: what are the views of students regarding the learning environment supported by dynamic technologies where collaborative problem solving method is used.

**Purpose of the Study**

The purpose of this study is to design a learning environment supported by dynamic technologies where collaborative problem solving method is implemented and determine students’ views on this environment. For this purpose, the study seeks an answer to the question: “What are the students’ thoughts on a learning environment supported by dynamic technologies where collaborative problem solving method is implemented?”

**METHOD**

**Research Method**

This study was set up as a qualitative research in order to determine students’ views on a learning environment supported by dynamic technologies where collaborative problem solving method was applied. In this regard, students had focus group interviews as the groups they formed during in-class activities. Focus group interviews enable researchers to get a better sense of the participants’ views, experiences and feelings on a certain matter (Yıldırım & Şimşek, 2013). Hence, the students’ full ideas on the environment created were obtained.
Study Group

One of the researchers worked in a public university in Turkey, and the study group was selected from the students in the department of computer programming at the community college through convenience sampling method. This study took place during the autumn-spring semester of the 2015-2016 school year. Some 36 students at the department of computer programming from a public university in Turkey who took the Object Oriented Programming I-II course participated in the study.

Data Collection Tools

A semi-structured interview form was prepared to determine students’ views on a learning environment supported by dynamic web technologies for collaborative problem solving. At the end of the course, focus group interviews were conducted with collaborative learning groups. The interview involved questions about students’ thoughts on a learning environment supported by dynamic web technologies where collaborative problem solving methods is implemented, such as the pros and cons, any difficulties they had faced, the effect of environment on student learning, and any skills they had gained. The focus group interview sessions lasted around 30 minutes and were recorded on a tape recorder.

Development of the Learning Environment

The learning environment supported by dynamic technologies and collaborative problem solving method was used. Students worked in groups to solve the problems presented and ultimately developed a software. While the learning environment, incorporating dynamic web technologies and based on collaboration, was being set up, the collaborative problem solving method introduced by Nelson (1999) was utilized. This process was as follows:

1. Build Readiness: Ill-structured problems were prepared by the researcher. Later the collaborative problem solving method, dynamic web technologies, and how to use them were explained to the students. During a 3 week period students were oriented regarding how to sign up for dynamic web technologies, how to use the relevant technology (menus, buttons etc.), how to share files, and so forth. In this way, the students were accommodated to the environment.

2. Form and Norm Groups: At the beginning of the implementation, groups of 3 to 5 people were formed. Later, these students were assigned to Edmodo and formed groups based around virtual collaboration.

3. Determine a Preliminary Problem Definition: The collaborative learning groups had online meetings using Google Services to solve the real problem scenarios given. They identified the problem and prepared a draft plan aimed at finding a solution. Later, they researched the necessary resources, tools and other support needed for the plan.

4. Define and Assign Roles: Each student in the collaborative learning groups fulfilled the tasks assigned to their own role.

5. Engage in an Iterative Collaborative Problem-Solving Process: In order to solve the real problem scenarios given, the groups conducted a series of activities such as online meetings via Google Hangouts, documenting group decisions with Google Documents, sharing progress on Edmodo weekly, sharing comments with other groups on Edmodo, and completing the steps necessary for creating the software.

6. Finalize the Solution or Project: The groups shared the final draft of the software they had prepared with the instructor and the other groups, and received feedback.

7. Synthesize and Reflect: Students prepared a report detailing their experiences during the collaborative learning process, what they had learned, and the skills they had gained.

8. Assess Products and Processes: The researcher evaluated the prepared software and the process.
9. Provide Closure: The prepared software was shared with the instructor through Google Drive and the process was concluded.

During the problem solving process, the groups used dynamic technologies to solve the problem scenarios. These dynamic web technologies were Edmodo, Google Hangouts, Google Documents, Google Drive, and the Mind42. The next section gives a detailed explanation of how these technologies were used.

Edmodo can be identified as an educational social media. Students signed up for Edmodo and all announcements, sharing the lesson programs, creating groups, sharing the group agreements, presenting real problem scenarios to the groups, and planning activities were made through Edmodo.

Using Google Hangouts, the group members had planned online meetings among themselves and with the instructor. During these meetings they used other dynamic technologies such as Google Drive, Google Documents, and Mind42.

They used Google Docs for activities such as creating group rules, role distribution in the group, forming the steps in the project, and writing up the project report. By using Google Docs, students were able to access the prepared documents at any time and make online adjustments.

With Google Drive, students stored any documents they prepared online (such as projects, reports, etc.) to be accessed by those permitted to view them. By using Google Drive they were able to save their projects and other important documents online, access these at any time and make online adjustments.

Mind42 was used as a mind mapping tool. Students used mind maps for the layout of the project they created to solve the given problems.

During the implementation process of this study, students used the aforementioned dynamic technologies. These dynamic web technologies could be useful during the research process as they provided a space for students to produce content, share content with the instructor and other groups, and work in collaboration. This is because dynamic web technologies are in widespread use and easily accessible. These technologies are publicly available, free, and easy to use. Edmodo was selected for this study for similarities with Facebook as social media, authentication, Turkish language support, and minimum distracting elements. Google services can be used with only authentication and provide students to use Google services synchronously. Mind42 can be used with authentication and enable students to work on the same mind map and export the mind map in different file formats.

**Implementation Process**

This study lasted 8 weeks during the autumn-spring semester of the 2015-2016 academic years, with computer programming students from a public university who took the Object Oriented Programming I-II courses. During the implementation process, students worked on the real problem scenarios given to them and ultimately produced a software. During this process they worked in a learning environment supported by dynamic web technologies in order to solve these problems. The course aimed at designing and building a software using object oriented programming language. The content of the courses are defining variable, data types, using operators, control structures, arrays, classes, methods and properties, delegates and events, functions and database connection (Afyon Kocatepe University Bologna Information System, 2017).

In this regard, at the beginning of the autumn semester, the instructor explained the course design and started with algorithm, basics of the programming for 6 weeks. Then, the implementation started and continued till half of the spring semester. During the implementation, students learnt the course content and produced a software for solving the ill structured problem given.

At the beginning of the implementation, groups of 3-5 people were created. Before the implementation began, students first learned about problem based education, collaborative learning, dynamic web technologies, and how to use them. During a 3 week period students were oriented regarding how to sign up for dynamic web technologies, how to use the corresponding technology (menus, buttons etc.), how to share files, and so forth. In this way, the students were accommodated with the environment.
The implementation process began with the students being assigned to their collaborative learning groups. Later, these students were assigned to Edmodo and created groups based around virtual collaboration. After this step, the groups continued their communications and interactions through Edmodo. Any course related documents such as the syllabus, assignments, and real problem scenarios, were shared through Edmodo by the instructor. Afterward, students were asked to come up with a group agreement that covered the role distribution, plans, responsibilities and so forth, during the implementation process. Students used Edmodo, Google Drive, Google Hangout, and Google Documents to compose and publish their group agreements.

In order to solve the real problem scenarios given to them, students did the following weekly activities with their groups:

- Had weekly meetings with their group members
  - Used Google Hangouts for these meetings
  - Prepared the decisions made during these meetings with Google Docs
  - Shared these decisions through Edmodo
- Shared news related to the project through Edmodo weekly
- Shared comments related to the project with other groups on Edmodo
- Shared the projects with the instructor through folders in Google Drive every week
- Had at least one online meeting with the instructor during the implementation process.

At the end of the implementation process the students had come up with a software as a solution to the real problem scenario. The groups concluded the process by preparing a report on their project and sharing it with the instructor through Google Drive.

**Data Analysis**

Content analysis was used for the qualitative data. To do this, first of all interviews were transcribed. Students’ answers were reviewed and the codes explaining the data were accessed. The codes relevant to each other were collected and sorted into categories and themes. After this, the code, category, and theme were made into a report with citations from students’ views (Yıldırım & Şimşek, 2008).

In this qualitative research, some issues were taken into consideration for reliability and validity. To ensure internal validity, prolonged engagement, peer examinations, expert reviews were taken into consideration. Prolonged engagement is the presence of researcher and students together for a certain period during the study. The researcher conducted this study for 8 weeks. Therefore the researcher and the students knew each other well. As a result, during the focus group interviews, an intimate and warm climate was built between the researcher and the students. This led to valid answers to interview questions. Another approach was peer examination. The researcher inquired about interpreting the findings to an expert in qualitative data analysis. To ensure content validity and accuracy of qualitative questions 3 experts evaluated the interview form. In order to ensure external validity, how the study was conducted was explained in detail and quotations from students’ answers were presented in the findings of the study.

In order to ensure reliability, inter-coder reliability analysis was conducted. To do this the data were analyzed by a separate coder with experience in qualitative data analysis. Afterwards, the consistency of the codes were determined by the following formula:
inter−coder reliability = \frac{\text{number of agreements}}{\text{number of agreements} + \text{number of disagreements}}

(Miles & Huberman, 1994)

As a result, the reliability coefficient was calculated as 88%. According to Miles and Huberman (1994), this shows that the qualitative data are reliable.

**FINDINGS**

**Students' Views on a Learning Environment Supported by Dynamic Technologies Where Collaborative Problem Solving Method Is Applied**

The research question is “What are students’ views on a learning environment supported by dynamic technologies where collaborative problem solving method is applied?” At the end of the implementation, students had focus group interviews. The data collected at the end of the implementation were analyzed using content analysis method. First, the data were reviewed and the codes explaining the data were accessed. After this, the codes relevant to each other were collected and sorted into categories and themes. The students’ answers were submitted with their group and student number (e.g., G11, G23, G64) under the theme, category, and codes obtained. Lastly, the results were interpreted. The themes, categories, codes, and their frequencies are shown in Figure 1.

![Figure 1. Analysis Results Regarding Qualitative Data.](www.mojet.net)
Four themes were obtained from the data analysis, including positive aspects of the learning environment, difficulties faced in the learning environment, advantages of the learning environment, and skills gained as a result of the project. The categories, codes, and answers related to these themes will now be explained in detail.

The students were asked about the positive aspects of the learning environment and their answers were sorted under three categories, “Dynamic web technologies”, “Collaborative learning”, and “Instructor”. In general, students expressed their satisfaction with the dynamic web technologies. The most common statement was that dynamic web technologies had simplified learning ($f = 22$). Regarding the positive aspects of dynamic web technologies, students expressed that the learning environment had given them opportunities to use many different dynamic web technologies, that they had not been able to benefit from these technologies before the course, that they had realized the potential of these technologies ($f = 19$), that communication with group members and the instructor was easier thanks to dynamic web technologies ($f = 12$), that they were able to constantly exchange ideas with other groups using these technologies ($f = 11$), that dynamic web technologies provided them with the means to share the project with their group members and the instructor ($f = 9$), that dynamic web technologies made the group work more convenient ($f = 4$), and that it gave them more time flexibility ($f = 1$). These were the most prominent student views regarding dynamic web technologies:

“We didn’t know a lot of the dynamic web tools before the course—Edmodo, for instance. We made the mind maps on Paint before. Along with Mind42, this made our work a lot easier.” (G11).

“We didn’t really know how to use these Web tools before. Mind42 for instance. We learned about them thanks to the course and it was beneficial for us.” (G53)

“Thanks to the technologies it was much easier to get our work done. We could communicate with each other anytime and talk about what we were going to do.” (G22)

“It was really helpful to see what our other friends were sharing on Edmodo.” (G61)

“Google Drive is already a system designed for group work. We can all upload files there at the same time, and make changes to the same document. In this regard, it was successful.” (G11)

“It was quick and easy to share things with each other. We didn’t have to be occupied with paper and documents. So we were lucky that it was all online.” (G21)

“Because we could have meetings on Hangouts so our problems and group work weren’t left incomplete.” (G61)

“It was useful for us in regard to time.” (G72)

According to the students, another positive aspect of the learning environment was collaborative learning. Under the collaborative learning category, students expressed that working with a group facilitated learning ($f = 37$), that exchanging ideas with other groups had benefits ($f = 11$), that during the process group members expressed their own ideas and each idea was taken into consideration ($f = 9$), that they learned the problem solving process ($f = 7$), and that they researched different sources and ideas to solve the problems given ($f = 7$). These were the most prominent student views regarding collaborative learning:

“This project would have been difficult to do on our own, but as a group we completed each other’s shortcomings. As a result, we presented a better project in less time.” (G82)

“We would comment on the other groups’ work and they would give us ideas as well.” (G12)

“During the group work everyone put forth their own ideas on how to do things. We began by considering different ideas.” (G22)

“We learned to be a group, to identify problems and solve them together.” (G24)
“We had a few problems during the programming process. There was some confusion and mix-ups, so we had help from the instructor, each other, and the Internet.” (G61).

According to the students, another positive learning environment aspect was the instructor’s support. Under the instructor category, students expressed that they discussed their projects with the instructor and received feedback throughout the problem solving process (f = 5), that it was helpful when the instructor provided them with basic information about programming (f = 4), that communication with the instructor was easy (f = 4), that the instructor provided them with necessary sources throughout the problem solving process (f = 4), and that the instructor guided them throughout the problem solving process (f = 2). These were the most prominent student views regarding the instructor:

“The instructor gave us guidance and advice at times. For example, he told us to add certain things that we hadn’t thought of, and he was a lot of help.” (G82)

“The codes the instructor gave during the lessons were helpful for us.” (G73)

“When we had difficulty finding something or didn’t understand the material, the instructor would share files with us and that was beneficial.” (G13)

“With a single teacher, there isn’t enough time for one-on-one. But we had two instructors and the fact that they were online was a lot of help.” (G82)

“Before the project began the instructor gave us all of the information and step-by-step instructions. This was really helpful.” (G52)

Students were asked about any difficulties they faced in the learning environment and their answers were sorted under two categories, “Difficulties experienced during the collaborative learning process”, and “Technical difficulties”. Regarding difficulties experienced during the collaborative learning process, students expressed that they experienced different problems with coding (f = 13), that they had responsibilities from other classes (f = 5), and that some of the collaborative learning groups did not fulfill their duties properly (f = 3).

These were the most prominent student views regarding collaborative learning:

“We had some problems when we divided up the classes-- for instance, we gave the customer class to “A” and the personnel to “E” and I was in charge of payment. So we did that but we had some problems with integration.” (G11)

“The thing was, we had other work and to do as well. It all piled up. Dissertations, homework, exams. It was hard when everything was at the same time.” (G74)

“We didn’t really have any problems in our group. The only thing for us was that one of our group members left the group.” (G12)

Under the technical difficulties category, students expressed that they had problems with Internet access (f = 14), that they had not known how to use dynamic web technologies prior to the class and that they had faced difficulty using them during the early stages of the process (f = 13). These were the most prominent student views regarding technical difficulties:

“They weren’t exactly difficulties, but we did have a few technical malfunctions. Sometimes we couldn’t do the meetings because of one of our group member’s Internet wasn’t working” (G81)

“We didn’t know to use these tools such as Google services, Mind42 especially, Edmodo. We asked our friends about these tools.” (G13)

Students were asked about the advantages of the learning environment and their answers were sorted under three categories, “Using dynamic web technologies”, “Collaborative learning”, and “Learning course
content”. With regard to dynamic web technologies, students expressed that integrating dynamic web technologies into the course facilitated learning (f = 21), and that dynamic web technologies enhanced communication with group members and the instructor (f = 6). These were the most prominent student views regarding dynamic web technologies:

“In our other classes, we don’t use these tools and we can’t exchange ideas with our friends. But we can do that in this course through Edmodo, and that has a lot of advantages.” (G71)

“A simple example is that we could reach the instructor anytime we were faced with a difficulty, and he would help us right away.” (G63)

As for the collaborative learning environment, students expressed that working in groups had a positive effect on their learning (f = 16), that they learned the content quickly while working with a group (f = 3), that the problem solving process gave them opportunities to discuss different ideas with group members (f = 3), and that they shared ideas, information, sources, and so forth, with other groups (f = 1). These were the most prominent views regarding the collaborative learning environment:

“We help each other out, for example, if one of my friends is stuck he’ll ask me for help, and vice versa. If I know the material I’ll explain it to him.” (G11)

“It’s really a time saver.” (G12)

“We think this process is more beneficial because we’re able to swap ideas with each other in a group environment.” (G93)

Under the learning course content category, students expressed that the information they learned was more permanent compared to other learning environments (f = 28), and that they learned more efficiently (f = 8). These were the most prominent student views regarding course content:

“I think the project is more beneficial. After all, we’re doing the research ourselves and as we research we’re improving ourselves. When the teacher is showing us something fixed, we confine ourselves to it and don’t add on to that. I think the project was rewarding.” (G102)

“After all, we’re only human. We want to choose whatever is easiest for us, and since we’re only working on the subjects we already know, it doesn’t provide us with any extra information. But when the instructor talked about ticket sales, I didn’t know anything about the ticket selling automation so I worked on that and gained new knowledge, which was a plus for me.” (G81)

The students were asked which skills they gained in the learning environment, and their answers were collected under the “personal skills” and “career skills” categories. Under personal skills, students stated that they gained the following attributes, fulfilling their responsibilities (f = 11), working in a collaborative format (f = 10), solving the problems faced (f = 7), establishing communication (f = 4), believing in themselves (f = 3), sharing information (f = 3), critical thinking (f = 2), preparing reports on the subject (f = 1), being patient while programming (f = 1), researching on the subject (f = 1), being social (f = 1), and being respectful toward others (f = 1). Some key student views in the personal skills category are as follows:

“Because a group is the responsibility of all of its members, you feel that you need to be doing this, or doing that, and you become more responsible as a result of this. Being in a group is like this nonstop...” (G12)

“I learned how to be less selfish and to do a program with my friends rather than on my own.” (G62)

“For example, I could use the step by step technique we used for this project in my other classes as well.”(G63)

“This project taught me how to share my views and opinions with my friends, I was strongly affected by seeing how much easier it was to communicate our thoughts had between our group members. In this way, and in a positive light, I was more in communication with my friends and group members.” (G103)
“For example, as I was writing and attempting to finish the program I gained more confidence in myself the closer I got to the end.” (G61)

“Our ability to share was improved.” (G33)

“It improves our ability to think.” (G51)

“The project also helped us to learn how to write reports.” (G24)

“We were even checking over and over for the smallest punctuation mistakes. This angered us at time but it also taught us to be more patient.” (G54)

“We learned how to research.” (G53)

“The project improved our social abilities.” (G74)

“Since we learn to treat each other with respect and with friendliness during group work, we also learn how to be more empathic.” (G11)

Under the career skills category, students stated that they gained the following experience: improving their programming knowledge and skills (f = 11), and how to use a variety of technologies in their professional lives (f = 4). Some student views that stand out in the category of career skills are as follows:

“We learned to solve a problem from scratch and to make programs.” (G62)

“This project helped us on a professional level. We learned, for example, let’s say that we will be computer specialists and programmers in the future, and we will need to write a accounting software, I use Mind42 in my own professional life and let’s say the accountant told me that they [want] certain specifics in the software. Now I don’t know much about accounting but we can develop a concept map right then and there, we don’t even have to be face to face with the accountant I can just send him a copy of the program that I have written through Google Drive and he can check it to see if it fulfills his needs.” (G82)

DISCUSSION AND CONCLUSION

Students evaluated the learning environment supported by dynamic web technologies where collaborative problem solving method is applied as positive aspects of the learning environment such as use of dynamic web technologies and the collaborative problem solving method, and the instructor support. They considered this learning environment was favorable in providing group work, supporting learning with dynamic web technologies, active participation, gaining lifelong learning, career and personal skills compared to their other courses. Hence, it can be concluded that students were satisfied with the use of a learning environment supported by dynamic web technologies and collaborative learning methods.

