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The Effect of Mobile Application Learning Style on Mute Deaf Student' Motivation

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Abstract
Technology innovation in teaching and learning such as mobile applications, has become a learning style nowadays. The purpose of this study is to identify the teaching and learning model using a mobile application and examine the level of mute-deaf students' motivation. This study used a survey method to obtain the data. The population of this study is 1045 students and 122 have been chosen using a random sampling technique. Linear regression test was used to measure the student's motivation levels using the Statistical Packages for Social Science 21 (SPSS) software. The findings indicate that pedagogical strategies and mobile devices significantly correlated with students' motivation level of P <0.05. It can be concluded that Mobile application is an innovative product that affects students to improve the motivation levels.

Keywords: Mobile Application, Teaching And Learning, Mute-Deaf Students', Motivation, Instructional Technology

Introduction

The mobile application is a new technology has been widely used in education both local and international. Mobile applications have been proven effective in teaching and learning for special students to increase their achievement. Mobile apps are not as strange because it is having been developed in various fields to give consumers benefit in daily life. Not being left behind, in education filed also well developed and mobile apps have become a reference tool for mute-deaf students.

Many teaching and learning tools can be as reference such as Malaysian sign language web (Mokhtar & Anuar, 2014), American sign language (Baynton, 1998; Xu, 2013), Online

Dictionary of New Zealand Sign Language (McKee & McKee, 2013), Ratib Al-Attas&Terjemahan(Rafiza Kasbun, Khodijah Abdul Rahman, & Rosni Wazir, 2015), India sign language (Bhat, Amruthesh, Ashik, Das, & Sujith, 2015).However, implementations to the sign language learning especially in the context of Malay language still less.

Based on Forsyth (2014) he states that the teaching and learning method using mobile apps as a learning tool allows students to get learning materials anywhere and anytime using mobile technology and access the internet. While according to Arkorful and Abaidoo (2015), mobile app learning is more flexible and gives students the freedom to create appropriate references.

However, mobile apps for signal language learning are still lacking especially in the Malaysian context. There are some problems faced by special education students in teaching and learning where they have short-term memory or easy forgetting. In addition, they also have difficulty understanding long sentences and non-verbal communication problems.

This study aimed to identify teaching and learning model for special student and examine the level of students' motivation using mobile apps. The role of mobile apps is a learning tool that is practical and suitable to the students' needs. Researcher sees the mobile apps will be as a tool that can help students learn and practice sign language in a Malay language context more easily and practically. This is because the ownership of the device is easily transferable by the students that significant contribution to the usage of the mobile apps.

According to the statistics released by the Apple mobility company, they state that there are more than 25 billion mobile apps were downloaded by the users (Dogtiev, 2016). This is clearly showed that education nowadays more open and students can accept technology as a tool that is able to help them to increase their achievements. Based report by (Utusan Online, 2018) states that 78.7% internet user in Malaysia, partially that amount is the student. This data showed that the education filed must implement mobile apps in teaching and learning.

Basically, they have weaknesses such as low communication skill and inability to hear and speak, all that thing influence on their achievements (Reed et al., 2008). However, this technology must be seen as a tool that can give a good impact to the students.

Literature Review

Motivation is an internal feeling that moves and directs an action for each individual whether positive or negative. Motivation also refers to the motivator of the mind and heart, which is the main motivator to do something. According to Reed, Antia, and Kreimeyer (2008), motivation has been identified as a facilitator for 15 out of 25 students (60%). Students who are motivated will be working hard to increase their academic performance. There are two factors make student motivated and they have a different opinion. Motivational sources are considered as a desire to do something in the classroom. Besides that, good grade also makes students motivated. Both factors also recognized by Laouris and Eteokleous (2005).

