Conceptual Framework in Teaching and Learning Using Mobile Application for Special Students

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ABSTRACT

Mobile apps is a teaching and learning tool that able to become the latest trend in education nowadays. However, the exposure of mobile apps is more focused on the normal students. Even though special students are hearing problem and have difficulties in conversation, they are still practicing the conventional learning methods. This study is aimed at identifying the framework of learning methods using mobile applications with effectively towards special education students' that have difficulties in hearing and conversation. This study was used survey methods to create a conceptual framework of learning that will be used as a guideline in conducting mobile application on special education students. This is the basic components in teaching and learning using mobile apps such as strategies pedagogies, mobile device, learning module, apps design, communication method giving the impact to achievement, communication level, and students motivation. In the conclusion, conceptual framework can help the teachers and students in teaching and learning

Keywords : Mobile applications, teaching tool, special education, conceptual framework, special students

1 INTRODUCTION

Technology not just contributes to management and administration but to the education sectors also such as courseware, e-learning, and virtual learning. These technology advancements comprise the teaching tools that have can be used according to the current situation. Mobile apps is also among the latest technologies used in education. In the context of special education needs, the approach to using mobile applications is more appropriate. According to Jeng, Wu [1] mobile app is also serves as a practical teaching tool that is with the needs of students. Additionally mobile apps in secondary school level are more suitable for students who need something unique compared to ordinary learning [2]. However, the implementation of mobile applications in education not only focused on the certain group of students but it should be focus on all levels student as knowledge is available for all. Consequently, to ensure that effectiveness, it needs to be thoroughly reviewed from the various aspects.

There are variety number of mobile applications that have been developed for educational purpose. It is a great effort that can be done in improving student achievement in their learning. This method is also become a flexible source of references in anytime and every where. This medium can supports the conventional learning methods. Therefore, mobile applications need to be integrated in
education improving the quality of education in particularly. This advantages should be one of the online reference sources or as an alternative method that can give impact towards students.

2 PROBLEM STATEMENT

Online learning is a new learning culture where various mobile applications are created. However it mainly focused on the normal students, but for the special education students are less attention in the development of mobile applications. The existence of a small number of mobile applications for special education students developed without looking at the overall implementation and the needs of students. Hence, for the minority group of special education students in Malaysia, it should be given special attention in implementing learning using mobile applications. The focus should be given to the disability students because they are deserve to learn something better as a normal students.

3 OBJECTIVES

This study aims to examine the needs of special education students in hearing problem and conversation issues in the integration of mobile application learning methods by creating a conceptual framework as a guide for teachers and students in the teaching and learning of special education needs.

The objectives of this study are
   i. To identify basic components of learning using mobile applications
   ii. To build a conceptual framework of learning methods using mobile apps
   iii. To examine the components of mobile app in teaching and learning

4 LITERATURE REVIEW

Constructivism derived from the English word which means the arrangement or structure [3]. The concept of constructivist learning is a process of restructuring or organizing. While the term constructivist is the philosophy of knowledge, psychology, teaching and learning theory that emphasizes existing knowledge. The process of learning is the interaction between new information and previous information [4]. In the context of learning using mobile applications, learning materials are organized in a systematic learning style and they went through a structured process. In addition, the learning style is more flexible, dynamic and attractive. Learning can be linked to previous experiences and constructivist learning theories can be implemented in a technology based learning environment. However, multimedia application oriented learning methods need to be explored based on the key aspects of mobile applications that give impact to the students. These five components are essential for learning to work perfectly because the concept of learning using mobile applications is material-centered and student centered learning [5].

Student centered or student-oriented learning encourages students to analyze their experiences and produce more responsible students [6]. The learning process takes place in an environment where students are actively involved [4-6]. Where new knowledge and existing knowledge are combined to solve problems in order to understand the concept of learning. Knowledge was formed not only based on the reading but also from the experience.