In particular, students appreciated the ease of communication between both their group members and the instructor using dynamic web technologies, the active engagement, the accessibility of information, the opportunity for interaction with their group members, sources, and the instructor during the construction of knowledge, the opportunity to work on the same things simultaneously, and the access to information anywhere and anytime using the Internet. Magnuson (2012) found that implementing dynamic technologies in the learning environment was beneficial as such tools facilitated sharing and collaboration, organizing information, and discussion. Malhiwsky (2010) found that students were pleased with the learning environment because of easy communication, easy accessibility, entertainment, and the user-friendly dynamic technologies. Uzunboylu, Bicen, and Çavuş (2011) found that students had positive views on these technologies after dynamic web technologies were integrated into their learning environment. Korucu (2013) noted that pre-service teachers considered dynamic web technologies beneficial in terms of communication, interaction, and simplification. Considering the results of this study and those in the literature, using dynamic web technologies in learning environments is seen as beneficial.
Other aspects of the environment the students liked were the real world problem solving process, collaborative work, discussing ideas with group members, and the instructor’s guidance. Therefore, students viewed this learning environment as advantageous compared to their other courses. This is because dynamic web technologies are not commonly used in other courses, and face-to-face communication is used as the only communication source. Also, as they did not commonly use processes such as real world problem solving, group work, and active participation, they expressed their willingness to participate in similar courses.

It was shown that the learning environment was effective in developing students’ personal and career skills. In similar studies, results indicated that students were pleased with collaborative and problem based learning approaches. Hatıtaru and Güler-Küçükturan (2009) found that problem based learning was advantageous in terms of working on problems from real life, the active participation process, and increasing interest toward the course. In their study on the effectiveness of the problem based approach on nursing students, Yuan et al. (2011) found that this approach developed communication and collaboration skills, was a key factor in configuring information, simplified the transfer of theoretical information to real life, and increased motivation in learning. In their work on PBL among engineering students, Biber and Başer (2012) found that this approach ensured active participation, prompted individual and group work, and developed various skills (communication, leadership, collaboration, responsibility, etc.). As for elementary students, İnel and Balım (2010) found that the PBL approach increased motivation, ensured active participation, and that working on problems was beneficial. Thus, the results of this study overlap with research results in literature.

The negative sides of this learning environment were considered access to Internet, the use of the technologies for the first time, learning programming, the amount of other work in other courses and problems faced while creating the groups. However, Internet access was more about the resources of the individual students. Difficulties with using the dynamic web tools for the first time were overcome with the user manuals. Similarly, their work and obligations in other courses may have led to difficulties such as inability to participate in meetings, delays in weekly sharing, problems with coding, and so forth. This meant students had to put in more effort. Occasionally, it was seen that students did not fulfill their responsibilities during the collaborative learning process; at times, this situation led to disruptions in the process. Literature review showed that the difficulties and problems faced in a learning environment supported by dynamic web technologies were listed as accessibility, difficulty of use (Malhiwsky, 2010), problems with Internet access, difficulties using dynamic web tools for the first time, and difficulties with planning group work (Korucu, 2013). Thus, the results of the study overlap with research results in the literature.

When students’ views on a learning environment supported by dynamic web technologies and collaborative problem solving methods are evaluated, it is seen that these learning environments have many benefits for learning activities in community colleges. In particular, it was thought that these learning environments may be a solution for the difficulties faced during the learning process in community colleges. According to the students’ views, these environments also support the social constructivist learning principles. This is because dynamic web technologies are seen as beneficial in terms of social interaction, active learning, and collaboration. Thus, the course overlaps with the social constructivist learning principles.

**SUGGESTIONS**

We suggest the following for implementation and further research based on the conclusions obtained from the study:

**Suggestions for Implementation**

The collaborative problem solving method was seen as beneficial by the students in the Object Oriented Programming I-II class. Therefore, this method can be implemented in learning environments in community colleges. Courses in the programs of community colleges of higher education aimed at teaching information and experience related to daily life problems can be prepared using ill structured problems from
daily occurrences. In this way students can be taught using problem solving methods prepared according to the challenges they face daily and thus their learning will be more easily facilitated. As using both dynamic web technologies and collaborative problem solving method provide many advantages for students, it can be concluded that dynamic web technologies will enrich and simplify the learning process in community colleges. Dynamic web technologies must be provided in a way that enables students to interact with other students, the instructor, course content, and other elements. Also, there must be exercises that increase dynamic web technology use by students.

Suggestions for Research

This research was conducted during the Object Oriented Programming I-II course in the department of computer programming at a community college. Similar studies could be conducted using different classes and departments. The different variables in a learning environment supported by dynamic web technologies and collaborative problem solving method could be researched (academic success, effort, permanence, students’ attitude toward the class, motivation, self-regulatory skills, etc.)

REFERENCES


ABSTRACT

Malaysian teachers are constantly challenged with many new technologies that are believed to enable them to perform their job better. In 2013, they have been given access to an online learning space known as the FROG VLE. However, initial evidence has shown poor adoption of the e-learning. As schools are becoming increasingly disconnected from society, teachers withdrawing into their old familiar landscapes of teaching and learning can no longer be accepted. Being the implementers in the classrooms, their perceptions of any innovation are important if the innovation is to be implemented. Measures to improve the present condition in order to sustain and increase e-learning uptake can only be enforced if we know the situations and conditions teachers encounter. A qualitative approach was used to identify the views and experiences of 60 secondary school teachers regarding implementation of FROG VLE in three secondary schools in Malaysia. This is to obtain a more nuanced explanation for teacher perceptions toward e-learning. Data were collected using an open-ended questionnaire. The results highlight the benefits as perceived by the teachers, the main barriers they faced and suggestions for improving implementation. Implications for teacher preparation, staff development efforts and education reform are proposed.

Keywords: E-learning, blended learning, perceptions, secondary school education, teachers.

INTRODUCTION

By 2019, 50 percent of all high school courses are predicted to be delivered in online format (Horn & Staker, 2011). Education will be revolutionized by making it more accessible and individualized (Christensen, Horn, & Johnson, 2011). To keep pace with the growth of e-learning education, the Malaysian government has embarked on a nationwide project to connect schools where student and teachers teach and learn in a virtual learning environment. Massive resources have been channeled into equipping over 10,000 primary and secondary government schools nationwide with 4G internet connectivity and a cloud-based virtual learning environment known as FROG VLE (Campbell, Al Harthi, & Karimi, 2015).

The FROG VLE is the government’s initiative to leverage ICT usage in all its primary and secondary schools in Malaysia. The previous initiative, to increase ICT usage in schools known as the Smart Schools’ project despite having consumed massive expenditure, found that 80% of the teachers used ICT less than one hour per week, and this was also mostly limited to word-processing (UNESCO, 2013). Other researchers have also argued that computer usage in schools is limited and in some cases almost non-existent (Hew & Syed Abdul Kadir, 2016). To benefit from the latest innovation introduced in schools, early intervention programs are needed to prevent similar poor results. The return on such large technology investments need to equal the money spent thus far. To ensure this, teachers’ early perceptions of the FROG VLE are crucial. There is a dearth in studies on the VLE instructional effectiveness and relevancy from the K-12 teachers’ perspectives (Hew & Syed Abdul Kadir, 2016). Ongoing assessment plus intervention programs need to be carried out as problems emerged can then be swiftly identified and solved. In order to facilitate an effective e-learning environment, the benefits as well as the barriers to implementation must be understood. Thus,
three research questions guided this study:

1. What are the benefits of e-learning for teaching as perceived by teachers?
2. What are the barriers of e-learning implementation as perceived by teachers?
3. What suggestions do they have to improve the e-learning teaching and learning environment in schools?

The results of this study are expected to help stakeholders to better understand issues related to teaching and learning among the teachers implementing e-learning in their classrooms. It also hopes to provide implications for designing and delivering e-learning education and professional development courses. To evaluate the true effect of technology in an educational setting, one must look beyond the teacher level. Instead we should focus on the accessibility and availability of computers and Internet connection, and the preparatory programs to initiate teachers into integrating technology into their teaching and learning processes. We also believe that the benefits are best articulated by those with first-hand experiences in using e-learning in their classrooms. Those who have not used the system are likewise in a unique position to provide insights into the barriers preventing them from utilizing the system. Suggestions to further improve the e-learning teaching and learning were also sought in order to better understand teachers’ situations. The implications are far reaching in our understanding of the e-learning role in supplementing and at times complementing face-to-face teaching and learning. The present study is part of a larger study in which factors predicting teacher satisfaction with the e-learning environment were also studied.

**Theoretical Framework: Technology Acceptance Model (TAM)**

The TAM (refer to Figure 1) was developed by Davis, Bagozzi, and Warshaw (1989). It focuses on predicting and assessing users’ initial pre acceptance of technology. This model guides the context of this study. According to this model, system use is a response explained or predicted by users’ motivation which is directly influenced by a system’s specific features and capabilities. It provides ways for stakeholders to identify barriers and enablers to adoption of any new technology. TAM focuses on the context of user’s acceptance of technology in explaining computer usage behavior (Davis et al., 1989). The theory posits that user motivation can be explained through perceived usefulness (PU), perceived ease of use (PEOU) and attitude toward a system. According to TAM, attitude that users formed toward a system will actually determine if users will accept or reject it. As teachers in secondary schools are free to decide whether or not to use certain methods and approaches in their classrooms, their beliefs and perceptions are important in determining if ICT is to be used at all in their lessons. Teachers’ attitude, in turn, will be influenced by two beliefs variables namely PU and PEOU. PEOU is also believed to have a direct impact on PU. When they consider the technology as easy, they will then perceive it to be useful too.

![Figure 1. Modified Technology Acceptance Model (Davis, Bagozzi & Warshaw, 1989, p. 985)](image-url)
System design features were predicted to directly influence perceived usefulness and perceived ease of use (Davis, 1993). These features are proposed to affect attitude toward using and actual system use via perceived usefulness and perceived ease of use (Davis, 1993). The rationale of the system is the flow of causality starts from the system design features through perceptions and attitude before reaching usage. User acceptance is the key factor in determining the achievement or failure of an information system. TAM is well-acknowledged to predict technology use through behavioral intention, attitude toward use, perceived usefulness, perceived ease of use and external variables, that the model has been cited in most of the research on user acceptance of technology (Lee, Kozar & Larsen, 2003).

Rogers (1995) mentioned that the complexity of an information system will hinder acceptance of an innovation; thus constructs such as perceived ease of use in TAM highlight the matter. TAM postulates two main variables as antecedents to individual technology acceptance; perceived usefulness (PU) and perceived ease of use (PEOU). These variables are the independent variables (IV) whereas the dependent variable in this model is system use. These two independent variables determine the attitude toward using the system. Attitude and behavioral intention to use the technology act as the mediating variables of TAM. Technology use will be high if users believe that using the system will improve their job performance and if they think the system is easy to use. A number of key variables from TAM have been considered relevant in predicting teachers’ perceptions toward e-learning such as PU, PEOU and attitude. External variables in TAM have also made it possible to include many other variables deemed relevant to suit researchers’ local context and settings. As such this theory provides a useful framework for analyzing the effects of external variables toward users’ attitude thus behavioral intention in explaining technology acceptance and usage.

**Virtual Learning Environment in Malaysia**

The Frog Virtual learning environment (VLE) is a cloud-based learning environment that emulates the traditional face-to-face teaching and learning. It not only supports e-learning activities such as presenting information, managing course materials, and running assessments but it also provides a rich media environment with numerous graphics, video, animation, sound, and hyperlinks (Berns, Gonzalez-Pardo, & Camacho, 2013). It also offers teachers a number of benefits, such as having the course management tools, group chat and discussion, assignment submission, course assessments, educational resource management and also tracking of student’s participation. Besides increasing interest among the teachers and learners, it also enhances teaching effectiveness and is cost-saving. It provides support and enhances traditional ways of learning (Georgouli, Skalkidis, & Guerreiro, 2008). Various terminologies are also used to describe the LMS, for instance Course Management System (CMS), Learning Content Management System (LCMS), Computer-based Learning and Online Learning. At present there are several LMS applications in the market such as Moodle, Blackboard, Etutor, eFront among many others.

In Malaysia, recent development has seen the launch of the Malaysia Education Blueprint which is a detailed plan of action that maps out the education landscape for the period 2013-2025. Realizing the gap toward producing a more technologically literate workforce, one that is relevant to the 21st century knowledge and skills, it has identified 11 shifts needed to deliver the change in education outcomes envisioned by all Malaysians. The National Education Blueprint emphasizes effort to leverage ICT to improve the quality of learning across the country. Twenty-five initiatives have been identified under the first wave of the Malaysia Education Blueprint (2013-2015). One of them includes providing 1BestariNet and software for schools. 1BestariNet is a project led by the Ministry of Education (MOE) to provide access to a cloud-based Virtual Learning Environment (VLE) known as the FROG VLE (adopted from the United Kingdom) and high-speed connectivity by June 2014 to all the 10,000 fully-aided government schools. The FROG VLE is a web-based learning platform which provides virtual equivalents of real-world learning (Frog Asia, 2014). Here teachers can assign lessons, tests and marks while students can submit their homework, view their notes and important documents. School administrators can organize their calendars and disseminate notices via FROG VLE. This easy-to-use system allows teachers and students to search for almost anything on the Internet and build it into the site as their educational materials and resources. The FROG VLE provides a plethora of educational resources and cool apps from around the web for easy accessibility during teaching and learning sessions (Thah, 2014).
The 1BestariNet project is to replace Schoolnet which was launched in 2004. Schoolnet fell short of expectations, especially in terms of speed (only 1Mbps), capacity and lack of specifications and integration. 1BestariNet on the other hand is an ambitious technology-in-education project which will cost Malaysian taxpayers RM1.5 billion (nearly US$500 million) and its implementation is expected to run over 13 years. 1BestariNet IDs has been made available to all students, parents and teachers in all the schools nationwide, where they now have single-sign-on access to the Frog Virtual Learning Environment (VLE), Google Apps for Education and the FrogStore. Content and educational tools are integrated from Khan Academy and Google Apps (Razak & Yusop, 2013). Through the Frog VLE, teachers are able to digitize their teaching content and explore new ways of bringing the best resources and teaching methods to be shared across the 10,000 schools. Learning anytime, anywhere is now possible with high-capacity wireless Internet access to all 10 million teachers, students and parents in Malaysia.

As the VLE becomes a more important long-term strategy for many educational institutions, a quality e-learning environment is highly required. Research on VLE to date tend to emphasize more on features, components and technical aspects of the platform rather than ways to optimize VLE use in the classroom (Sa’adon, Dahlan, & Zainal, 2013). As the one person at the forefront of online delivery is the teacher, training and support for teachers are important components of an e-learning education. This is in relation to the different roles that teachers would be playing in an e-learning environment. The transition from face-to-face to an online setting requires relevant and effectively planned professional development courses. Are teachers ready to meet the challenges of increased demand for e-learning? Although there seemed to be an increase in the use of VLEs worldwide, there is no widespread transformation in pedagogic practices (Kinchin, 2012). In their study, Motaghian, Hassanzadeh, and Moghadam (2013) found that monetary, pedagogical and technical competencies are some of the more important factors affecting the success of any e-learning initiative. Instructors’ abilities, skills and commitment to teach online are critical to successful e-learning. Instructor willingness to adopt is also an important consideration. However, instructors’ pedagogical conceptions and values often do not include using ICT as part of their teaching and learning process. The majority of teachers are only using VLEs as a simple repository for students to obtain materials such as PowerPoint slides and reading lists (Rienties, Giesbers, Lygo-Baker, Ma, & Rees, 2014). Continual management of the e-course also makes the instructors’ work time-consuming. Teacher perception of extensive time required are the key obstacle to e-learning. More time is felt needed to plan, create and maintain a course and to motivate and spark interest among students to work online are just some of the many challenges to successful implementation. Their level of personal innovativeness also to a large extent will determine if they will take the extra steps to experiment with and implement any new innovation.