Karthik and Hsiang (2010); Kit et al. (2010); Marguerite (2009); Mehmet, Hakan, and Volkan (2018); Rustam, Yuin, and Min (2017), has been doing the research to identifying students' cognitive skills towards learning using mobile apps. The findings showed the motivational

factor relates to teaching and learning using mobile applications. While Chee, Yahaya, and Ibrahim (2018), there is a difference in behavior when students engage with learning using mobile apps.
The findings show that students using mobile devices have no awareness of the more general world. Some students are encouraged to use mobile devices. But they only have a bit of understanding about learning using mobile devices which is a device that is so interesting and motivating to use it (Oyelere, Suhonen, Wajiga, & Sutinen, 2018).

According to (Anderson, 2018), motivation is a prerequisite to the students required for the involvement of any kind of learning activities. Whatever they do and how they do will be influenced their level of motivation. While (Collins & Halverson, 2018) said, motivation plays an important role in attracting and maintaining focus on learning using mobile devices.

Teaching and learning using conventional method make intrinsic motivation as a framework to implement in mobile apps learning method (Sharples, Arnedillo Sanchez, Milrad, & Vavoula, 2009). It aims to identify the perceptions of teachers and students on the use of mobile devices in the classroom that are related to motivation. Research by Ciampa (2014); Jeng, Wu, Huang, Tan, and Yang (2010), the findings showed that mobile devices have the charm of students with a variety of fun learning applications and are suitable as reference.

While in the teaching and learning context, technology can help teachers and students to grow their intention (Hwang & Chang, 2011). According to Rossyahida and Mohamad Hisyam (2011)states that the existence of technology some information can be shared with students and teachers through a various platform such as email, chatroom, and so on. This technology can increase student's motivation trough interest in mobile apps.

Teaching and learning environment nowadays applied various tool such as a computer. The computer has become a necessary tool in the learning environment. However, others tools need to be seen as an important tool such as smartphones where dependence on this tool is so significant in life as well as in education because its function has a significant impact on various affairs in daily life. Its significance has created concern, interest, preference and motivating the user or student. Laouris (2005) said there are seven parameters involved in teaching and learning such as time, space, learning environment, content, technology, mentality and learning methods. This parameter was affected by the student's motivation in teaching and learning.

Taxonomy of Intrinsic and Extrinsic Motivation

Fun learning giving more effective effect on students such as game-based learning (Muntean, 2011). While Mason (2010)states that game-based learning provides benefits to teaching and learning activities in education. However, the implementation of this method should incorporate fun elements with the teaching design aspect that includes motivation and interactive components. Williams and Williams (2011)state that student behavior is determined by self through motivation in which learning occurs in engaging or fun learning activities. In addition, students themselves are involved in learning activities to gain success and rewards.

Research by (Lee Matthew, Cheung Christy, & Chen, 2005) state that teaching and learning based on motivation perspective using online medium have a significant effect to intrinsic motivation (fun learning) and extrinsic motivation (ease of use). According to Shanmugam & Balakrishnan (2019) 90.2% of respondents agreed that ICT-based learning of Science stimulated their Intrinsic Motivation. However, the online learning environment keeps the students not focus on their study and the students' motivation in learning is limited. This means that in order to develop the student curriculum, teachers need to understand the scope of technology-driven learning activities.

According to Malone (1981), Malone and Lepper motivation theory has six motivational categories for individuals to engage in intrinsic and extrinsic learning activities that motivate students and contribute to the fun of game-based learning. Among these categories are challenges, curiosity, control, cooperation, competition and recognition and he also suggest that these elements should be applied to intrinsic and extrinsic learning activities for students. While Dempsey, Lucassen, Gilley, *and* Rasmussen (1993) said, Malone and Lepper motivational theory can provide guidance on how and why mobile technology is considered fun in teaching and learning that can be a catalyst for a change of device to redesign the teaching and learning system.

Intrinsic Motivation for Learning

Challenge

Challenges in the context of digital learning are more likely to be learned, by the way, games are played and they have a concrete goal. With concrete goals, it prevents students from engaging in purposeless learning activities. Game learning methods create goals that students must meet in order to move to challenging levels. Thus, students who have clear goals are more motivated. Therefore, the curriculum design should use varying degrees of difficulty.