Based on the learning concepts using mobile apps, [7] student’s ability in building the learning concepts depends on the design
aspect. It is to ensure the learning process is becoming more easier. Learning does not consist in consistently, meaning that the knowledge delivered by the teacher does not directly passing towards the students. However, learning using the mobile applications focuses on strengthening aspects of unclear knowledge and training as a method of measurement of knowledge learned.

There are five basic components of learning in mobile application methods. Constructivist learning theory [8] outlines five key components of learning such as pedagogy strategies, device, module, design and communication skill. These components are is the basic of learning using mobile apps.

![Figure 2. Apps teaching and learning component](image)

### 4.1 Pedagogy strategies

Learning strategy is an important aspect of education. It is aims to determine the strategies to the teachers in achieve the learning objectives. It is supported by Kemp (1995) which is learning activity used by teachers in teaching and learning to achieve learning objectives. The learning strategy also refers to the appropriate activity or training chosen by educators to help students achieve the learning goals that they want to achieve (Kozma 2007; Cropper,1998). While Sunhaji [9] stated that the learning strategy is a way of how the learning method used by the teacher to plan the learning method to be used. Therefore, the learning strategy should depend on the approach used in education.

In the context of learning using multimedia applications, there are two approaches used in learning such as student centered and material centered learning. These two approaches need to be integrated because learning takes place based on the creativity of students using the application in their learning.

However, learning by using mobile devices is also influenced by other aspects. According to Jeng, Wu [1], there are four dimensions that influence learning strategies using mobile devices, such as learning environment, strategies, students and teachers. Mobile devices and mobile apps are can make the learning process more organized and systematic [10].

Zainuddin Ibrahim, Ngu Kee Shing [11] point out that high school students showed student communication is easier to use multimedia applications and they recommends multimedia applications need to be implemented at higher learning centers. Therefore, researchers will implement in this research that multimedia based application that capable to help students in their teaching and learning.

### 4.1.1 Student centered learning

Various of learning approaches commonly use by the teacher to the students and it gives an added values in teaching and learning. Student-centered learning or also known as the global Student Centered Learning (SCL) is an approach has been implemented in developed countries. Popular approach that has resulted in developing creative learners in their learning. The SCL learning approach is able
to build student skills for them to deal with the world in the future.

The basic concepts of SCL learning are, students play an important role in learning [6]. It is closely related to past experience, exploration of new knowledge, and actively encouraging student to participate. It also stimulates students to think with high levels and promote lifelong learning even learning happens based on the extent of the ability of the student to master it. The SCL learning approach is a learning process controlled by a student whose learning procedures are based on the student. In terms of learning time, it is based on the suitability of the time and the learning or assessment results performed by the student. Assessment of learning is assessed by students because they are more knowing of their level of control.

Moreover, SCL learning also creates a more engaging learning experience with their friends who willingly can share their knowledge. SCL also produce creative and critical learners and can improve problem solving. Student engagement is also active in the group, using appropriate methods and techniques such as discovery inquiry, discussion, role play and contribution that will makes student engagement more active. and this will lead and contributes to the development and sharing of knowledge among peers.

4.1.2 Material learning based

Teaching and learning using multimedia applications as a teaching and learning tools facilitates teachers to deliver a good learning. This is because learning has taken place by teachers become a source of reference for students to reinforce knowledge acquired based on learning materials multimedia applications provide multiple access to body of knowledge as it is more convenient and students can make referrals more quickly. The material provided in this method have been through a process conducted by experts in their field. Through this Learning method, it is based on the ability of students to learn, test, and assessment of their self-esteem level.

There are several student centered learning methods used in education today. According to [12] there are six methods used such as make brief notes, exercises, self-learning, group discussions, presentations and exercises. These method is effective for use in learning.

It is different with the teacher based learning approach where students are given notes, exercises and answers to the material-based learning of each lesson that contains information, questions, training and answers. This gives an opportunity to the students with their ability. These learning materials were characterized as teachers who can guide, communicate information, motivate and provide self assessment [13]. This Learning material has a more systematic structure and contain clear objective.