New Pedagogy and Technology for E-Learning Educators

Stepping into any classroom today is almost the same as stepping into any classroom 20 years ago. Although technology is used in every aspect of our students’ lives, the same does not happen in the classrooms. Instead, in schools computing is an organized event, scheduled according to the convenience of timetabling. The gap between what students can do with technology and what they are allowed to do with it in school is expanding with each passing day. Teacher Professional Development Courses, training, workshops and in-house sharing have been less than successful in helping teachers to be motivated to integrate technology for teaching and learning. School leadership is often unable to provide strong leadership and strong support due to their own lack of technological knowledge and experience. Even new teachers, whom the school communities looked up to for guidance on technology use, hardly infuse technology into their own classrooms. Current teacher preparatory programs are not effective enough in equipping these new teachers with the much needed skills and knowledge required to transform today’s classrooms. Teachers are just not taught to handle effective infusion of technology in all subject areas. Lacking in widespread support and professional development, existing teachers are unable to make the necessary changes to their classroom practices. Even the enthusiastic ones with high level expertise may give up because of the barriers faced. However, the fact remains that learning to teach and learn in new ways with technology is no small task. Imagination, intellectual stamina, creativity and huge courage are needed (Jacobsen, Clifford, & Friesen, 2002).
According to Guskey (1986), many educational initiatives fail because of two factors; management fail to understand what motivates teachers to engage in professional development and the processes by which change in teachers typically occur. Training and professional development courses will only work if teachers can be shown evidence of improvement in their students’ learning outcomes, even more so in our exam-oriented community. This is the prerequisite if we want to see significant changes in teacher attitudes and beliefs. Experienced teachers are seldom committed to new instructional approaches until they have seen it working in their classrooms with their students (Guskey, 2002). Training and implementation combined with improved students’ learning will have more chances at incurring changes in attitudes and beliefs among teachers.

Change brings with it a certain amount of anxiety and threat. Teachers are reluctant to change because they are unsure if they can make the new practices work (Lortie, 1975). As change means risking failure, teachers do not easily alter or discard the practices they have long developed and refined (Bolster, 1983). Technology intimidates even experienced teachers, as it makes them feel stupid, inept and at the mercy of situations they do not understand and cannot control. Teachers lacking confidence in their ability to handle the technology will simply not use it. Change will not be implemented uniformly across schools as teaching and learning are influenced by a number of situational and contextual factors. Close collaboration between the system’s developer, and management will help in facilitating change among the teachers. Regular feedback on what they are doing can sustain any little change they are trying to make.

Sustaining change after the implementation period must be seen as a continuous and ongoing endeavor. Considering the importance of their role, teachers’ perceptions of the newly implemented FROG VLE must be considered and taken into consideration for the betterment of e-learning implementation in Malaysian schools. Though a number of studies have been carried out in other countries, effects of contextual differences should not be discounted. Development of educational ICT path for every country is unique with its own educational, social, political and cultural contexts. These will differentiate factors influencing ICT usage among teachers according to their countries of origin. So this study will be particularly useful in identifying factors affecting Malaysian teachers’ use of the e-learning.

METHODOLOGY

Sample and Data Collection Procedures

Participants

Participants in this study were 60 teachers from three secondary schools from two states in Malaysia. They were randomly selected after their schools were identified as being among the top users of the FROG VLE. Some 18.33% of them mentioned no training on FROG VLE was received so far while 75% indicated that they have received training which exposed them to the VLE while 6.67% did not provide any indication. Moreover, 70% of them have less than fifteen years of teaching experience while the rest have more. As for the age of the participants, 40% are male, one did not indicate, while the other 58.33% are female. As for their age, they were mainly in the 41 to 50 years range (refer Table 1).
Table 1: Distribution of Participants' Age in the Survey

<table>
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<tr>
<th>Age Range</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-30</td>
<td>20</td>
</tr>
<tr>
<td>31-40</td>
<td>23.34</td>
</tr>
<tr>
<td>41-50</td>
<td>45</td>
</tr>
<tr>
<td>51-60</td>
<td>11.66</td>
</tr>
</tbody>
</table>

Procedures

Participants responded to an open-ended questionnaire administered to them in schools. Open-ended survey forms with three questions that inquired about teachers’ perceptions of the benefits, barriers and suggestion for improving FROG VLE were distributed. Data were collected about six months after the FROG VLE was implemented across the nation.

Measures

Open-ended survey form was employed as the data collection method. Three questions posed were meant to provide a window on what was working or not working and what needed further refinement in the recent implementation of e-learning. The data collected were then analyzed for key themes or patterns in teachers’ perceptions of the e-learning in schools. Burnard’s (1991) framework (refer Table 1) was adapted in order to produce a detailed and systematic record of the themes and issues identified from teachers’ opinions. The data were analyzed and results of the analyses were reviewed to verify accuracy and enhance reliability. In our analysis process, we are aware of Van Maanen’s statement (2011), whereby, there can never be “immaculate perception”, and no text or research may be closed to further interpretations (Van Maanen, 2011). The study would provide different interpretations had it involved different researchers and participants and was carried out in another place or at a different time. With this realization, we have approached this research with the belief that there will not be any single one truth; instead there will be many, with multiple realities and multiple interpretations of the same events (Cohen, Manion, & Morrison, 2000).

Table 2. Data Analysis Strategy

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Read all survey entries</td>
</tr>
<tr>
<td>2</td>
<td>Re-read the data and make notes throughout the reading, generate general themes. Immerse in the data.</td>
</tr>
<tr>
<td>3</td>
<td>Re-read the data and identify specific headings and categories. Open-coding. Generate categories.</td>
</tr>
<tr>
<td>4</td>
<td>Sort out the categories into precise groups. Collapse some of the similar categories into broad categories.</td>
</tr>
<tr>
<td>5</td>
<td>Re-sort categories; similar headings are grouped to form a final list and remove extraneous categories.</td>
</tr>
<tr>
<td>6</td>
<td>A colleague was invited to blindly validate the first findings. Categories were discussed and adjusted as necessary.</td>
</tr>
<tr>
<td>7</td>
<td>Journals and categories were examined identifying the data relating to each category.</td>
</tr>
<tr>
<td>8</td>
<td>Data linked to category headings. Numbers are used to distinguish between findings in the survey forms and categories.</td>
</tr>
</tbody>
</table>

Adapted From Burnard (1991)
FINDINGS AND DISCUSSION

Results

Several themes emerged from our analyses of the open-ended questionnaire. The findings were summarized and organized by the aforementioned three research questions.

Benefits of Teaching Online

For the students

Most teachers recognized that the FROG VLE has created great interest among the students. Besides interest, easy access to a wealth of materials and resources were some of the main benefits identified. These teaching and learning resources can help to improve learning outcome and increase self-directed learning among the students. Flexibility in learning regardless of place and time increases student motivation and in the process it also increases their ICT usage and awareness of ICT’s potential as an alternative way of learning. This ‘updated’ approach of learning, in the long run provides greater opportunities when these students enter the job market. Respondents felt students will be more equipped with the much needed 21st century work skills. FROG VLE is more student-centered with its reduced need for teacher talk. However, despite the reduced teacher talk, surprisingly a few teachers felt that their interaction with students can be increased through e-learning. Another important finding was when a number of teachers claimed that the system provides “hands-on” information for the students. With technology, students can view, listen, reflect and just do about anything in order to comprehend any new items that they wished to learn.

For the teachers

Many of the teachers appreciated FROG VLE in helping them make their teaching job easier than the traditional approach. Besides being easy to use, the system also helped them to organize their teaching and learning materials. This saves their time when updating or locating specific materials. They are also pleased that, with the system, they need not print or distribute handouts and this reduces cost substantially.

Barriers to Teaching Online

Within the School

Some teachers viewed lack of time as the key concern in e-learning implementation. They claimed the workload in school prevented them from exploring and mastering the system further. As such, many expressed the critical need for more training and exposure to the system. Despite having been trained, ICT skills remained an issue with the teachers. Not having technical support was also stressed as a main challenge in utilizing the system, and teachers felt management should be working on this aspect to ease the innovation’s adoption process. Besides having limited ICT skills, low English proficiency is also a barrier in understanding the FROG VLE. Some felt the language used was difficult for them and their students to understand. The inability to understand the language used by the system even caused confusion as claimed by some teachers. Validity of information over the Internet was also questioned.

Another identified barrier was large class size (30-40 in a class). This made it difficult for teachers to implement e-learning in the classroom. It is a challenge to let students take more responsibility for their own learning as they were not always on task. Whatever the technology being used, teachers with strong classroom management skills and ability to create a positive classroom culture are needed. Students tend to get distracted and visit other than the suggested websites; thus this lack of control was considered a struggle in running e-learning in the classrooms. One teacher also mentioned that she felt students were lazier when using e-learning. Some felt teachers’ initial guidance is heavily needed by the students because students lacked in skills and exposure in using the system. Nearly all teachers complained of poor Internet connection
and facilities as the greatest barrier in implementing e-learning. Slow internet connection and that only certain areas in the school have access to the Internet made it difficult for the teachers. They also claimed that they do not have enough working computers to make e-learning possible during their lessons. As such, due to the constraints expressed, plus high maintenance incurred by e-learning, some teachers insist on their preference for the traditional face-to-face approach.

**Beyond the School**

Teachers in their comments made it clear that not all students have Internet access and computers at home. These are the basic necessities that they felt the Malaysian government needs to look into before exercising e-learning in our education system. The harsh reality of the matter is that rural areas in Malaysia will need more time to make e-learning a reality. Students’ involvement beyond the classroom walls can only be turned into reality when these barriers are removed.

**Suggestions for Improvement**

**Training**

Suggestions provided by most of the teachers reflected the urgent need for more training and assistance in delivering e-learning. Technical support is necessary though only five of the teachers mentioned this. This may be because most of them are used to relying on themselves in getting things done in schools. They instead highlighted their lack of skills and confidence in utilizing the FROG VLE. They believed that with more skills and knowledge of FROG VLE, they would be able to increase their usage. Some of them also advised student teachers to be taught to integrate the VLE during their training at the Teacher Training Institute.

**Facilities**

A vast majority of teachers in the survey provided suggestions related to providing and upgrading the school facilities. Most teachers are crying out for better access to the Internet, and ICT devices such as laptops, both at school and at home. Teachers felt that Internet access and computers for students at home will facilitate e-learning.

**Awareness**

Awareness programs must be carried out to inform students, teachers and parents regarding the e-learning initiatives. More enthusiastic involvement from students and soft pressure from the parents will hopefully create more urgency and motivate the teachers in sustaining e-learning. Some respondents even suggested having a monthly e-learning program, to make it more of a whole school initiative instead of individual teacher’s effort in the confines of his or her classroom.

**FROG VLE’s Relevance**

Subject such as Mathematics were seen as incompatible with the online system used. Innovative practices must be linked to school curriculum for sustainability. Teachers mentioned that they were unable to use certain symbols necessary in their teaching. A few teachers commented on the webpage design and content. The internet access to the e-learning is also restricting teachers’ usage or visits to certain websites, YouTube for example. There were mixed opinions regarding this restriction as some agree to this while others felt this restriction was unnecessary.

**Discussion and Implications**

The aforesaid research described sought to investigate e-learning use in the classrooms, as perceived by teachers, its benefits and barriers. They were also asked to provide some suggestions on how e-learning implementation can be sustained and improved. An open-ended survey was created which included three questions pertaining to the focus of this study. These findings are significant as they come directly from those who have the greatest power to impact on the success of the e-learning initiative. Findings suggest that e-
learning has created much interest among students and could improve student learning outcomes as was also found in a number of previous studies (Callpy & Arnold, 2009; Vaughan, 2010). Teachers also found e-learning helpful for managing their materials and resources. They also acknowledged that e-learning provides opportunities for students beyond what they can offer in their traditional classrooms.

This study also provides important information on the barriers in using e-learning. If e-learning is to succeed, teachers must have the appropriate technology, training and time to spend on the system. As their basic knowledge of ICT has a significant correlation with training (Kaur & Hussein, 2015), training must not cease after the implementation; instead it should continue throughout the initial implementation when struggles are likely to be at their greatest. Moderate skill level and comfort in using the technology is a necessity. This is because their personal comfort and confidence will to a large extent decide how teachers approach technology use and plan their lessons.

Administrative support is also important especially by looking into critically needed facilities, such as a reliable and fast Internet connection and providing enough computers for all students. Administrators need to play a more active role in creating conditions fostering innovation. They must be the ones to identify with the innovation and persuade or cajole others into adopting it. Their importance has many times been confirmed in many past empirical studies (Lafford, 2009; Young, 2008). Having Internet access at home is still not possible for many students. Parental involvement was repeatedly stressed in order to overcome barriers. By educating parents on the importance of e-learning, and if finance is not an issue, we would be able to see more students’ houses equipped with computers and Internet access.

By understanding the barriers teachers are facing, MOE and school management can decide how these barriers can be tackled. Teachers must be convinced of the importance of using technology in the classroom. At the same time, they should be provided with access to resources and be trained to use these resources effectively. Getting access to the Internet and computers, and knowing how to use them require time, training and technical support.

Analysis of findings on suggestions showed heavy focus on the need for training and facilities for better uptake of e-learning. Teachers realized the need for them to learn many new skills and unlearn instructional pedagogical practices that have long dominated their professional lives. To do this, teachers must be given ample time and support to master the FROG VLE. Learning to teach an online course requires time; preparing for online teaching involves considerable time, effort and workload. Kaleta, Skibba, and Joosten (2007) in their study even proposed that teachers were to be given the necessary training at least six months before implementation. Lack of competence has been known to be one of the most serious obstacles preventing teachers’ use of technology in education (Bingimlas, 2009). Creating a community of practice among the teachers may be a good idea because teachers will not feel alone in their struggle; they will then have each other to bounce off ideas and make planning and preparation easier.

Carrying out this study has shown us a number of pertinent aspects about e-learning implementation in Malaysian schools nationwide. The first most obvious was that most schools are not well-equipped. Poor Internet connection made it quite challenging for teachers to carry out online learning. Our second finding points to the critical lack of training and support for teachers. There was a unanimous plea to provide teachers with the necessary ICT qualifications to enable them to effectively engage students in using ICT to enhance their learning. Technological infrastructure and technical training are important aspects of successful e-learning. In addition, without sufficient technical support and assistance in the school, teachers cannot be expected to overcome the struggles preventing them from fully utilizing the system (Lewis, 2003).

Finally, we also realized the lackadaisical attitude among the teachers, administrators and the relevant government agencies in trying to make this innovation a success. An example was given by Arokiasamy, Abdullah, and Ismail (2014) where they found although Computer Studies has been introduced in secondary schools, teacher training has yet to introduce it as a teaching subject. However, all is not lost as we also found some schools which were not involved in this study, but who are doing extremely well in their e-learning initiatives. Though their numbers are small, future researchers need to study these schools in order to understand how barriers were removed in their contexts. Hopefully, they can act as catalysts of change for
other schools to follow suit.

In discussing perceptions toward e-learning, it is worthwhile to consider the learning curve in Figure 2 for new technology as proposed by Glass (1999).

![Learning Curve for New Technology Software](Figure.png)

As can be seen, there is an initial loss of productivity, followed by a slow improvement. The scale of time and improvement will differ for each teacher and the type of technology used. This curve may explain the slow uptake that the Malaysian teachers are currently experiencing. Recent report by the Auditor-General (National Audit Department, 2013) revealed that although RM663 million was spent on the 1BestariNet project, it is suffering from lack of usage. The report also revealed that FROG VLE usage by teachers, students and parents was between 0.01 percent and 4.69 percent. Daily utilization of the VLE by teachers was found to be between 0.01 percent and 0.03 percent. The aforementioned report suggests that the VLE is underused or unused by most of the teachers. We must accept this initial learning phase where no immediate or obvious benefits are seen. In fact, this is the period where most support and scaffolding are needed by the teachers as early adopters. More teachers will embrace technology integration in the classroom over time, as the infrastructure matures and their beliefs evolve. On the other hand, policy makers need to do away with beliefs that just by providing high access to e-learning would lead to major changes in classroom teaching and learning. The most pertinent aspect is to change how schools are organized, how time is allocated, and the way teachers are being trained. Interactivity of cloud-based learning designs would benefit from a greater focus in teacher education programs (Campbell, Harthi, & Karimi, 2015). Systems developers and telecommunication companies should also improve their product reliability by making them more user-friendly and useful, increase technical support to teachers, and not forgetting to increase Internet connection at marginal cost to schools. If these cannot be done, then only peripheral modifications will occur in schools. Contextual factors will influence the technology adoption rate or if there is to be no adoption at all. If at all technology is being used, it will be used to sustain old practices.

CONCLUSION

TAM as the guiding framework used in this study has been useful in explaining the usage behavior of the FROG VLE. TAM asserts that external variables, PEOU, PU, attitude toward use, and behavioral intention to use, represent beliefs which will finally lead to actual use. In this study, more than half of the teachers do not find the FROG VLE easy to use while 11 teachers found it not useful in their subjects taught. This shows that the potential of FROG VLE potential has not been sufficiently made known to the teachers and there was no follow-up to the one day exposure training. The more tech-savvy teachers might be able to make sense of the VLE on their own but the majority of them will have problems. Pedagogical technological knowledge needs to be modelled and taught before teachers can be expected to use the VLE effectively. Poor attitude was the general consensus felt due to the many external barriers; facilities, management support, and so forth. This in turn reflects the poor usage results as stated in the Malaysian Auditor General (2013) report.
According to Einstein, “The only source of knowledge is experience.” Hence it is crucial for teachers to start experimenting and experiencing e-learning or the Malaysian education system will be left far behind. This modest study was an attempt to provide insights into Malaysian teachers’ perceptions of the newly implemented online learning across the schools in Malaysia, in order to accelerate e-learning usage across schools nationwide. Lack of facilities and training were found to be the most common barrier among educators. As such, technology innovations in schools must be accompanied with reliable and effective ongoing support by providing what teachers need. Knowing the benefits of e-learning alone will not help accelerate the adoption process if teachers lack sufficient pedagogical and technological knowledge and skills. Room to experiment, to make mistakes, to try again and finally learn must be made part of the school culture if change is expected.

At the heart of the e-learning is still for education to take place. Technology is only a tool to facilitate the processes involved. Teachers and students are still the ones who have to make teaching and learning happen. Students need to want to construct knowledge on their own instead of merely receiving and memorizing what is taught. On the other hand, teachers must have in-depth knowledge of their content and pedagogical matters. The more teachers know how their students learn, the more they will be able to employ a variety of teaching strategies including a wide-range of technology-based tools in matching their students’ needs with the content to be taught. Technology-enhanced learning environments need to be designed by considering pedagogy and content matters for higher ecological validity and thus for systems be useful in practice.