Curiosity

Curiosity is the most basic intrinsic motivation for learning. According to Malone (1981), the concept of curiosity can be divided into two categories namely, curiosity through the senses and cognitive curiosity. The sense of curiosity is fueled by the multimedia element and based on the interaction with mobile devices. Mobile devices such as smartphones offer greater opportunities as new channels for communication using mobile applications.

While Lepper (1988) said, students' curiosity also arises in students' sense of learning when they realize that their knowledge is incomplete and that they have a desire to explore and access information through technological capabilities. Thus, the ability of technology as a source of reference creates an interest in the technology.

Self-Control

Self-control is also one of the elements of intrinsic motivation. According to Blumenfeld et al. (1991),self-control functions are associated with motivation because each learning activity takes place depending on student control. However, Madar and Md Yunos (2005) said, self-control is determined by the variety of choices made in a learning activity and the outcome of the activity depends on the students' acceptance. Therefore, intrinsic students' motivation for learning using mobile applications depends on the individual to determine their learning style.

The ability of mobile application users to make their own choices is one of the factors contributing to student success where student success in the learning environment using mobile applications is more flexible. While mobile devices have the potential to support and encourage students with a constructivist learning approach through the concept of self-learning. Self-directed learning such as learning outside the classroom can help students interact with their surroundings, make choices and plan their learning styles and also the students become more enthusiastic about working on assignments and accessing the internet through gadgets on positive uses.(Godwin Jones, 2011)(Safitri et al., 2019).

Extrinsic Motivation for Learning

Extrinsic motivation is less effective than intrinsic motivation. however, both motivations play an important role in determining student(Teo, Lim, & Lai, 1999). While the goal is to enhance students' motivation in self-directed learning and existing knowledge. For educators, intrinsic motivation is how something can attract students to learn while extrinsic motivations such as collaboration, competition, and recognition need to be considered when designing the learning process or selecting teaching materials (Malone, 1981).

Cooperation

Collaboration is defined as an activity that involves a group of individuals working together to achieve a common goal (Malone &Lepper, 1987). Some researchers have found that collaboration facilitates an activity, especially for interpersonal activities (Barhoumi, 2015; Dyson, Griffin, & Hastie, 2004; Y. M. Huang, Lin, & Cheng, 2010). While according to Abrami, Bernard, Bures, Borokhovski, and Tamim (2011) collaboration between students is important to encourage better efforts to achieve success and more productive students.

A mobile device is a tool used to deliver a command or function as a medium for group collaboration. This means that students can learn quickly, collaborate with other students, and be able to motivate one another using the mobile application platform. Through a learning activity using student-centered mobile applications, it complements the curriculum to promote student collaboration and creativity and will enhance student social interaction (Yousaf et al., 2018).

Competition

In a competition, the competitor is one of the basic components of an intrinsically motivated activity or game (Mekler, Brühlmann, Tuch, &Opwis, 2017). Whereas Bolliger et al. (2010) state that competition is usually in two categories of two or more people and that each group has the opposite purpose. How it creates motivation in teaching and learning is based on reactions and interrelationships.

Recognition

Recognition is one of the elements in intrinsic motivation that can be used in designing teaching and learning curricula (Malone &Lepper, 1987). According to Menges, Tussing, Wihler, and Grant (2017) in their study stated that students have to show their efforts and achievements to be recognized and appreciated by others. But to create a learning environment that is motivated to gain recognition, students need to prove that their learning is the best. Whereas Malone and Lepper (1987) outlined three ways in which recognition is a process for an activity, a visible outcome, and another observable outcome. Therefore, this

clearly indicates that success needs to be recognized or rewarded for enhancing students' motivation.

Methodology

This study uses a quantitative research approach. There are several methods in quantitative research including survey studies, experimental research, causal-comparative research, and correlation research. This study uses a survey method to measure students' motivation and communication skills in learning using mobile applications. According to Karpawi (2013), this study method is suitable for this type of study to find out about attitudes, beliefs, demographics, behaviors, opinions, habits, desires, ideas and other information related to a group of people. The survey method does not have a specific design. However, it has several processes that need to be implemented to ensure the accuracy of the data obtained (Piaw, 2011a).