4.2 Mobile Device

Mobile devices or known as electronic devices such as smart phones. This device commonly used as a tool to communicate between people. It is not just used as a communication tool but can be used as a learning tool since various mobile applications have been developed according to the latest design of the devices. There are various advantages of using this mobile device in sign language learning.

Various studies have been done regarding learning using mobile devices. Researchers
have been discussing various issues on how mobile devices can be used in education by providing a variety of content. Unfortunately, it is less attention to the content adaptability in an app by using such mobile technology [14-17]. According to [18] the theory is appropriate to the use of mobile devices learning. Claimed that learning with mobile devices give students tendency to learn and facilitates their revision process.

mobile devices basically can make a contact with the people by making calls, sending emails, messages and so on. This development of mobile device is based on the needs and importance of the individual in relation to facilitating of the communication [19]. In the context of learning, it does not rely on the frequency of someone exploring other individuals but what information they can access using this mobile device. In this context, the development of the system depends on the system design that can provide information or content in an application. Moreover it can provide information about a new content and provide space for learning purpose.

In addition, the mobile device also has various types of components such as GPS, microphone, accelerometer and so on. These components can be used to provide users with information. There are now a variety of apps that provide these features and it’s is no longer common place because apps is the mobile technology exist since 2005 [20]. However in Malaysia education sector it is still new approach. According to Lokman Mohd Tahir, Nurul Qistin Mustafa [21] an infrastructure is a factor that affects the success of typical education students.

Current trends of mobile devices have been affecting in everyday life [20]. If we look at the usage of mobile device is not only dominated by adults but to the teenagers and children as well. It makes these mobile devices as a trend in their daily lives. Previously, personal computer was dominated by adults and teenagers and cost factor was so expensive to have a gadget or device, but this scenario was changed today. Mobile device was affects the pattern of use where it differs from sharing and for research purpose. This proving that the changing of usage pattern as an individual device or just a sharing tools.

4.3 Module

Module is defined as a teaching package developed for learning and the topic of learning which is organized consistently. Teaching packages have been introduced and used in teaching and learning. Teaching packages or modules are also known as the Learning Activity Package (LAP) or Individualized Learning Package (ILP). There are several disciplines in developing modules. First, the modules need to be self-taught package and second, it needs to meet the needs of the students for having a specific and clear teaching objectives. Module preparation should be based on the level of learning thus students can get benefit from it. Moreover, modules also need to actively apply in learning. This will makes strengthening of self-learning and also self-assessment of learning.

The development of learning methods using learning applications is considered in line with the constructivist learning approach because multimedia based learning materials can be linked to the existing student knowledge that can be explicitly developed to produce meaningful learning [22]. Constructivist learning approach emphasizes multimedia presentation learning that helps students think with actively. According to Mayer and Moreno [23] The development of
multimedia learning modules using cognitive theory is more effective. This is because, modules that integrate the visual and verbal elements with knowledge can generate students who can build knowledge with a broader perspective.

Previous study by Siti Hajar Halili and Hamidah Sulaiman [24] showed that the learning modules have positive implications for students in improving understanding of learning. This demonstrates that multimedia learning modules are effective and appropriate to implement in today's education. Hence it is clear that mobile device technology is able to provide a more engaging learning experience and help in improving student achievement.

4.3.1 Module Development Model

Based on the framework of the cognitive model in multimedia learning by Mayer [24], shows that text and audio are important elements used in learning applications. The elements are need to be translated and presented to students where inputs should be place and it needs to be processed based on the input. Then it produces output such as an image and animation. The input elements are integrated with output elements and generate a new knowledge. Then, it will be integrated with existing knowledge and they are stored in long-term memory.