REFERENCES


Technological Readiness of UiTM students in Using Mobile Phones in The English Language Classroom

Agelyia a/p Murugan [1], George Teoh Boon Sai [2], Agnes Liau Wei Lin [3]

ABSTRACT

Mobile Assisted Language Learning (MALL) by using devices such as mobile phones is an ideal learning platform for learners to acquire language and share knowledge beyond the confines of a fixed location. By utilizing the mobile applications available via smartphone, learners can engage in collaborative networks and find information in a variety of diverse environments. This article shares the findings of a research at Mara University of Technology (UiTM) in Malaysia to determine the technological readiness of the students by measuring their digital skills using the Digital Competence Framework (EU). Some 50 students from the English language proficiency course were purposively sampled because they have been exposed to MALL by their lecturer. Their responses were collected through an online questionnaire. The findings showed that all 50 of the students owned a smartphone. While 82.6% of the students did not attend any training on how to use the smartphones, 80.4% of them have their own storing strategies and nearly 90% of them reported having technological skills in operating their smartphone such as accessing applications, ability to record, share and produce technological resources. The findings suggest that to ensure successful MALL, educators need to be aware of the background and technological skills of learners before embedding m-learning into the English Language lessons.

Keywords: m-learning, mobile assisted language learning, technological readiness

INTRODUCTION

Mobile technology offers numerous benefits in the education world. Wang, Shen, Novak, and Pan (as cited in Mohamed & Norazah, 2015) posited that “ ... the use of Mobile Learning activities in class highlights the power of the Mobile Learning system as persuasive technologies as such technologies can be used to change people’s thoughts, feelings and action (sic)” (p. 2). Mobile devices encourage students to learn anywhere and anytime because the students can process information in and outside the classroom. Mobile learning has the power to change a passive learner into an active learner by enhancing learner engagement in the learning process. Klopfer (as cited in Miangah & Nezarat, 2012) further explained that due to the small size and weight of the smartphone, the mobility of the learning process is increased. Apart from that, learners can interact virtually to exchange data and collaborate in the learning input and output with other learners. In addition, the learning process is personalized because the activities platform can be customized for individual learners.

Kearney, Schuck, Burden, and Aubusson (2012) highlighted three central features of mobile learning namely; personalization, authenticity and collaboration in their mobile learning framework. Through personalization, learners are able to control the place and time of learning and they can enjoy full autonomy...
over their learning content. These activities can be customized and tailored to their needs which can lead to a strong sense of ownership of one’s learning. Kearney et al. (2012) further posited that “M-learning episodes potentially involve high degrees of task and process authenticity as learners participate in rich, contextual tasks (setting, characters, tools), involving real-life practices….learners can generate their own rich contexts with or through their mobile devices”. Hence, mobile learning can provide an authentic learning experience because it allows learners to experience real world issues and they become more able to perceive and relate the value of these practices. Also, through mobile learning, learners are able to collaborate by making connections with peers and educators. They can collaboratively participate in creating, producing and sharing of information across time and place.

Hulme, Norris, and Donohue (2015) stressed that learning through mobile phone is “a powerful extension to classrooms and other spaces, making language learning mobile provides the possibility for learners and teachers to be able to communicate in English with peers and experts via online tools” (p.18). Hulme et al. (2015) proposed a mobile pedagogy for English teaching as they believe that teachers and learners can become active participants in making and shaping the current language learning. Miangah and Nezarat (2012) added that mobile devices could control learning progress based on the learner’s cognitive state that can improve the focus of the students. It caters to both students who want to learn independently and also to those who like to learn collaboratively. It is more realistic, promotes interactive learning and gives the learner more control and fun in learning since students learn using the devices or gadgets familiar to them. As educators, we need to embrace the stage of transition in the current education system as digital media is becoming significant in many parts of the learners’ lives. Mobile Learning in the classroom can promote active learning by making learners accountable and responsible for their own learning while their teachers facilitate them. By implementing mobile technologies in the English Language Classroom, students are able to bring in their own devices to facilitate their learning. Hence, it enables them to:

- Create and share multimodal texts
- Communicate spontaneously with people anywhere in the world
- Capture language use outside the classroom
- Analyse their own language production and learning needs
- Construct artefacts and share them with others
- Provide evidence of progress gathered across a range of settings, in a variety of media.

(Hulme, Norris, & Donohue, 2015)

**Problem Statement**

Mobile technology has become the part and parcel in students’ life as it teaches them on how to communicate, gather information, allocate time and attention and also self-regulating learning. Chen, Seilhamer, Bennet, and Bauer (2015) stated that “Effective use of mobile technology is less about tools and more about students’ digital literacy skills, including the ability to access, manage and evaluate digital resources”. As educators, we need to know the students’ capability of using digital devices as there will be a number of students who may not know the function of certain smartphone tools that can generate a meaningful learning experience. Chen et al. (2015) also added that “Technology adoption in higher education is more than applying technical innovations. Wide-scale institutional implementation requires clear university policies, device availability and readily accessible technical and pedagogical support”. In other words, it is understood that technology use in the classroom not only depends primarily on the new available tools but it is more on how the tools are available and accessible. On another note, Rung, Wamke, and Mattheos (2014) reported that “understanding the skills of the main users and their attitudes toward new tools is of fundamental importance, in order to guide development of appropriate innovation”. This is because mostly students are reluctant to use the smartphone for educational purposes and they would rather use it for social networking.
The key goal of this research is to understand how the students are able to use their smartphones inside and outside the formal learning context. This is to give assurance to the teachers and educators that students would be able to learn independently at their own pace without any distractions or problem such as the kind of phones that they own, the capacity of their mobile data plan, and also the capability of the smartphone users to explore and use the tools available in their smartphones.

Research Focus

Song (2014) (as cited in Miller & Doering, 2014) stated that:

Mobile learning apps should be designed based on the learners’ needs and instructional purposes. When it comes to mobile learning itself, the learners’ needs vary depending on sociocultural background, prior knowledge, skills, competences (Papanikolaou & Mavromoudtakos, 2006), cognitive styles and motivation (Seong, 2006). (p. 129)

Song (2014) further posited that the teachers might not know how the learners use mobile devices in real situations due to the learners’ multiple background and learning locations. It is very important to focus on the learners’ skills, their use patterns of the mobile devices and their level of digital literacy. Without getting this information, teachers can never assume that learning via mobile devices can be successful. Many issues must be considered before mobile learning can take place in a MALL environment.

These issues are:

a) Accessibility

- Accessibility to the context in the mobile phone is very important because learning takes place in and outside of the classroom. Some students may have their own mobile data (internet package) while other students might heavily depend on WiFi connections at university and public places due to financial constraints. Some applications that can be used offline. However, learners still need the internet connection for retrieval of information, web services, data transactions and information sharing. So, it is very important to know how the students can access their learning applications for an uninterrupted learning process.

b) Mobile Application Platform

- This is a very significant issue as learners use different platforms based on their mobile devices. Song (as cited in Miller & Doering, 2014) explained that “In the mobile app development field, the term platform typically refers to a mobile device’s operating system or its software development kits and each platform has its own user-interface conventions in its operating system that restricts the development of customised and integrated approaches” (p.131).

c) Learners’ Experience

- This is another practical issue that needs to be considered closely as it is crucial for a successful mobile learning. Learners need to know how to navigate information via their mobile devices, especially using their smartphones. Apart from that, the learners also need to understand the function of their mobile devices such as the limitations of the data storage, display, the mobile applications interface and the designs. Some students may have very limited digital skills as it depends on the type of mobile phones that they have and also their understanding of the function of the devices.

Hence, the objective of this study was to look at the background and the digital skills of the learners because it is very crucial in understanding their capability of using mobile devices in the educational context.
Literature Review

Sharples, Taylor, and Vavoula (2007) proposed a theory related to mobile learning which whereby they stressed that learning can take place from a new angle and mobile technology can enhance the learner’s knowledge and skills. Besides that, Mergel (1998) advocated that “this theory of mobile learning must be tested against a few criteria”. One of the criteria is whether the theory is accountable to both formal and informal learning. The second criterion is whether the theory analyzes the dynamic context of learning. Since learning is a constructive and social activity, the theory needs to be tested by using these criteria. According to Kearney, Schuck, Burden, and Aubusson (2010), “Sharples, Taylor and Vavoula’s framework for analysing mobile learning is structured according to theories that are tested based from the criteria stated above”. They stated that the aim of this framework is “to provide a coherent account of how activities are performed, the people involved, their contexts, the tools and technologies they employ, the structure of the tasks and an account of their cognitive processes, management of knowledge and social interactions” (2007, p. 15).

The framework in Figure 1 explains how Mobile Phone Technology can be used as a learning resource where human and technology can collaborate to create and share meaning of the knowledge and skills. The interaction process directs to the subject (learners) and the object (content knowledge and skills) where both are needed in the Control, Context and Communication factors that could influence and enhance learning in this new world of global digital communication.

![Figure 1. Framework for Analysing Mobile Learning (Adapted from Taylor, Sharples, O’Malley, Vavoula, & Waycott, 2007)](www.mojet.net)
Research Questions

The following were the research questions of this study.

1. What is the level of technological readiness of the selected UiTM students in using mobile phones in their English Language classroom?

2. Are the participants aware of the ethics related to using mobile phones in mobile learning?

3. Do the participants have the cognitive skills in using mobile phones in mobile learning?

METHOD

A survey was carried out to obtain the data for this research survey. The questionnaire was uploaded online through the ‘Survey Monkey’ tool and the link was sent to the students via Whatsapp.

a) Participants

The participants for this research were chosen based on purposive sampling method. “Purposive sampling is different from convenience sampling in that researchers do not simply study whoever is available but rather use their judgement to select a sample that they believe, based on the prior information, will provide the data they need” (Fraenkel, Wallen, & Hyun, 2015, p. 101). The participants were purposefully selected by the researcher because they have been exposed to MALL as compared to other students in UiTM who have not been exposed to MALL. The participants were all from the 2nd semester and were enrolled in the same English course at UiTM. The participants for the research are shown in Table 1.

<table>
<thead>
<tr>
<th>Group</th>
<th>Program</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>HM1112A1A2</td>
<td>Hotel &amp; Tourism</td>
<td>20</td>
</tr>
<tr>
<td>EE1112A1A2</td>
<td>Electrical Engineering</td>
<td>10</td>
</tr>
<tr>
<td>EM1102C1C2</td>
<td>Mechanical Engineering</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 1. Participants of the Research

Research Instrument

The questionnaire used in this research was adapted from the ‘Measuring Digital Skills across the EU: EU wide indicators of Digital Competence report, 2014’ and Sakinah’s (2013) MReadiness questionnaire. The instrument considers many aspects. Hoz, Gutierrez, and Mediavilla (2015) stressed that the EU Digital Competence instrument consists of “key aspects such as information management, learning and solving problems and meaningful participations as well as the user attitudes including aspects such as critical ability, creativity, responsibility, self-sufficiency and intercultural respect”. Sakinah (2013) stated that the “MReadiness questionnaire had three purposes: (1) to gain better understanding of common mobile devices and applications; (2) to investigate students’ perceptions of usefulness of mobile learning activities, and (3) to understand how the students use them to support their learning”. This questionnaire was piloted at a higher education institute in 2012 and to test the validity and adequacy of the instrument. It was found that this questionnaire meets the survey’s aim after a few improvements made during the research process.

There were 35 questions in this questionnaire. The questionnaire was divided into a few sections:

Section A: Demographic Profile of the students

Section B: Demographic details on the Technology Competency of the Students

Section C: Technology Concepts and Operation
Section A, B and C were to address Research Question 1

Section D: Technology Ethics

Section D was to address Research Question 2

Section E: Cognitive Skill in Technology

Section E was to address Research Question 3

RESEARCH FINDINGS AND DISCUSSION

Student Demographic Profile

The students for this research came from three different Diploma programs: Mechanical Engineering, Electrical Engineering and Hotel and Tourism. Some 32 female and 18 male students were involved in this research. There were 41 students who were 19 years old, five students who were 18 years old and four students were 20 years old. The students mainly came from a Malay speaking background and English is their second language. This is the 2nd semester of their studies at UiTM Pulau Pinang.

The research shows that 48% of the students’ financial assistance to pursue their studies were from study loans while 44% were sponsored by their parents. Only 6% of the students received scholarship and 2% took personal bank loans. The students’ average expenses for a month ranged between RM70 to RM200. Most of them spent their money on Internet/Mobile Data, toiletries, meals and others. The data above is an indication for the teachers to know the financial status of the students before embarking on the research. It is important for us to know whether the students are studying under a scholarship or study loan so that it will not be a burden for them when we are integrating technology in classroom as teaching and learning. Mobile devices and mobile data consume a sum of money and from the data, we can come to an understanding that all of them own a smartphone and mostly it is equipped with mobile data. An efficient educator who integrates mobile learning will definitely look into how to minimize cost in teaching and learning based on findings of the demographic profile of the students.

Technological Competency of the Students

This section addresses research question 1: What is the level of technological readiness of the selected UiTM students in using mobile phones in their English Language classroom?

The data showed that all of the students own at least a smartphone. Besides that, they also have other devices such as laptops (76.6%), tablet (3%) and MP3 Player (4%). The students had been using these technological devices from 6 months to 2 years. The participants mentioned that this was because they were still schooling a few years ago and were not allowed to use mobile devices. From the survey, it was noted that the students at UiTM Pulau Pinang used their mobile devices, especially their smartphones for chatting, messaging, browsing education websites and accessing social networks, playing games and listening to music.

The findings also showed that only 17.4% students have attended seminars/trainings/workshops on how to use the mobile devices and 82.6% of the students did not attend any proper training or workshops on how to use such devices. Some 86.6% of the students stated that they learned from their siblings, parents, friends, online and their teachers in school. Table 2 shows the information given by the students regarding their skills in utilizing their smartphones.
Table 2 Smartphone Operating Skills

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to switch the smartphone's language to English</td>
<td>46</td>
</tr>
<tr>
<td>Able to log onto Wi-Fi</td>
<td>45</td>
</tr>
<tr>
<td>Able to switch on and off the silent mode and flight mode</td>
<td>46</td>
</tr>
<tr>
<td>Find the privacy settings and describe what they mean</td>
<td>42</td>
</tr>
<tr>
<td>Enable or disable location services</td>
<td>44</td>
</tr>
<tr>
<td>Access to the Voice Command</td>
<td>37</td>
</tr>
<tr>
<td>Able to access the Apps store, search for and understand the permissions required, in-app purchases and data storage required</td>
<td>45</td>
</tr>
<tr>
<td>Send and receive emails</td>
<td>45</td>
</tr>
<tr>
<td>Input the address of a website</td>
<td>45</td>
</tr>
<tr>
<td>Take and share photographs</td>
<td>46</td>
</tr>
<tr>
<td>Able to make notes</td>
<td>43</td>
</tr>
<tr>
<td>Able to make audio recording</td>
<td>46</td>
</tr>
<tr>
<td>Able to make Video recording</td>
<td>46</td>
</tr>
<tr>
<td>Find out how much data storage is available</td>
<td>46</td>
</tr>
<tr>
<td>Know how to update software</td>
<td>42</td>
</tr>
<tr>
<td>Take a screen shot</td>
<td>45</td>
</tr>
<tr>
<td>Scan a QR code and a bar code</td>
<td>37</td>
</tr>
<tr>
<td>Make free phone calls and send free texts using platforms apps such as Skype, WhatsApp, Viber and etc.</td>
<td>43</td>
</tr>
</tbody>
</table>

The findings showed that nearly 90% of the students reported having the following skills in operating their smartphone: accessing applications, ability to record, share and produce technological resources. This shows that most of the participants have the basic skills in handling the functions of their mobile devices and they have the technological competence to use them for mobile assisted language learning in the English Language classroom.

Students’ Knowledge of Technological Concepts and Operations

Smartphones come with many unique features which allow us to store our documents in folders. It is important for the users to have various skills in handling and storing information in their smartphones (Miangah & Nezarat, 2012). Some 80.4% of the students in the study stated that they have their own strategies in storing information in their folders; while 10.9% of them used Dropbox to save and keep their documents, 8.7% of them did not know how to save or store information. This information is important to teachers because it allows the teachers to know the background of the students’ knowledge of technological concepts and operations before the teachers can implement MALL. Knowing this, the teachers might need to tutor the students on how to manage the storage of their information.

Table 3 shows the information on the types of files saved by the students’ in their smartphone.

Table 3 Types of Files Saved by Students in Their Smartphones

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don’t know</td>
<td>10.6%</td>
</tr>
<tr>
<td>.JPEG / .PNG</td>
<td>19.1%</td>
</tr>
<tr>
<td>.docx</td>
<td>17.0%</td>
</tr>
<tr>
<td>.PDF</td>
<td>53.2%</td>
</tr>
</tbody>
</table>
Table 3 shows that 53.2% of the students know how to save their files in the PDF format. This means that the teachers of the participants of this study can send their educational content via PDF documents to the students. Besides that, the data in this table also shows that 19.1% of the students know how to save through JPEG/.PNG format and 17% of them know how to save through .docx. It was found that about 10.6% of the students do not know how to save the files and documents via their mobile phones.

Table 4 shows the students’ skill of saving and bookmarking resources via their smartphone.

### Table 4 Saving Webpage and Bookmarking in The Smartphones

<table>
<thead>
<tr>
<th>I know how to save a webpage and bookmark it in my smartphone</th>
<th>Response</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don’t know</td>
<td>6.4%</td>
<td>3</td>
</tr>
<tr>
<td>L2 Save every page that I access</td>
<td>10.6%</td>
<td>5</td>
</tr>
<tr>
<td>L3 Save only one reliable resources</td>
<td>55.3%</td>
<td>26</td>
</tr>
<tr>
<td>L4 Save all reliable resources</td>
<td>27.7%</td>
<td>13</td>
</tr>
</tbody>
</table>

However, the teachers need to brief the students on how to save webpages, use bookmarking, and search for information using keywords. This is because 6.4% of the students admitted that they did not know those skills and can be left out or become passive if the teacher starts using mobile applications in the classroom. About 55.3% of the students saved only one reliable resource and 10.6% of the students saved every page that they accessed. Some 27.7% of the students saved all reliable resources. Students need to know this skill as mobile application activities will involve many technological skills such as surfing for specific information, saving website pages and sharing information with their peers in the educational classroom.