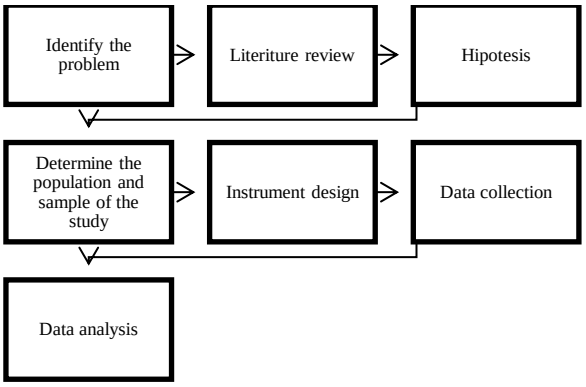

Figure 1. Research design

This study outlines seven key processes involved in the process outlined by (Karpawi, 2013; Piaw, 2011a). The first step is to identify the issues involved in the study. Subsequent literature reviews were conducted to identify the variables involved and to develop hypotheses. The purpose of the hypothesis was to provide a preliminary prediction of the relationship between the identified variables. It then determines the size of the population involved and the sample is selected based on the study population and the selection is random.

The next step is to determine the research instrument, the instrument that is based on the research question. Subsequent operations, in which the research is conducted using the instrument developed to obtain data related to the research question and the last step is data analysis. Data analysis is performed after the researcher has completed the survey using appropriate statistical tests. At this stage researchers also generalize the results of studies that represent the study population.

Finding

Data analysis of this study using linear regression analysis using Statistical Packages for Social Science 21 (SPSS) software. Linear regression analysis was used to test the effect of more than two independent variables on dependent variables (Janie, 2012). The following is a symbol of an equation that represents a variable

Y = Levels of communication skills and motivation of independent variable students
α = Constant
β1-β5 = Independent variable
x1 = Pedagogical strategy
x2 = Learning module
x3 = Mobile device,
x4 = Design
x5 = Communication method

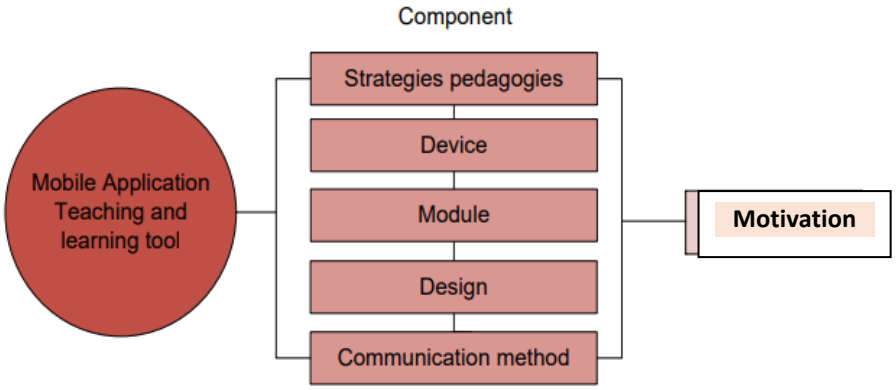

Figure 2. Research framework

Figure 2 is the research framework will test to be achieved using linear regression analysis. It is by using data sources based on the questionnaire to measure the level of communication skills and motivation of the students. Components that are empirically tested to find out how they affect dependent variables.

Regression Analysis of Multiple Levels of Student Motivation
Students' motivation levels also use linear regression analysis to test the relationship of the dependent variables (pedagogical strategies, learning modules, mobile devices, design and communication methods) to the dependent variables (motivation level). The model also assumes that there is a linear relationship between the dependent variable and the predictor variable. This relationship is usually formulated as

$$Y=\alpha+\beta1x1+ \beta2x2+ \beta3x3+ \beta4x4+ \beta5x5+\varepsilon i$$

The summary of the regression model for the student motivation level based on table 5.13 shows that the R2 value is 0.347. This represents a 34.7% level of student motivation depending on pedagogical strategies, learning modules, mobile devices, design and communication methods. While 63.3% was influenced by external factors of the model. The value of the standard error of the estimate 0.32, this value predicts a change in the student's motivation level which, if smaller, the more accurate the change in the student's motivation level.