Referring to the basic concepts of sign language learning, learning occurs based on observations of what is perceived as the hearing problems and conversational of students are only able to learn based on observations and behaviors. However, in the context of a special education teacher’s for
4.5 Communication Method

Communication is the process of delivering information through messages of various meanings that conveyed through symbols [29-31]. According to Griffin, McClish [32], communication is the process of linking, creating and interpreting messages to get the response. According to Mohamad Yusoff (1985), communication is also a dynamic process involving the production of shared meanings and the meaning that born through the process of conveying and receiving messages through co-understood codes.

Communication takes place by involving two parties such as between individuals or individuals with the technologies such as television, radio, newspapers and so on. Communication is a one way to convey or exchange information, opinions, thoughts through conversations, writing, and signals. There are two types of communication such as one way communication which is communication that only involves presenter and receiver. While two-way communication involves communicators, recipients, as well as feedback and interaction between senders and recipients.

In the context of today’s special education, it still uses non-verbal communication which is based on signals, body movements, face ripple, eye contact, and objects such as usage, symbols, graphics and so on. In fact, non-verbal communication also occurs through individual attitudes. However, technology is now able in influencing communication in education where there are various technologies that can connect between individuals such as phones and computers that can described as verbal communication tools. Such technology is also a complement to human communication as a whole, it is also a complement to the process of human communication itself.

5 METHODOLOGY

This study was conducted at several special education schools which is focusing on the use of mobile applications that became a sign language learning tools for Malay language. It also conducted to get student responses of mobile applications to ensure this tools able to help in improving student achievement. In this study was discussed the components of learning using mobile applications that become a focus on this study.

In this study, 32 respondents were involved with (10%) of the population, have hearing abnormalities and lower secondary level conversations. Sample selection is randomly representing as a population of studies that has been using mobile applications. Students were involve as a participant to answer the question using developed mobile application. Some of the components were identified as a guideline for teachers and students in implementing learning using mobile applications to improve student achievement in learning.

The instrument used in this study is a questionnaire and the method of collecting data is done through online using the Google form as a platform for students to answer the questionnaire. The questionnaires consist of two sections. Part A is a question related to respondent’s demographic while part B is a question based on five components of a mobile learning application. An Analysis part was used the Statistical Package for the Social Sciences (SPSS) version 21.

6 RESULTS

This study was conducted a pilot test to see the validity and reliability of the instrument.
According to Piaw [33] validity refers to the capability of a measurement performed to measure the real value of the concept in the hypothesis. Validity depends on the instrument developed, if the instrument is good then its validity is high. In other words, the extent to which the constructor’s was developed contains all the new features or ideas that represent the construct [34]. This process is known as a pilot test or pilot study tested to see Cronbach’s Alpha value.

Table 1. Reliability statistics

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.932</td>
<td>0.935</td>
<td>75</td>
</tr>
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</table>

Based on the above table, it is shows the test done by 75 items that measure to 32 respondents. The results show that the Cronbach’s Alpha value for the item is 0.935, thus it indicates that the built-in questionnaire has a validity that can be categorized as good and acceptable to continue the study of the actual population.

While reliability is a concept that refers to the consistency and stability of the instrument used in this study for the questionnaire. The reliability test of the questionnaire was conducted to find out whether the results of the test showed the best answer.

The table above shows all constructs which have been categorized according to the relevance of the question based on the needs of the study. The result of the data analysis shows that the value of all the constructs meets the set value which is > 0.7 and all items in the construct are received.

7 CONCLUSION

The findings show some of the components that are based on the use of mobile applications in teaching and learning. It is one of the important components need to be seen in the implementation of the method in education. By having this framework, it will provide benefits to the teachers and students as a guideline in teaching and learning for the special education in sign language. This is because no specific guideline teaching and learning using mobile application [35]. Moreover, mobile apps also showed significantly impact to teaching and learning sign language, it is easier to use and the information can be access by students easily it is supported by Hamidi & Chavoshi, Hammami, Saeed, Mathkour, & Arafah [36, 37].

REFERENCES