Table 5 show the findings about the students’ ability in searching for keywords, finding and deciphering information and in refining their search by using their smartphones.

### Table 5 Ability to Search by Keywords, Find, Decipher Information and Refine Search by Using The Internet Through Smartphone

<table>
<thead>
<tr>
<th>I have the ability to search by keywords, find, decipher information and refine my search by using the Internet through my smartphone</th>
<th>Response</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don’t know</td>
<td>4.3%</td>
<td>2</td>
</tr>
<tr>
<td>L2 Long stretch of keywords</td>
<td>17.0%</td>
<td>8</td>
</tr>
<tr>
<td>L3 Exact keywords for the search</td>
<td>40.4%</td>
<td>19</td>
</tr>
<tr>
<td>L4 Use the exact keywords and refine the final search documents</td>
<td>38.3%</td>
<td>18</td>
</tr>
</tbody>
</table>

It was found that about 40.4% of the students have this ability by using the exact keywords for their search. 38.3% of students could use exact keywords and refine their final search documents. About 17% of students used long stretch of keywords to search for the information. However, 4.3% of students did not know how to search for information by using keywords.
Table 6 Checking, Analyzing and Filtering Information by Students Through Their Smartphones for Their Assignments

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don't know</td>
<td>6.4%</td>
<td>3</td>
</tr>
<tr>
<td>L2 Save every webpage that I access</td>
<td>6.4%</td>
<td>3</td>
</tr>
<tr>
<td>L3 Save only one reliable source</td>
<td>25.5%</td>
<td>12</td>
</tr>
<tr>
<td>L4 Save all reliable sources</td>
<td>17.0%</td>
<td>8</td>
</tr>
<tr>
<td>L5 Verify the origin, author and site history before I save the sources</td>
<td>44.7%</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 6 shows that 44.7% of the students were likely to verify the origin of the author and the website history first before they used the information saved in their smartphone for completing their assignments. Some 25.5% of the students would save only one reliable source and 17.0% of the students would save all the reliable sources. Around 6.4% of students saved every webpage that they accessed without checking and filtering for authenticity of the information. Only 6.4% did not know how to check, analyze and filter for information through their Smartphone.

Table 7 shows the awareness of the students on the authenticity of the information, online materials and resources before they saved the materials or webpages through their Smartphone.

Table 7 Students’ Awareness of The Authenticity of Information Searched Through Their Smartphones

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don't know</td>
<td>2.1%</td>
<td>1</td>
</tr>
<tr>
<td>L2 Save every webpage that I access</td>
<td>2.1%</td>
<td>1</td>
</tr>
<tr>
<td>L3 Save only one reliable source</td>
<td>27.7%</td>
<td>13</td>
</tr>
<tr>
<td>L4 Save all reliable sources</td>
<td>12.8%</td>
<td>6</td>
</tr>
<tr>
<td>L5 Verify the origin, author and site history before I save the sources</td>
<td>55.3%</td>
<td>26</td>
</tr>
</tbody>
</table>

Some 55.3% of the students showed a positive sign that they were aware of this issue because they will verify the origin of the author and the website history before saving the sources through their Smartphone. Only 27.7% of the students would save just one reliable source and 12.8% saved all the reliable sources. However, teachers still need to guide the students on the awareness on the authenticity of the information that they have browsed through the internet via their smartphone. This is because 2.1% of the students saved all the webpages that they accessed and another 2.1% did not know how to check for the authenticity of the online resources browsed through their Smartphone.
Table 8  Students’ Ability in Sharing Information through Messengers, WhatsApp, Dropbox and Others Through their Smartphones

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don’t know</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>L2 Able to receive only</td>
<td>6.4%</td>
<td>3</td>
</tr>
<tr>
<td>L3 Able to receive and forward the information to others</td>
<td>8.5%</td>
<td>4</td>
</tr>
<tr>
<td>L4 Able to receive, send, share and forward the information to others</td>
<td>85.1%</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 8 shows that 85.1% of the students were highly competent in receiving, sending, sharing and forwarding information to others through Smartphone by using applications such as messengers, WhatsApp, Dropbox and many more. Only 8.5% of the students were able to receive and forward the information to others and 6.4% of them were able to receive information only.

As discussed on the findings of question 1, it is understood that students know how to do proper internet search by using search terms and modifiers. Apart from that, they also know how to create, edit and modify documents, presentations and video recording because these skills will be essential when the teacher starts implementing mobile devices in classroom teaching and learning. In order to have an effective e-learning to take place, it is best to evaluate the students’ capability on how they handle daily technology routines that uses mobile phones or smartphones such as sending and receiving emails, basic internet etiquette skills of communicating in different platform and navigating different programs through different software.

Participants’ Awareness of Ethics related to Technological Competence

This section addresses research question 2: Are the participants aware of the ethics related to using mobile phones in mobile learning?

Apart from finding out about the students’ knowledge and skills in using their devices, teachers can further investigate the students’ background knowledge of ethics in the cyber world. It is important for students to know about cyber-crimes such as hacking, spamming and downloading unauthorized materials from the Internet. Crystal (2011, p. 1) stated that “if everyone does whatever they want on a network, it uses up a ton of space and interferes with other users……if they download a virus along with the software, they risk destroying the entire system……incuring tremendous financial loss”. In addition, teachers need to identify the students’ knowledge on the danger of misusing intellectual property such as articles, books and software, which are available online. They need to be taught to acknowledge the original author and creators of the cyber world. This will enhance a culture of using technology ethically.
### Table 9: Students’ Awareness in Saving and Trusting Reliable Resources Searched Through Their Smartphones

<table>
<thead>
<tr>
<th>B3 ETHICS</th>
<th>I am aware that I can’t trust everything that I see, read or hear from the Internet via Smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer Options</td>
<td>Response Percent</td>
</tr>
<tr>
<td>L1 I don’t know</td>
<td>2.1%</td>
</tr>
<tr>
<td>L2 Save every webpage that I access</td>
<td>2.1%</td>
</tr>
<tr>
<td>L3 Save only one reliable source</td>
<td>23.4%</td>
</tr>
<tr>
<td>L4 Save all reliable sources</td>
<td>19.1%</td>
</tr>
<tr>
<td>L5 Verify the origin, author and site history before I save the sources</td>
<td>53.2%</td>
</tr>
</tbody>
</table>

Table 9 clearly shows that most of the students (53.2%) in this study verified the sources first before they downloaded their materials. 23.4% students stated that they saved only ONE reliable source after going through all the sources. 19.1% of the students saved all the reliable sources and 2.1% of them saved all the webpages that they browse through. Another 2.1% of the students did not know how to check for the reliability of the resources found in the internet.

### Table 10: Students’ Ability in Cross-checking Information Received Through their Smartphones

| I think it is important to cross-check the information received via Smartphone |
|-------------------------|------------------|----------------|
| Answer Options | Response Percent | Response Count |
| L1 I don’t know | 14.9% | 7 |
| L2 Save every webpage that I access | 0.0% | 0 |
| L3 Save only one reliable source | 21.3% | 10 |
| L4 Save all reliable sources | 17.0% | 8 |
| Verify the origin, author and site history before I save the sources | 46.8% | 22 |

The students also knew about the importance of cross checking the information first before downloading it into their devices as shown in Table 10. Some 46.8% of the students verified the origins of the author and the websites before saving any information into their smartphones, while 21.3% saved only one reliable source and 17.0% saved all the reliable sources. Furthermore, the students also checked the writer’s credibility of the resources found online before saving the information into their smartphone folders.
### Table 11: Students’ Ability in Checking the Writer’s Credibility Before Saving Resources Through Their Smartphones

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don’t know</td>
<td>17.4%</td>
<td>8</td>
</tr>
<tr>
<td>L2 Save every webpage that I access</td>
<td>4.3%</td>
<td>2</td>
</tr>
<tr>
<td>L3 Save only one reliable source</td>
<td>17.4%</td>
<td>8</td>
</tr>
<tr>
<td>L4 Save all reliable sources</td>
<td>13.0%</td>
<td>6</td>
</tr>
<tr>
<td>L5 Verify the origin, author and site history before I save the sources</td>
<td>47.8%</td>
<td>22</td>
</tr>
</tbody>
</table>

Table 11 shows that 47.8% of them would verify the origins of the author and the resources, 13% of the students would save all the reliable sources and 17.4% saved only ONE reliable source. About 4.3% saved every page that they browsed through the internet by using their smartphones.

### Table 12: Students’ Awareness of Adware, Scamming and Fraud Websites Appearing in Their Smartphones

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don’t know</td>
<td>10.6%</td>
<td>5</td>
</tr>
<tr>
<td>L2 Try to open</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>L3 Close</td>
<td>44.7%</td>
<td>21</td>
</tr>
<tr>
<td>L4 Block</td>
<td>17.0%</td>
<td>8</td>
</tr>
<tr>
<td>L5 Block and Report</td>
<td>27.7%</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 12 is about the students’ awareness of Adware, Scamming and Fraud Website that appears in their Smartphone. Some 44.7% of the students would close the sites if they encountered dangerous popups while browsing the Internet using their smartphones. Another 27.7% of the students would block and report to the respective authorities that deal with the dangerous hardware and viruses and only 17% of them would block the popups without taking further actions.

Although most of the students were aware of basic technology ethics, some of them still did not know how to find genuine information or software from the Internet. As shown in Table 10, 14.9% of the students, 17.4% of students in Table 11 and 10.6% of students in Table 12 were unaware of how to check the credibility of the information found in the Internet.

From these findings, teachers cannot assume that all students are aware of the rules and ethics related to technology use. Teachers need to teach the students about these before they proceed to use smartphone applications in the classroom. Moreover, the students should be taught how to block and report to the respective authorities rather than merely closing the websites because this action could prevent cyber-crimes from happening.
Table 13 Students’ Ability in Installing and Updating the Applications in Their Smartphones

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 I don’t know</td>
<td>2.2%</td>
<td>1</td>
</tr>
<tr>
<td>L2 Install the applications immediately without reading the terms and conditions</td>
<td>17.4%</td>
<td>8</td>
</tr>
<tr>
<td>L4 Install the applications after reading the terms and conditions</td>
<td>28.3%</td>
<td>13</td>
</tr>
<tr>
<td>L5 Install the applications after reading the terms and conditions and explore</td>
<td>52.2%</td>
<td>24</td>
</tr>
<tr>
<td>the site after the installations process are done</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 13, it is found that there was a positive sight for the teachers as many students know how to install applications after reading all the terms and conditions properly. Some 52.2% of the students would explore the site immediately after the installation and another 28.3% of students would install first but would only explore later during their free time. Teachers need to be aware that 17.4% of students did install before reading the terms and conditions. Only 2.2% of students did not know how to install and update the applications through their Smartphones. The students need to be reminded on the importance of reading the terms and conditions because not all the applications are free and offer full features. Some applications come with a price which will be deducted through the phone bill and some may have bad reviews from their customers.

As an educator, we must not take things lightly when it comes to awareness and ethics of using technology devices for educational purposes. The preceding data analysis shows that most of the students are aware of the function of antivirus, spam, phishing and other Internet safety issues. If the students are unaware of these safety issues, it may bring more harm than good when the teachers implement mobile learning in the classroom. Teachers also need to educate the students about privacy policies of Internet usage such as recognizing genuine and authentic information, steering clear from websites that share personal information and also type of viruses that can be malicious to technology devices.

Participants’ Cognitive Skill in Technology

This section addresses research question 3: Do the participants have the cognitive skills in using mobile phones in mobile learning?

Cook (2015, p. 1) stated that students from generation Y and Z are active learners in terms of building and understanding the world’s experience, interactions and observations. The student “craves regular and technology-enhanced learning opportunities and looks for educational opportunities that use visually enhanced methods of teaching” (Cook, 2005). When technology is used appropriately, the students can explore, experiment and create according to the needs of the context. With more understanding and exposure of the materials found on the Internet, students are able to create, produce, share and review the materials or information effectively.
Table 14 Students’ Ability in Creating and Producing Ideas for Educational Purposes Through Their Smartphones

<table>
<thead>
<tr>
<th>B4 COGNITIVE</th>
<th>I am able to create/produce ideas for educational purposes via the help of my Smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer Options</td>
<td>Response Percent</td>
</tr>
<tr>
<td>L1 I don’t know</td>
<td>10.6%</td>
</tr>
<tr>
<td>L2 A few ideas</td>
<td>42.6%</td>
</tr>
<tr>
<td>L3 Many ideas</td>
<td>36.2%</td>
</tr>
<tr>
<td>L4 Extremely many ideas</td>
<td>6.4%</td>
</tr>
<tr>
<td>L5 Everything</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

Based on Table 14, only 4.3% of the students were able to create and produce ideas for educational purposes via their smartphone. Some 6.4% of them had extremely many ideas for creating and producing and about 36.2% had many ideas; 42.6% have only a few ideas and 10.6% of them did not know and were unable to create or produce ideas by using their smartphones.

Table 15 Students’ Ability in Creating, Producing and Sharing Ideas for Educational Purposes with Their Friends Through Smartphones

<table>
<thead>
<tr>
<th>I am able to create/produce ideas for educational purposes via the help of my Smartphone and share it with my friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer Options</td>
</tr>
<tr>
<td>L1 I don’t know</td>
</tr>
<tr>
<td>L2 A few times</td>
</tr>
<tr>
<td>L3 Many times</td>
</tr>
<tr>
<td>L4 Extremely many times</td>
</tr>
<tr>
<td>L5 Every time</td>
</tr>
</tbody>
</table>

Table 15 shows the findings about the students’ ability in creating, producing and sharing ideas for educational purposes with their friends by using their smartphone as their tool. 6.4% of the students were able to perform these ability extremely many times, 36.2% were able to do this many times, 8.5% of them did it every time, 38.3% of them did it for a few times and 10.6% of them did not know how to perform this ability.

Table 16 Students’ Ability in Restructuring and Reviewing the Content Received Through Their Smartphones

<table>
<thead>
<tr>
<th>I am able to restructure and review the content that I received via Smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer Options</td>
</tr>
<tr>
<td>L1 I don’t know</td>
</tr>
<tr>
<td>L2 Not every time</td>
</tr>
<tr>
<td>L3 Many times</td>
</tr>
<tr>
<td>L4 Extremely many times</td>
</tr>
<tr>
<td>L5 Every time</td>
</tr>
</tbody>
</table>

Table 16 shows the data on the students’ ability in restructuring and reviewing the online contents received via their smartphone. About 40.4% of the students were able to restructure and review the online contents many times, 6.4% extremely many times, 8.5% every time, 34% not every time, and 10.6% of them
admitted that they did not have this ability when they received online contents through their smartphones.

Based on Table 14, Table 15 and Table 16, it was found that many students did not know or only had a few ideas. The percentages of those in both categories are quite high compared to other categories and this clearly shows that students need to be taught the fundamentals of knowing how to create, produce, share and review information or materials from the Internet.

The participants’ Cognitive Skill in Technology seem to be important as it highlights the higher order thinking skills based from Bloom’s Taxonomy. Bloom’s Taxonomy suggested that students will start to create, evaluate and analyze in e-learning situations. It is very important in the Instructional design process that requires the learners to reach certain level of cognitive skills that focuses on knowledge dimensions such as factual, conceptual, procedural and metacognitive. With these basic skills, teaching via smartphone would be more successful in the classroom.

CONCLUSION

To ensure a successful MALL in a truly transformative manner, it is vital that educators have a proper understanding of the mobile technology characteristics such as accessibility, mobility and collaborations in the teaching and learning environment. This article aimed at identifying the readiness of the UiTM students in MALL before they are exposed to educational technological tools in the classroom. The students were measured according to their demographic background, competency in technological skills, technology concepts and operation, technology ethics and cognitive skills. All these information are very important before implementing any activities related to technology in the classroom.

The research findings in this study showed that most of the UiTM students have the technological readiness to use mobile phones in the English Language classroom. However, the teachers still need to tutor some of the students on the strategies for storing the information. Teachers also need to guide some students so that they know the technological concepts, operations and have adequate awareness of some issues pertaining to the usage of smartphones. This is to ensure that students would not be left out when mobile applications are being used in MALL classes.

These findings are able to benefit both teachers and the students in fully capitalizing on the advantages afforded by mobile educational technology. Teachers need to facilitate the students on the basics of computer skills especially the cognitive skills in technology before they can use web tools available online for teaching purposes. This can simultaneously build the confidence of the students and they will have a positive attitude in embracing technology into education besides strengthening their digital skills. The report ‘Measuring Digital Skills across the EU: EU wide indicators of Digital Competence, 2014’ further described that:

Skills needed include the ability to search, collect and process information and use it in a critical and systematic way, assessing relevance and distinguishing the real from the virtual while recognising the links. Individuals should have skills to use tools to produce, present and understand complex information and the ability to access, search and use internet-based services. Individuals should also be able use IST to support critical thinking, creativity, and innovation (p. 4).

To prevent educators from viewing mobile learning as a distraction in teaching, teachers need to be made aware of the benefits of using this mobile technology. Educators need to understand the characteristics, possibilities and peculiarities of mobile learning so that they can successfully conduct mobile learning. Knowing the vital elements of mobile learning will make the teachers appreciate the use of mobile phones in aiding their teaching and more importantly in their students’ development, satisfaction and motivation to enhance their knowledge and skills in learning English. Vygotsky’s sociocultural theory suggested that mobile learning is a wonderful opportunity that can support the learners through a lifetime of learning, providing them with tools to capture and organize their everyday experiences, to create and share images of the world and to probe and explore their surroundings. In order to improve the usefulness...
of mobile technologies in education, educators should strive to understand the uniqueness of the mobile phone applications and how to effectively use them in the teaching and learning process.