Summary of student motivation level model

Table 1. Anova test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.589[a]	.347	.319	.32752

a. Predictors: (Constant), communication method, strategy pedagogy, learning module, Design , mobile device

While based on the table 1 Anova test, the F value was 12,331 with a significant value of P <0.05. Therefore, it can be concluded that the regression coefficients of pedagogical strategies, learning modules, mobile devices, design and communication methods also have a significant impact on students' motivation levels.
The influence of ABIM on students' motivation level

Table 2. Independent variable parameter

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.613	5	1.323	12.331	.000[b]
	Residual	12.443	116	.107		
	Total	19.057	121			

a. Dependent Variable: Motivation lavel
b. Predictors: (Constant), communication method, strategy pedagogy, Learning module, Design, mobile device

For T test based on table 2 is to explain the independent variable parameter through unstandardized coefficient. Based on the table, there were two significant variables with a P value <0.05 namely pedagogical strategy (0.00) and mobile device (0.04). While the learning module, design and communication methods were not significant P> 0.05. This may be caused by many factors in module construction, Ardianti et al., (2019) suggested the module need to be improving students' love. However, predictable levels of student motivation are influenced by the regression of pedagogical strategies, learning modules, mobile devices, design and communication methods with similarities;

Motivation level = 0.506+0.761+0.131+0.137-0.86-0.81+Ɛ
Student motivation level regression coefficient

Table 3. Value of constant

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.678	.511		1.326	.188
	Strategy pedagogy	.305	.101	.284	3.024	.003
	Learning module	.166	.124	.137	1.341	.183
	Mobile device	.242	.119	.218	2.033	.044
	Design	.092	.160	.060	.573	.567
	Communication method	.047	.079	.047	.596	.552

a. Dependent Variable: motivation level

The value of constant unstandardized coefficients based on table 3 is positive. This indicates that students' motivation levels increased by incorporating all the independent variables. The regression coefficient values for pedagogical strategies, learning modules, mobile devices,

design and communication methods also show that they are all positive. Individually there is improvement without involving other independent variables and directly increasing the level of student motivation.

Conclusion

Learning to use mobile applications has a profound effect on students, especially their internal motivation, their interest in learning. The results of the study show that students are very interested in mobile applications that are used as learning aids. This clearly shows that digital learning is well received from students with deaf disabilities. In addition, students also demonstrate motivation in terms of students' focus on their learning.

Also influencing students' internal motivations are pedagogical strategies and mobile devices. The findings show that these two variables are significant for student motivation. Looking at aspects of mobile devices such as smartphones influences students' motivation as mobile smartphones are a technology that is a cultural part of life and an essential part of every individual. As such, the existence of mobile applications has facilitated their learning.

Whereas in the learning module, the integration of the Ministry of Education module has made students more focused on mobile applications as they have similar content and are accessible online. It is also acknowledged by Rossyahida and Mohamad Hisyam (2011) that online modules are accessible to all students and facilitate their learning. However, the findings show that there is no significant relationship between student motivation due to the tendency of students to use mobile devices for entertainment. But looking at the learning context in more detail the Sign Language Malaria (ABIM) significantly affects students in terms of their achievement. Therefore, there is an intrinsic motivation of students to use their mobile devices for non-learning matters.

Whereas in the learning module, the integration of the Ministry of Education module has made students more focused on mobile applications as they have similar content and are accessible online. From a pedagogical strategy point of view, it is a self-learning concept, in which students can manage their learning time at an appropriate time. It is a technological innovation in education that provides active learning experiences, solving problems that require critical and creative thinking.

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