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Technology and College Students: What Faculty Members Think About the Use of Technology in Higher Education

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ABSTRACT

Tablet PCs especially iPads are one of the most commonly used devices that most educational institutions from elementary school to colleges have been using as a main or supplementary part of their educational system. This article aims at investigating faculty members’ personal and educational use of technology especially iPads, their opinions on educational use of technology, and their students’ technology competency. This study was conducted at a college of education in the Southwestern United States where a technology initiative was carried out and iPads were distributed. In this qualitative research, case study research was utilized as a research method and a purposeful sampling method was employed. The data were obtained from eight faculty members via semi structured interviews. Results of the study show that faculty members own a variety of devices in addition to iPad, and they are using many apps based on the class needs. Almost all faculty members define themselves and their current students as technology competent, and they stated that experience, socioeconomic status and willingness to use the technology are the main factors affecting technology competence.

Keywords: faculty members, technology in higher education, technology use

INTRODUCTION

Technology has become a main component of our daily life for a long time (Halac & Cabuk, 2013; White & Manton, 2011). Mobile devices especially have become a ubiquitous part of our daily life that shapes our habits. Along with the changing habits, institutions have been reshaping their educational systems to meet the needs of both learners and teachers as they try to integrate the latest technology into classrooms (White & Manton, 2011). For example, mobile devices have been used widely in all stages of the educational system for different purposes (Hunsinger et al., 2008). Such devices allow students to interact with their friends and instructors and access course content whenever and wherever they choose (Kukulska-Hulme & Shield, 2008; Nihalani & Mayrath, 2010). New technologies such as student response systems or the new applications work on both mobile devices and PCs to increase the limited instructor-student and student-student interaction even in crowded classrooms (Kenwright, 2009; Lantz, 2010; Sevian & Robinson, 2011). As Rodriguez (2011) stated, the combination of mobile devices and social media, free web tools especially, support interaction between students and each other and their instructor, hence increasing learning.

One of the most common mobile devices, tablet PCs have been integrated into the educational environment since they were launched in 2002. Tablet PCs have become so popular in a short time for several reasons. One of the biggest advantages of the tablet PC is that, like the notebook, it allows people to write and draw directly on the screen by just using a digital pen (Wise, Toto, & Lim, 2006) and so it has attracted attention of all age groups from toddlers to adults as well as educators. Tablet PCs bring several advantages to both educators and students. Firstly, using tablet PCs in educational settings is more efficient compared to using blackboards or developing PowerPoint slides. Unlike PowerPoint slides, in tablet PCs educators easily draw what they want and spend less time drawing directly to the screen. Moreover, they can re-use their
writings and drawings repeatedly; this property is especially important and time saving for the instructors who use graphics, do extensive calculations and write complex equations and formulas. Secondly, tablet PCs enable teachers to create more dynamic online lecture notes that students can easily search within. Teachers can use these lecture notes without breaking the conversation or facing another direction while teaching (Frolik & Zurn, 2004; Willis & Miertschin, 2004). Tablet PCs offer many advantages for college students such as mobility, interactivity, longer battery life than laptop computers, and easier input methods to write or highlight. They also allow display of digital books or new version Z-Books which enable students to interact with the content via sound files, video files, or interactive applications (Fischer, Smolnik, & Galletta, 2013).

The current students were born in a technology-rich era so computers, including tablet PCs, and the Internet were a part of their life all the time (Gu, Zhu, & Guo, 2013; Margaryan, Littlejohn, & Vojt, 2011). This generation is given different names, such as “Millennials”, “Net Generation”, and “Digital Natives” (Salajan, Schönwetter, & Cleghorn, 2010). Prensky (2001) made an exact distinction between generations based on the birth date and called the generation born after 1980 “Digital Natives”, whereas the generation born before 1980 are “Digital Immigrants”. These terms have been discussed by several researchers (Gu et al., 2013; Margaryan et al., 2011) but no consensus has emerged on them. While a group of researchers endorse Prensky (Gu et al., Zhu & Guo, 2013); another group opposes his idea (Margaryan et al., 2011; Salajan et al., 2010). Actually, the second group does not totally reject Prensky (2001); but they point out the insufficient empirical evidence regarding the generation differences. They mention that there is no concrete evidence to prove that the difference between digital natives and digital immigrants is much more than in the previous generations (Margaryan et al., 2011; Salajan et al., 2010). Even though there are two opposing groups discussing the terms both agree that a new generation has grown up under the influence of computers, mobile devices and the Internet (Gu et al., 2013; Margaryan et al., 2011). According to Guston (2006), this new generation not only requires technology in class, but also needs to be engaged with the topic. They have grown up in the hypertext era and do not like strict linear processes.

Several studies have been conducted to determine the technology usage levels of the new generation and affecting factors (Gu et al., 2013; Margaryan et al., 2011; Salajan et al., 2010). For instance, Margaryan et al. (2011) conducted a study on technology usage of university students. Their study showed that students’ technology usage may be influenced by technology use in university courses; and there was a complex relationship between age, subject, technology use and university support for technology usage in learning. Another study conducted by The Educause Center for Applied Research (ECAR) (2012) revealed that students adopted mobile devices, such as smartphones and tablet PCs, in higher education. According to results of the study, 67% of the students used mobile devices for academic activities and thought that these devices played an important role in their academic success. Gikas and Grant (2013) supposed that increased use of mobile technology between university students offered new options for students, and it encouraged educational institutions to explore the use of social media and mobility as an instructional strategy.

Since technology use is widespread in all aspects of people’s lives, professors, teachers or any kind of educators have been forced to redesign their courses to adopt new technologies. They have started to use new technologies and online materials such as videos and animations as a part of their courses. They produce their own materials if they are able to; or else they search for them online (White & Manton, 2011). Since they start to change their teaching habits and try to integrate ICT into their courses, their perception and use of technology in both their social life and classroom is critical. As Xu and Meyer (2007) claim, the decision to use technology in many higher education institutions is up to the faculty members so identifying how they perceive technology use and whether they sense the gap between them and their students shed light on their tendency to adopt ICT in their courses. Hence, the purpose of this research is to determine faculty members’ personal and educational use of technology especially iPads, their opinions on educational use of technology, and their students’ technology competency. The research questions of this study are:

- How do faculty members use the technology, especially iPads in both their personal and professional life?
- What do faculty members think regarding technology use in educational settings?
• What do faculty members think about their students’ technology competency?

METHOD

In this study, qualitative research design was employed to understand faculty members’ personal and educational use of technology especially iPads, their opinions on educational use of technology, and their students’ technology competency. The qualitative research studies are interested in describing a situation in detail (Fraenkel, Wallen, & Hyun, 2012; Yin, 2011) and they represent the views and opinions of participants (Yin, 2011). Hence, qualitative research design was appropriate for this study due to its aims.

Case study research was utilized for this study as a qualitative research method. Case study is one of the qualitative approaches conducted to obtain in-depth understanding of a single case or multiple cases based on the determined variables, by using different data collection methods or tools such as observations, interviews, documents or questionnaires (Yin, 2009). Case studies are preferred when the research question consists of a “why” and “how” question, or the researcher has no or very limited control, or the research is about a temporary phenomenon (Yin, 2011). In this study we employed case study in order to understand how faculty members use technology for personal and educational purposes, how they define their and students’ technology competency, and why.

Context of the Study

This study was conducted in a college of education in the Southwestern United States. The University started a five-year technology initiative in Summer 2012 that aimed at increasing student engagement and success via technology. The college of education was chosen as the pilot of the initiative for several reasons such as having fewer students than the other colleges, willingness to participate in the initiative, suitable curriculum and qualified faculty members who were already using technology in a similar manner to the initiative. As a part of the initiative, iPads were distributed to faculty members and students. Meetings were held for students and faculty members separately to introduce a variety of apps provided as part of the initiative and to explain the possible ways of using iPads in class.

Data Collection and Analysis

Data of the study were collected via semi-structured interviews. At the beginning of the study, we prepared a semi-structured interview protocol controlled by three faculty members from the College of Education. Based on experts’ views, the final interview protocol was prepared that consisted of 33 questions under two sections. In the first section, 18 questions explored which technology devices faculty members own, how they use technology in and out of the school, and what they think about their technology competence. The second section included 15 questions to review faculty members’ beliefs about students’ technology competency, and differences between their current and former students. Each interview was recorded and lasted around 30 minutes. The interviews were transcribed, coded via the constant comparative technique, and analyzed based on the data analysis process of Miles and Huberman (1994). In other words, the researchers filtered unrelated text from raw data, read transcripts to get meaning from interviews, extracted meaningful parts and creating first level codes, grouped related codes and created themes, and created a matrix based on codes and themes (Miles & Huberman, 1994). Each transcription was independently analyzed by two researchers, each of whom had a Ph.D. in Instructional Technology, and experienced both in qualitative research and technology integration into education. Each researcher analyzed and coded the interview data, compared and sustained a consensus between the codes and themes.

Participants

A purposeful sampling method was employed in this study. Purposeful sampling can be defined as selecting participants based on their prior knowledge that can provide necessary data for the study (Fraenkel et al., 2012). The sample of the current study consisted of faculty members of the College of Education who participated in the technology initiative. For this study, out of 68 faculty members, eight faculty members -- from three different departments, Educational Psychology (EP), Instructional Leadership and Academic
Curriculum (ILAC), and Educational Leadership and Policy Studies (ELPS) -- participated. For this study, three full professors, four associate professors and one assistant professor volunteered to participate. While six of the participants were female, two of them were male. Furthermore, the experience of the participants ranged from 13 years to 46 years, while their age ranged from 39 to 67 years. The demographics of the participants are given in Table 1.

Table 1. Demographics of Participants

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Department</th>
<th>Program</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>60</td>
<td>ILAC</td>
<td>Reading and Literacy</td>
<td>39 years</td>
</tr>
<tr>
<td>P2</td>
<td>63</td>
<td>EP</td>
<td>Special education</td>
<td>33 years</td>
</tr>
<tr>
<td>P3</td>
<td>67</td>
<td>ELPS</td>
<td>Educational Studies</td>
<td>46 years</td>
</tr>
<tr>
<td>P4</td>
<td>39</td>
<td>EP</td>
<td>Instructional Psychology and Technology</td>
<td>17 years</td>
</tr>
<tr>
<td>P5</td>
<td>45</td>
<td>ILAC</td>
<td>Reading and literacy</td>
<td>13 years</td>
</tr>
<tr>
<td>P6</td>
<td>57</td>
<td>EP</td>
<td>Instructional Psychology and Technology</td>
<td>25 years</td>
</tr>
<tr>
<td>P7</td>
<td>40</td>
<td>ILAC</td>
<td>Science Education</td>
<td>15 years</td>
</tr>
<tr>
<td>P8</td>
<td>44</td>
<td>ILAC</td>
<td>Mathematics Education</td>
<td>22 years</td>
</tr>
</tbody>
</table>

RESULTS

Technology Ownership and Personal Use

The data analysis showed that all participants owned a variety of devices, and they used these for personal and educational purposes. All the participants had at least either a desktop or a laptop computer, and an iPad. Furthermore, two of the participants described themselves as “tech geek” and stated that they followed the most recent technology advancements and owned the latest versions of the devices. More details about the technology ownership of each participant are given in Table 2.

Moreover, it was seen that in their daily life participants used technology for three main purposes in terms of communication, getting or tracking information, and fun. Regarding communication, the majority of participants mostly used e-mails, and three participants preferred Facetime as the primary communication mode. Similarly, participants used Skype and texting for communicating with both their colleagues and friends. All participants also used their devices either for getting or tracking different information such as tracking weather, their weight/exercise, news, shopping offers, and looking for cooking recipes. Lastly, participants used their devices for fun such as reading, watching video, listening to music, taking photos, recording videos, and playing games.

Table 2. Technology Ownership of Faculty Members

<table>
<thead>
<tr>
<th>Participant</th>
<th>Technology Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>iPad, iPhone, MacBook Air, Dell Laptop, Desktop computer</td>
</tr>
<tr>
<td>P2</td>
<td>iPad, Smartphone (android), Desktop computer, Laptop (X2)</td>
</tr>
<tr>
<td>P3</td>
<td>iPad, Computers (X3), Cell Phone (not a smartphone)</td>
</tr>
<tr>
<td>P4</td>
<td>Every iPad 1 to 4 except iPad Air, Android Tablet, Smartphone (android), Google Chromebook, Mac laptop (X2), iMac (X2)</td>
</tr>
<tr>
<td>P5</td>
<td>iPad, iMac, MacBook Pro (X2), iPhone, Kindle</td>
</tr>
<tr>
<td>P6</td>
<td>iPad (X2), iPhone, iPod, Mac Computer (X2)</td>
</tr>
<tr>
<td>P7</td>
<td>iPad, Desktop computer, Laptop Computer, iPhone</td>
</tr>
<tr>
<td>P8</td>
<td>iPad, Smartphone (android), Laptop Computer, Desktop Computer</td>
</tr>
</tbody>
</table>
Technology and Apps Used in Class and Their Source

This study revealed that laptop computers and iPads were the main devices used in class. All participants mentioned that they used Laptop Computers and iPads as a part of their classes; only one participant mentioned that she used Smartboard in class. While Laptop Computers were generally used for preparing and presenting course materials such as presentations and videos, iPads were used for a variety of apps for many purposes. Although faculty members mentioned a total of 19 different apps, the most common were “Socrative” used by three faculty members, “Schoology”, “Notability”, and “iMovie” used by two faculty members.

When faculty members were asked about apps they used in their classes, it was revealed that they generally used non-educational apps, such as “Facetime”, “Kidblog”, “QR Code” for educational purposes. Furthermore, five faculty members especially mentioned that they employed non-educational apps as a part of their classes. For example, P1 used “Facetime” to connect students to class who were unable to attend. Furthermore, she used movie-making, photo-taking, and note-taking apps in order to create more effective course materials or games as a course material. P3 mentioned that he used iPads to deliver course materials to students before the class via e-mail so that students would bring the materials to the course, could reflect on the topic of the class and take notes directly on them during the class. Furthermore, P3 mentioned that he used D2L, the learning management system (LMS) of the university, over the iPads.

P4 used different apps related with the topic. For instance, she used a specific application to measure a classroom and different objects to show students how they could use mathematics in daily life. Moreover, she mentioned that she used apps to start or carry on class discussion which allowed students to share their experiences and opinions about apps. She initiated the discussion in two different ways; either by demonstrating the use of a particular app followed by asking about different ways of its possible usage, or asking them to share their experiences about different apps that they recommended to their friends. P5 stated that she used several apps such as quiz apps to evaluate the effectiveness of her lectures and student understanding of the lesson topics. Moreover, she stated that she took advantage of the technology to apply new teaching methods to her courses. For instance, she implemented the flipped classroom and used the technology to apply this method more effectively. She used an app to prepare course material for her flipped classroom and created her PowerPoint slides using her laptop; after taking the screenshots, she combined these pictures and added audio files in which she explained each picture. Finally, she sent them to students and asked them to watch the slides before class.

“So, I have used a lot of the apps, but I just treat them for my own purposes...When students come into class, I have music playing in the background... I feel like that’s something I do to prepare the class and get them ready......I try flipped the classrooms .... this semester. So, I was recording... I recorded lectures before came to class and in the class we did hands on activities. They seem to enjoy it, but there is also some not so nice feedback, they were not too happy with the change” (P5).

P6 stated that she used technology, especially iPad, to create a classroom environment where all students share their ideas related with the lesson content.

“I’ve been doing group work for a long time. How do you have them do meaningful group work and share given the limited amount of time? And so, one of the things iPad is made a lot easier to have. This year none of the groups needed me to instruct them on Apple TV which really kind of shocked me. Last year, we all had to learn it, but his year even though they are new. But, they already figured out like that. It’s nice because they have to summarize their group work and then present it. And, that process has been a lot easier.” (P6)

P7 stated that she used Apple TV and many applications in class to increase the effectiveness of her lectures. For instance, she wanted her students to download several apps to their iPads, and she demonstrated their use to the class. Moreover, she took photos of her writings on the blackboard and sent those pictures to the absent students. Although she benefitted from the features of the technology in her lessons, she complained about the technical difficulties she faced and warned the instructors.
“We do spend unnecessary time just working with that technology either we can’t get a connection to the Apple TV Network or it just takes a while. So we will have to either restart which takes a little while with the Apple TV. Ideally I would really like my students whenever they are doing projects that they can use the Apple TV device to project what they have been working on, but it’s not efficient enough for me to waste class time to do that. I teach a grad class with five students six students and we actually...because the class is so small I can do that, but with a class of 21 it just it’s not time efficient” (P7)

Lastly, P8 emphasized that she used educational apps in class such as “digital microscope” that a scientist might use in the field. She stated that she used several educational apps related especially for science and math.

This study also revealed that faculty members gained the information related with the apps via 6 different ways. Five faculty members were informed about the apps by their friends and colleagues, students, and app store. In addition to those, the Internet was mentioned by three faculty members, technology initiative meetings were mentioned by two faculty members, and social media mentioned by only one faculty member in this study.

**Use of iPads**

Since one of the purposes of this study was to investigate whether faculty members use iPads distributed as a part of the technology initiative, they were asked about how they used iPads and why. The interview data indicated that participants in this study used iPads both in their daily and professional life.

The results of the study revealed that faculty members used their iPads for a variety of personal reasons, but mostly for fun. The personal purposes could be listed as social networks (n = 2), recording and watching video (n = 2), tracking personal data such as exercises and weight (n = 2), searching (n = 2), tracking weather (n = 1), arranging travels (n = 1), calculator (n = 1), reading (n = 1), taking photos (n = 1), communication (n = 1), and web-surfing (n = 1).

Aside from personal use, faculty members benefited from iPad in their professional life. The six common ways of using iPads in professional life were collaboration, class preparation, research, reading, grading and feedback.

The most common purpose of using iPad among faculty members was collaboration. Six out of eight faculty members mentioned that they used iPads for collaborating with colleagues via “skype”, “hangouts”, or “facetime”. Furthermore, cloud-computing apps such as “Google Documents”, “Google Drive”, and “Dropbox” were used to collaborate and work simultaneously with colleagues.

“Yeah, I use it for Skype meetings and for Google+ Hangouts and stuff. ... Sometimes when I want to—like, I had to show somebody here how I wanted a website to look. What I did was I wrote it out and explained everything, and it made a video of how I wanted it to look, and then I emailed them the video” (P4)

“I have colleagues around the country and actually one in Australia... to Skype. So, I can type on my computer. So, it’s good for an extra Skype thing. I use that all the time” (P6)

Secondly, faculty members used iPads for class preparation including reading students’ papers and preparing course materials.

“I also use it a lot for reading student work. So, like before in my undergrad class we have these weekly writings. And so, I often, I always read them before class, so I can talk about them in class” (P6)

“If you send me a paper draft—actually, you sent me a paper draft and I did it on Word, which was rare. I usually put it on the iPad and then load it into Notability and then write on it so that it’s like how I used to write on papers” (P4)
Moreover, one faculty member stated that she used iPad for her research. She mostly used her iPad in order to collect and analyze qualitative data, and read related articles on her research topic. Furthermore, another faculty member stated that even if she had not used her iPad for research, she was about to start new research projects and was planning to use iPad as a part of those projects.

“I use it for my coding. We use highlighters in Notability to code. I also use it for all of the articles that I read and for highlighting in the articles, and I also—like, for example, I was just doing interviews on a qualitative study. I took pictures of everybody’s classroom using my iPad” (P4)

Two faculty members stated that they preferred to use iPad for reading over computers due to its mobility. Finally, while one participant stated that she used iPad for grading students’ assignments, another used it to provide feedback to her students.

“Yes, I do it for student feedback a lot. I type my notes using my keyboard on my iPad in the Notes app, and then I am able to cut and paste it from my Notes app into the grade book. I also give all my student feedback” (P4)

Self-view on Technology Competency and Reasons for Technology Adoption

Technology competency and the reasons for technology adoption of faculty members were examined as a part of this study. Faculty members were asked to describe themselves whether they were “digital natives” or “digital immigrants” with reasons and examples. Out of eight faculty members, only one, P3, described himself as a “digital immigrant”. Likewise, just one participant, P4, labeled herself as a digital native in some sense due to accessing technology and doing programming in her childhood.

“I am a digital native because I used a lot of technology as a kid, but it was not prevalent, so I would say in my generation, I would be considered pretty digital native. I did programming when I was a little kid. I would save up programs and take them to my cousin’s computer, but I didn’t have a computer myself until I was in high school... I think I was a digital native in that sense, but compared to what the students’ experiences are today, I am not” (P4)

Furthermore, six of the participants considered themselves neither “digital natives”, nor “digital immigrants”, but something in the middle, maybe a “digital naturalized citizen”. They stated that they had not grown up with the technology, which eliminated them from being digital natives. However, they added that they did not have any problem with the technology, and did not fear of it so they were not “digital immigrants” either.

“There needs to be a middle one. I mean, while 20 years ago, I would have said I was a digital immigrant, I think now I’m not a digital native, but I’m not a digital immigrant either.... a digital naturalized citizen” (P5)

“I would probably say a combination. I feel like I use the, you know, the technology for personal, professional I mean every day I do but I know I can better.... I just don’t have the time or don’t take the time to really learn those, but I do have a tutoring session upcoming with one of our IT people, he is going to sit down and kind of walk through some things. I would say a combination, but I am not fearful of it” (P7)

In addition to their self-view on technology competency, the participants were asked the reasons behind technology adoption in both their daily and professional life. It was seen that “needs” were the major reason for technology adaptation. Four participants indicated that they generally decided to spend money on technology based on their needs, and did not spend extra money for new devices they did not need.

Furthermore, while two out of eight faculty members mentioned that they adopted technology based on personal choice, and advancements in technology, only one faculty member stated that technology integration into schools, and technology initiative of the university were the major reasons for his adaptation.
“I do feel an obligation to make sure I learned as much as I could and got with my colleagues went to the professional development and tried to be a model for the students to the extent that I have accomplished that I don’t know” (P8)

“I had actually started to integrate technologies into my classroom probably about 4 years ago, when I knew we had laptops for checkout, and I knew laptops were happening in schools, and I figured my students” (P1)

“The university spent a lot of money, or donated the money, whatever. I feel like they spent quite a bit of money to do that and I felt obligated to implement it” (P5)

On the other hand, high cost, and the possibility of having bugs of new devices negatively affected the technology adoption of faculty members. Two of the faculty members stated that when a new device was announced, it was so expensive that prevent them to buy. Furthermore, new devices might have hardware problems or software bugs that might not be predicted and needed to be improved.

“When the new one comes out, I buy one the right before it, because you get it cheaper” (P6)

“I will wait to see if there are any issues, any bugs or anything like that” (P7)

What Makes You a Digital Native?

According to results of this study, faculty member thought that the year a person born was not the only indicator of being a “digital native” or “digital immigrant”. They mentioned that the factors affecting to be a “digital native” could be listed as experience (n = 6), socioeconomic status (n = 3), and willingness to use technology (n = 2). According to faculty members, a person could only be a “digital native” if he or she experienced the technology. This might be possible if socioeconomic status allowed people access to technology and they were willing to use it.

When the participants were asked to analyze their students, six out of eight faculty members mentioned that although most of their students were “digital natives”, they still were struggling with the technology.

“Most of them… digital natives. They’re digital natives in their everyday life. I don’t know that they are digital natives in thinking about technology integration to be perfectly frank… They may be considered digital natives but not to the degree that I think next generation is going to be. Simply, because of sophistication of the technology itself.” (P2)

“They believe that because they grew up with technology, they don’t have a lot to learn” (P4)

“Most of them, yes… They may not have started out with that, but I do think that they have adapted really well. So I think they were probably exposed to in their not early childhood years but maybe elementary to junior high. So, they have been able to adapt very well” (P5)

“Although about the digital natives, they still struggle with how to use devices. And so, every new, it’s not like they naturally figure out….. that does not mean they are completely competent. Even though they are digital natives, they still are learning. Of course they are, but they still have struggle in terms of making technology meaningful to them. That is a good thing” (P8)

The status of current students

The participants were also asked to compare their current and former students or generations. The findings indicated that participants in this study compared the generations under six main categories which were technology competency, in-class habits, language, technology use, learning styles and search habits.
Technology competency

The first and most mentioned difference between current and former students was the technology competency. Seven faculty members stated that their current students were technology competent, they were faster and better at learning a new application that the former ones.

“They think it’s a lot higher than it is... they don’t have any need to learn new things.. they think that because they grow up with technology, there is no point in learning about it or making themselves better” (P4)

“I think they are competent... They’re certainly more able to use technology more quickly” (P1)

Only one faculty member disagreed with other participants and believed that current students still needed to know how to use technology and apps.

“They haven’t general level of competence. But, certainly on new ones that they are still figuring out like things like how do you go from “Notability”. How do you send something to Notability to me or even harder? They figured out quick. How do you get something from notability to D2L Dropbox? So, those kind of things they still trying to figure out. Figuring out a nice way to [send] you something, but then how do they get it to somebody else”

In class habits

The second commonly mentioned difference between two generations was in-class habits. Out of eight, six faculty members stated that in-class habits of the students had changed over time. The students were capable of multitasking, they liked sharing knowledge, and were more comfortable with the technology.

“I’ve noticed, is that there is way more comfortable with multitasking. They don’t care anymore if I see they are doing “Pinterest” during class. I can’t figure it out, they are confident while they are listening. They are not ashamed” (P6)

“When we are doing things that involve using iPad or technology they definitely seem to be engaged or excited about that or when we are doing the app reviews they were very interested in sharing those kinds of things with the class. Things that they have found and what it would do.... I have seen them a shift just overall in attitudes about learning” (P8)

Even though students were capable of multitasking as faculty members stated, it was mentioned that they did not use this ability always with good purposes. Five faculty members indicated that off-task behaviors of the students were different than the former due to advanced technology. Faculty members mostly complained that students used their mobile devices for non-educational purposes during the class; they especially used social media and chat apps during lecture time.

“If you’re on Facebook, we’re going to be having a meeting of the minds. And I have had to, I did have to last week, go stand behind someone for the third time and finally say, “Close that up,” because she was not taking notes or looking at an uploaded piece... something I had uploaded to use for class. She was on Facebook” (P1)

“I am sure that they are not 100% engaged the whole time and I would imagine they probably check their e-mail once a while. I mean, because they are so social...it doesn’t seem to gone to way of learning.... it has gone in the way of class discussion” (P2)

“They always were on their phone, and the only difference is their shoulders are not slumped over doing it. Now they are doing out in the open, and it’s not a big deal. I used to get myself really upset over them doing these other things in class, but I now I have decided that I present a class and I am prepared for class, and if they choose not to participate, that is their choice, not mine” (P4)

Furthermore, some prevention was taken by the faculty members in order to stop or decrease the
off-task behaviors of the students. Mentioning the rules on syllabus, arranging physical setting of the classroom, walking around, and warning them in-person were some examples of the preventions.

“I try to physically set the classroom up so it is not all that easy for them to be checking their gadgets”
(P3)

“I don’t think no more than people texting on their phone you know I make it pretty clear that first day in class why we use it, when we use it, and don’t be a distraction and they are pretty good about honoring that so I don’t see it anymore then when texting was an issue when that first you know was pretty a problem”
(P7)

“If it bothers me I address it... If the students [are] presenting and I am in the back of the room and I can see you know the stuff happening under the table and I have just been really tried to be really good about addressing it like look what could be happening in your life that you need to be texting? Is your mother dying? Is there something you know major going on? If not, put it up until break. I start the semester off with this is a text free zone you know we are not going to be texting in class and so on and if you have a problem with that just put your phone right up here if you can’t keep from it. So I kind of make it light hearted about it, but I am serious about it you know I want them to be in class engaged because otherwise and this past semester I did have one student who continued to text frequently” (P8)

Technology use by students

Related with the differences between the generations, faculty members were asked to identify how their students use the technology. Five faculty members stated that their students were addicted to technology.

“If I looked back even 10 years ago, the students I have now are more tied to electronic devices and are certainly better at using them than I am, than students even 10 years ago.. most of them will either use the iPad or the laptop. I take laptops to class as well... and will look them up, and in many cases I will say, “Okay if you don’t remember, get out your copy of your e-textbook or get online, and let’s take a see what you find”
(P1)

“When the IPads came in abundance into the classroom, I had a much harder time getting the students to have a class discussion... because. I don’t think they are trying not to discuss... they are trying to put everything in their IPads. I do not think they are engaged in discussion as they used to be” (P2)

“I have been doing it has all; have all of these illogical fears about technology, thinking that technology is out to get them. Technology hates them. They are not good at it. They have really bad attitudes towards technology, and that hasn’t changed. I think what’s changed is that students now are more reliant on technology and they don’t have other ways of doing things if the technology doesn’t work. So if the technology fails, they freak out more” (P4)

Learning styles

When faculty members were asked whether there was a change in learning styles of the students, there was a disagreement between them. Three faculty members stated that the learning style of the students changed over time. According to them, current students were lazier, more passive, and less interactive than ever. On the other hand, three faculty members were against this idea, and stated that there was no difference between former and current students.

“They are more distracted. I think they are lazier, and I think they expect it to be given to them more, and they are more passive. They are waiting to receive, not as much as create” (P4)

“A lot of them prefer to just sit and get a lecture than actually do fun activities that make them think” (P6)
Search habits

Lastly, faculty members explained their ideas about the students’ search habits. Three faculty members claimed that search habits of the students were changed over the time along with the technology.

“Well, their search habits are certainly different. I started teaching when people used the... they went to the library and looked through card catalogs... they access information differently than students did previously. I practically started teaching before there was television” (P3)

“If they don’t understand a concept in class, they won’t seek out the information on their own. They wait for me to explain it, or they ask questions where as if I am confused on something. I actively seek out various sources to figure out what I need to know. And so, I don’t know if it is lack of motivation or lack of understanding how to use the technology or what can do for you” (P5)

DISCUSSION

Even though all the faculty members participating in this study could be considered as “digital immigrants”, the results of the study revealed that all the faculty members were aware of the advantages of the technology and use various technologies such as computers, tablet PCs, smartphones, and software easily in their daily life. Several researchers (Baker, Lusk & Neuhauser, 2012; Bayless, Clipson, & Wilson, 2013) state that students have started to use many technological devices such as smartphones, tablet PCs, laptop computers due to advancements in technology, and decrement in prices. Moreover, Teo (2015) emphasizes that with the diffusion of computers and Internet in our lives, young people use Internet for socialization, entertainment and education and use instant messaging and email to communicate with people. This study showed that this was also true for faculty members. They bought various devices and used them for different purpose in their daily life namely for communication, fun or to gain information about their interests.

The study of Alleman, Holly, and Costello (2013) revealed that in faculties, the technology usage for general and educational purpose was widespread but it was not extensive. According to Xu and Meyer (2007), funding of an organization does not affect the technology use of faculty significantly. Faculty decides to integrate the technology or not based on its perceived value. Before integrating specific technology to educational settings, they analyze whether it improves students learning and/or instruction, or decrease the job of instructors (Fredericksen, Pickett, Shea, Pelz, & Swan, 2000; Hartman, Dziuban, & Moskal, 2000). Technology use can be influenced by many factors such as faculty members’ professional and demographic characteristics. It is assumed that younger faculty members are more open to using technological innovation and they get used to computers and Internet in their university education (Green, 2002). Controversially, faculty at higher ranks (associate, full professor) are claimed to develop their current ways of working in years so they might not be volunteering to change their working style. In this study, it is found that despite their ages and ranks, participants adapted new technologies both in their professional and daily life easily. It is seen that only two participants used them for preparation for their class. This might be caused by the experiences of the instructors. They might have prepared their course material in years so they did not need to prepare new ones. But, the majority of the participants used their laptops for projecting course materials such as PowerPoint slides, Internet search results, videos and used iPad for their class preparation such as overview their documents or reflection paper of their students as well as using some applications for educational purpose in their lectures. This might be also indicated the existence of course materials such as videos, and PowerPoint slides.

The participants in this study used iPad for both in their daily and professional life. This indicated that they integrated this technology into their work. They benefitted from this technology for various tasks. Participants used them especially for collaboration with their colleagues by using special chat applications such as Skype, Hangout and file sharing applications such as Dropbox. Moreover, they used them for preparing their lectures, their research, providing feedback and grading. This finding indicated that participants could integrate the new technologies into their professional life to meet their needs. Regarding technology adaptation of the participants, needs were the top reasons for technology adaptation whereas
high cost and possible bugs in the new version prevented some participants from buying newer versions of the specific technologies.

In some studies, it is reported that the faculty of education was the highest users of different instructional technologies (Guidry & BrckaLorenz, 2010; Perez-Stable, Sachs & Vander, 2013). According to Perez-Stable et al. (2013), this finding is not surprising since the faculty of education is generally considered to be the pioneer in pedagogical innovation. In this study, it is found that instructors not only used several instructional technologies, but also used several applications in their classroom in order to increase the effectiveness of their lectures. Waycott, Bennett, Kennedy, Dalgaro, and Gray (2010) analyzed 31 teaching and support staff regarding their technology usage. They found that technology usage in educational settings contributed student learning, and ease managing the learning activities. Dobbin, Dahlstrom, Arroway, and Sheehan (2011) mention that technology use helps the students to connect to the academic resources and related information, makes learning more applicable and creative and increases productivity, efficiency, and peer engagement. In this study, participants integrated the technology especially iPad in order to increase the effectiveness of their lessons. The apps used by the participants in this study are generally non-educational but they were adapted for their teaching activities. Herrington et al. (2010) advises that faculty members should not use only tablet PCs or iPod devices in their teaching activities. They should implement these technologies to increase their personal productivity, to test their pedagogical practice; benefit from their facilities such as taking pictures, recording videos and voices. It is seen that the participants in this study benefitted from the capabilities and features of the iPads and used them for different purpose. They created their course materials, analyzed their research data or integrated them as a course material in their lectures. In addition, participants informed about these applications generally from their students, colleagues and App store. This showed that they wanted to use apps both in their professional and daily life, sought applications and discussed with both their students and colleagues about the existing apps in order to find the appropriate apps that met their needs. This situation might indicate that participants took the applications seriously and integrated them if they met their needs in their lectures.

Prensky (2001) defined the generation born before 1980 as “digital immigrants” and the others “digital natives”, but this study showed that most of the participants in this study disagreed with Prensky and proposed another term between these two which was suitable for their condition. But, they added that their students were digital natives and technology competent because they learnt how to use a new application faster than participants and the older generations. According to Bennett (2012), researchers have not agreed on the differences between the digital natives and immigrants in terms of technology use and self-efficacy. Romero, Guittet, Sangra, and Bullen (2013) found few differences between the students born before 1982 and in or after 1982 in their use and preferences of m-ICT. They also added that these differences were caused by the use of ICT rather than their age. In this study, the majority of the participants indicated that there was no big difference between them and their students. According to them, their students were generally technology addicted but they did not know the appropriate use of technology in the courses. This finding is consistent with previous studies. Teo (2015) states that, for young people, technology is necessary and they think that they are technologically skilled based on their use of personal technologies. However, Keengwe (2007) found that students did not appropriately use available technologies in the educational environment although they were proficient in using many technologies for communication. Hence, Keengwe (2007) claims that students need direct instruction about technology use in education and faculty should model the appropriate use of technology in order to help students to perceive technology use as valuable. The participants in this study also emphasized this fact and complained about their students’ limited ability to use technology for educational purpose. They indicated that students could not use the technology in the educational setting appropriately. Thus, they explained the apps and demonstrated their usage in the class to the students in their lectures.

Finally, this study also found that the majority of the participants complained about the in-class behavior of their students and they needed to eliminate this problem in their lectures. Bayless et al. (2013) claim that students bring their technology into the classroom environment with increasing frequency. Although Denholm (2013) argues that instructors should allow students to use their smartphones and tablet PCs in class since they use them outside of class, many educators in the literature complain about the misuse
of laptops and tablet PCs in the classroom settings and state that they are a distraction rather than beneficial. Bugeja (2007) showed that students brought their laptops to take notes, but while the instructor tried to give the lecture at the front, they checked or sent e-mails, checked their Facebook accounts or played games through wireless connection. In their study, Tindell and Bohlader (2011) found that 92% of college students texted or receiving messages while waiting for the class to start, 95% brought their cell phones to the classroom and 30% sent or received messages during lecture time every day. Moreover, the researchers found that texting or receiving messages often related to the class size; in a class with 100 or more students, students texted more whereas in a small class size of 12 students, least texting occurred. Some 54% of the students in their study also indicated that their professors would be shocked if they learnt how much texting was occurring during their lecture. Moreover, another study conducted on 600 students revealed that 75% of the students spent more time on non-course activities if they brought their laptops to the classroom. Furthermore, 35% of the students spent more than 10 minutes on social network sites and e-mail per class (Sample, 2012). Hence, in some universities such as the American University, the College of William and Mary, Georgetown Law School, George Washington University, and the University of Virginia, professors forbid laptop use in their lectures (de Vise, 2010). Moreover, instructors in the University of Wisconsin, the University of Michigan, Florida International, and Harvard created laptop-free zones (Fischman, 2009). Bugeja (2007) reports that 20% of the syllabus in one school of Journalism includes warning about the misuse of technology in the learning environment and adds that the percentage will be increased in the future. Sample (2012) recommends forming a policy on personal technology use and informing the students about it. In this study, the participants also indicated misuse of technology occurred in their lessons; hence some of them needed to add warnings related to misuse of personal technologies in their courses.

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ABSTRACT

The study of popular culture is now becoming an emerging research area within education. While many studies have confirmed that students’ interest in anime has driven much of enrolment in Japanese language courses, the impact of using anime as a teaching tool has not been studied thoroughly in the teaching Japanese as a Foreign Language (JFL) classroom. This article attempts to propose a model that can be used to plan lessons by using anime as a teaching tool in JFL classrooms. By introducing the teaching idea of using anime in a Japanese language classroom, this article is hoped to be able to encourage more Japanese language teacher to consider the use of anime in teaching JFL.

Keywords: anime, cartoon, Japanese as a Foreign Language, language education, popular culture

INTRODUCTION

Heavily influenced by mass media, popular culture has increasingly received more attention nowadays. The study of popular culture is now becoming an emerging research area within education. For example, using graphic novels to enhance students’ reading and writing ability (Frey & Fisher, 2004) and using the highly popular hip-hop culture and rap as a transformative educational tool despite their controversial position in mainstream education (Alim & Pennycook, 2007). According to Black (2008), incorporating popular culture in the classroom could unite the students and encourage possible connection with one another based on their interests outside of school.

In the case of teaching Japanese as a Foreign Language (JFL), prior studies have confirmed the apparent connection between interest in Japanese animation (anime) and interest in learning Japanese language (Abe, 2009; Fukunaga, 2006; Manion, 2005; William, 2006). Furuhata-Turner (2013) suggested that, “by using materials in which students are already interested, language teachers can expect that students will enhance and improve their language competencies” (p. 73). Besides, we believe that various interactive activities derived from the use of anime as a teaching tool can make the classroom more dynamic, creative, and fun. Interactive activities such as active viewing, role play, and follow-up discussion will create a more learner-centered learning environment to encourage students to practice their Japanese language speaking skill, besides stimulating their critical thinking skill.

The use of anime in teaching JFL has not been studied in depth in the classroom context (Spindler, 2010). Some of the difficulties reflected in using anime as a teaching tool in the JFL classroom include: (1) underdeveloped theory on facilitating learning through anime in classroom context (Spindler, 2010; William, 2008) and (2) lack of teaching manual for language teachers intending to use anime as a teaching tool in the
classroom (Furo, 2008). This article aimed at proposing a model that can be used to plan lessons by using anime to teach JFL.

Anime and Cartoon

What is anime? Anime is often correlated and compared with the concept of cartoon. According to Napier (2005):

“To define anime simply as ‘Japanese cartoons’ gives no sense of the depth and variety that make up the medium. [...] Essentially, anime works include everything that Western audiences are accustomed to seeing in live-action films – romance, comedy, tragedy, adventure, even psychological probing of a kind seldom attempted in recent mass-culture Western film or television. [...] Unlike cartoons in the West, anime in Japan is truly a main-stream pop cultural phenomenon” (p. 6)

From Napier’s statements, the clear distinction between cartoon and anime could be observed. In addition, the Japan External Trade Organization (JETRO) coined the word “Japanimation” to describe animation produced in Japan by claiming that, “Japanese animation has been acclaimed worldwide for its originality, Japan-based culture and content, to the extent that it is called Japanimation” (Dateline JETRO, 2005, p. 4). Aeschliman (2007) explained that while the term anime is used as a blanket term to refer to all animation from all over the world in Japan, many dictionaries in English define anime as a style of animation developed in Japan. In view of these definitions, the term anime is used to define and distinct animation made in Japan with other region’s animation (cartoon) in this article.

Bahrani and Soltani (2011) claimed that cartoons have been effective in increasing language learners’ motivation because cartoons provide variation for the brain as “visual information in the form of cartoons is usually processed by the right brain which is the holistic, creative, artistic side” while “the spoken word engages the left side of the listeners’ brain” which is “is analytical, recognizes and interprets words, performs calculations and so on” (p. 20). No matter how convincing and interesting the lesson, after a short time, learners will start to feel the dullness of the same manner of teaching involving the constant use of the left side of the brain. On the other hand, cartoon is a kind of visual information processed by the right side of the brain. Therefore, cartoons can be served as a tool for creativity and variety in keeping the learners less bored (Bahrani & Soltani, 2011).

Barker (2009) explained that making the learners interactive is the best way to keep them interested and engaged in lessons. By adapting cartoons into the classroom with suitable and applicable activities, teachers can promote learners’ observational, analytical, and higher order thinking skills. According to Oliveri (2007), cartoons can ignite meaningful conversation, and create opportunity for teachers and students to discuss issues such as family life, social, and current events, as well as moral values and religious philosophies.

Using cartoon in the teaching English as a Second/Foreign Language (ESL/EFL) classroom has shown positive effect in improving students’ language competence (Arikan & Taraf, 2010; Munir, 2016; Velez Gea, 2013). This suggested the possibility of anime as an effective teaching tool in a JFL classroom.

The Use of Anime as a Teaching Tool in a JFL classroom

According to Richards (2013), “input” in language teaching refers to teachable and learnable units of linguistic content. Richards (2013) stated that different approaches to course design “reflect different understanding of the nature of language” such as grammar, functions, and vocabulary (p. 6). After “input” has been determined, the domain of “process” concerning the issues of teaching methods, instructional materials, and classroom activities can be addressed. Finally, “output” refers to the learning outcomes. The “output” refers to what students are able to do as the outcome of a period of instruction.

Input (Approaches)

Nunan (1988) suggested that a language teaching course should be started with mainly the analytical/formal approach. The analytical approach should focus on the language form explanations and
language form learning activities to meet the students’ conditions and expectations. Then, the communicative learning approach should gradually replace the formal approach to facilitate the students’ communicative skills. Using the analytical approach, the teacher emphasizes on the language analysis such as the phonological and lexical components of language to help students become aware of these components and be able to practice them, whereas the experiential approach emphasizes the inductive method of learning through the students’ experience. The language is regarded as a tool to encourage comments, responses, and expressions from the students based on the text itself or its theme/topic (Robinson, 2007).

Process (Classroom Activities)

To integrate the analytical and experiential approaches into practical instructional methodology in the classroom and to get a successful outcome in language learning, there are some classroom activities that should benefit both teacher and students. Cakir (2006, p. 69) outlined some practical techniques or classroom activities for using video in classroom (see the Appendix).

Unlike passive viewing where the viewer is only exposed to the video content but does not engage with the video content at any critical level, active viewing requires the viewer to identify and analyze the viewing experience. Classroom activities such as freeze framing and prediction activity, silent viewing activity, sound on and vision off activity, repetition activity, role play activity, reproduction activity, dubbing activity, and follow-up activity can be carried out in pairs and groups depending on the class size. Pair work and group work can effectively stimulate communication, foster knowledge sharing, and develop cooperative skills among the students. For example, the repetition activity can be carried out as pair work using the analytical approach where the students are required to analyze the dialog lines in certain short scenes; the follow-up activity can be carried out as group work using the experiential approach where the students are given opportunities to express their personal responses about the anime watched and discuss issues related to real life situations.

Output (Outcome)

Frey and Fisher (2008) suggested numerous valuable resources that may help teachers develop film selection criteria for classroom viewing and instructional activities, for example, “Reel conversations: Reading films with young adults” by Teasley and Wilder (1997), “Reading in the dark: Using film as a tool in the English classroom” by Golden (2001), and “Great films and how to teach them” by Costanzo (2004). However, “none of these books devotes more than a few paragraphs to anime” (Frey & Fisher, 2008, p. 74). To solve the problem, the film analysis framework (Eken, 2003; Tanriverdi, 2007; Teasley & Wilder, 1997) can be used to analyze anime for classroom teaching purpose. The film analysis framework was chosen because it provides a rich source for examining different aspects of a film, as well as anime.

The aspects proposed in the framework by Teasley and Wilder (1997) include “literary” aspect (narrative, characters, setting, theme, sign, and genre), “dramatic” aspect (acting, costumes, and make-up), and “cinematic” aspect (camera angles, music, sound and vision, and lighting). Eken (2003) refined the framework by adding the “language work” aspect to analyze the vocabulary and language skills that could be learned from the film. Tanriverdi (2007) added “cultural” aspect to the framework to analyze the culture background and ideology of the film.

In this article, we compared the film analysis framework proposed by Teasley and Wilder (1997), Eken (2003), and Tanriverdi (2007) and decided to focus only on the “literary”, “language”, and “cultural” aspects of anime by leaving out other aspects such as “dramatic” and “cinematic”, which were too technical or irrelevant to apply to the analysis of anime for language and culture learning purposes. In addition, the aspect of “personal response” can be added into the framework to examine the students’ impression of the anime. The “personal response” component will deal with the students’ overall opinions about the anime, comparison with real-life situation and the good points or bad points of the anime.

By integrating these theories, Figure 1 illustrates the model that can be used to plan lessons by using anime as a teaching tool.
Other Pedagogical Considerations

Here are some pedagogical suggestions to be considered by Japanese language teachers who intend to start using anime as a teaching tool.

Anime Selection

Anime can be classified into different genres. Anime genres are also often uniquely classified by targeted audience group such as *kodomo* (children’s), *shoujo* (girls’), *shounen* (boys’) and various ranges of genres targeting the adult audience such as *josei* (women’s), and *seinen* (men’s). Japanese use various styles of language (e.g., polite-plain form, dialect-standard language, etc.) depending on the situation and human relations. These language use variations are also reflected in anime. In the context of learning JFL, *shoujo* anime which is driven by “human relations (*ningenkankei*)” (Yu, 2015, p. 21) and daily life situations is more suitable for use as a teaching tool as compared to *shounen* anime which focus heavily on the action, fighting, and competition. Most importantly, anime selection should respond to the students’ needs and learning objectives. Additionally, other criteria such as cultural appropriateness, length of anime, availability of hardware, visual quality and compatibility should be considered as well (Syafuddin, 2010).

Useful Websites

Of course, it is true that every class is different, as is every teacher or every student. The most important aspect to consider when choosing the anime as a teaching tool is the class objective. As a matter of fact, it is not difficult even if the teacher does not know much about anime. A bit of research on the Internet will take care of that. Here are some of the useful websites:


As a starter, the website Japanese in Anime and Manga could be used to discover the new experience of learning Japanese language through anime and manga (Japanese comic or graphic novel). This e-learning...
website was created by the Japan Foundation, Kansai, Japan. This website aims at giving Japanese learners and anime/manga fans from all over the world an opportunity to learn Japanese in an enjoyable way by using the anime/manga as a gateway to their studies.

(2) MyAnimeList (http://myanimelist.net)

MyAnimeList is the world’s largest anime and manga database and community. This website introduces visitors to anime and manga, besides helping them organize their own manga and anime collections by creating a personal watchlist. Functionality includes site search, anime and manga listing, and forum.

(3) Anime News Network (http://www.animenewsnetwork.com)

Anime News Network is an anime industry news website that reports on anime, manga, video games, Japanese popular music and other related culture. The website offers reviews and other editorial content, forums where readers can discuss current issues and events, and an encyclopedia containing a large number of anime and manga with background information, theme songs, plot summaries, and user ratings.

(4) YouTube (http://www.youtube.com)

YouTube can be used to explore the trailers, short clips, and reviews of anime. YouTube is a free video sharing website that makes it easy to watch online videos. You can even create and upload your own videos to share with others. Originally created in 2005, YouTube is now one of the most popular sites on the web.

Copyright Issues

As far as using audio-visual material as a teaching tool is concerned, the teacher has to be very careful to not infringe copyright law. To avoid this, the teacher should not rip, copy, and alter the audio-visual material in any way. Also, the teacher has to take copyright concerns very seriously when uploading or placing the audio-visual material in an online repository for student use outside the classroom (McLelland, 2013). The teacher also needs to be reminded that although YouTube clips can be played live in the class, recording and redistributing the clips infringe the copyright guidelines.

Class Size

In addition, given the large number of students, it is sometimes difficult to address individual concerns. Therefore, using anime as a language and culture teaching tool seems more practical for smaller class size of 10 to 15 students.

CONCLUSION

Nowadays, students spend much of their time networking with popular culture. Therefore, using popular culture as an educational tool allows teachers to make that time more fruitful. Besides, in order to make the classroom teaching more relevant to the students, teachers should learn more about the students’ learning habits outside the classroom. Exploring the students’ fandom of popular cultural texts “maybe a way to get students interested in school literacy practices” and provide teachers “with insight into students’ out-of-school lives” (Alvermann & Hagood, 2000, p. 445).

Although using audio-visual popular culture texts, such as movie, drama, song, and cartoon in language teaching has become a common approach for language teachers, many of them might not be aware of using anime in the context of teaching JFL. For successful communication, language learners should have clear understanding not only of the lexicon, grammar, cultural patterns, but also the pragmatic background of the situation. In other words, learners need to understand how context contributes to meaning in order to construct meaningful and effective communication in a foreign language. In the case of teaching and learning JFL, anime could be useful to help language teachers and students to achieve these language teaching and learning goals. By introducing the idea of using anime in a Japanese language classroom, this article seeks to
encourage more Japanese language teachers to consider use of anime as a Japanese language teaching tool.

REFERENCES


APPENDIX

Practical techniques for using video in the classroom

<table>
<thead>
<tr>
<th>Technique</th>
<th>Classroom implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active viewing</td>
<td>Active viewing increases the students’ enjoyment and satisfaction and focuses their attention on the main idea of the video presentation. So, it is necessary for students to take an active part in video teaching presentations. Before starting the presentation the teacher writes some key questions on the board about the presentation so that the students get an overview of the content. After viewing the questions the students answer the questions orally, or they may take notes while viewing. For more detailed comprehension students are provided a cue sheet or viewing guides and let them watch and listen for specific details or specific features of language. However, it should be kept in mind that the level of the students should be taken into account and the technique should be adapted according to their level.</td>
</tr>
<tr>
<td>Freeze framing and prediction</td>
<td>Freeze framing means stopping the picture on the screen by pressing the still or pause button. Video gives us an additional dimension of information about the characters’ body language, facial expressions, emotions, reactions, and responses. Teacher freezes the picture when he or she wants to teach words and expressions regarding mood and emotions, to ask questions about a particular scene, or to call students’ attention to some points. By freezing the scene the students can be asked what is going to happen next. So they speculate on what will happen in the next act. Freeze framing is excellent for speculation. This activity also fires the imagination of the students by leading them to predicting and deducing further information about the characters.</td>
</tr>
<tr>
<td>Silent viewing</td>
<td>As video is an audio-visual medium, the sound and the vision are separate components. Silent viewing arouses student interest, stimulates thought, and develops skills of anticipation. In silent viewing, the video segment is played with the sound off using only the picture. This activity can also be a prediction technique when students are watching the video for the first time. One way of doing this is to play the video segment without the sound and tell students to observe the behavior of the characters and to use their power of deduction. Then press the pause button at intervals to stop the picture on the screen and get students to guess what is happening and what the characters might be saying or ask students what has happened up to that point. Finally, the video segment is replayed with the sound on so that learners can compare their impressions with what actually happens in the video.</td>
</tr>
<tr>
<td>Activity</td>
<td>Description</td>
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<tr>
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<tr>
<td>Sound on and vision off activity</td>
<td>This activity can be interesting and useful to play a section of a video unit and remove the visual element from the presentation by obscuring the picture so that students can hear only the dialog but are unable to see the action. Through this activity the students predict or reconstruct what has happened visually depending only what they hear.</td>
</tr>
<tr>
<td>Repetition and role play</td>
<td>When there are some difficult language points in the video unit, close repetition can be a necessary step to communicative production exercises. A scene on video is replayed with certain pauses for repetition either individually or in chorus. When students have a clear understanding of the presentation, they are asked to act out the scene using as much of the original version as they can remember. When students become confident with role playing and are sure of vocabulary and language structures, more creative activity can be introduced in which they are asked to improvise the scene to fit their views of the situation and the characters they are playing. Role-play involves students as active participants. As students play the assigned role, they become more and more involved. This activity also helps students to better understanding their own behavior and to be more able to respond in a positive way to various human relationships. In other words, role playing is a good communicative activity and true preparation for real-life situations. It gives a chance to students to apply what they are learning.</td>
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<tr>
<td>Reproduction activity</td>
<td>After students have seen a section, they are asked to reproduce either what is being said, to describe what is happening, or to write or retell what has happened. This activity encourages them to try out their knowledge. Students will benefit from experimenting in English, even though it is challenging and mistakes are made. As it seems a bit difficult to perform, guidance, help and reassurance may be needed.</td>
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<tr>
<td>Dubbing activity</td>
<td>This activity can be done when students have the necessary language competence. In this activity, students are asked to fill in the missing dialogs after watching a sound-off video episode. It is interesting and enjoyable for the students to complete a scene from the video by dubbing.</td>
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<tr>
<td>Follow-up activity</td>
<td>It is important that a video presentation should lead to follow-up activity as the basis for further extended oral practice. Discussion stimulates communication among students, and it helps to achieve communicative practice. With this activity students have an opportunity to develop sharing and co-operative skills.</td>
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