

## Review on the Effectiveness of the Technology Learning Materials in Teaching and Learning in Higher Education

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**Abstract.** This paper will discuss on the effectiveness of the technology learning materials in teaching and learning in higher education. The objective of this paper is to investigate what are the most construct that always being used to develop the learning materials. The construct among previous study have been presented here in order to aid the selection of our future research direction. Based on the previous data, the mean of the effectiveness will be combine and the new mean that most higher will be selected. The finding of construct will be presented and be a new model of the technology learning materials construct. This paper therefore attempts to propose a new model of construct for the future research and it's also an initial survey before the construct will be adopted in a project which integrates video analysis technology multimedia learning software in teaching and learning of movement skills.

**Keywords:** Technology learning materials, Teaching and learning, Learning material construct.

### 1. Introduction

In this keep on changing era, the style of teaching and learning also keep on synchronize changing. Learning is a process of information seeking, gathering and transferring. These process demands learner to construct knowledge through interaction with environment. In recent years, the learning process has been moving toward the technology. Education takes advance of the technology transformation in increasing the effectiveness of teaching and learning process. Teaching methods play a crucial role in the process of teaching and learning [1]. This is because it is an educator with a systematic series of actions intended to achieve the specific objective of learning whether the short-term effects of an education and a strong memory for long-term effects. The sequence from that there are various methods used in an effort to improve the quality and makes the process to be more meaningful and effective. Approaches that are often used in learning are as content-based learning, instructor-centered learning, student-centered learning and so on.

However, teaching approaches commonly used in higher education are usually based on the content. The approach has resulted in educators teaching only focus to spend as fast as possible without taking into account the students' knowledge. It also causes the transfer of abstract information. A concept that served outside the real context and knowledge is often viewed as an object separate or apart from each individual [2]. This causes students to fail to remember their lessons and may lead to failure in the application in the life of the internet. It can be seen here that the learning system is not in sync with the latest generation.

### 2. Technology learning materials in teaching and learning

Students in the ICT era is different in terms of value, how to think, how to act, how to get motivated, ICT skills, age, ethnicity, economics, religion, work experience and so on [3]. Other changes that occur as the overall learning goals for developing human potential, the concept of lifelong learning, learning without constraints of time and place, learning needs and learning styles and student-centered curriculum [4].

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Evolution education has changed the methods of teaching and learning slowly and in stages. Thus, through the technology environment, teaching and learning process should be infused with the use of materials as suitable for the particular learning technology. Centered teaching methods of teachers have been converted to student-centered. The role of teachers as a major source of knowledge has changed the teaching staff as a facilitator [3]. Developments like this to happen in tandem with the development of technology in education.

The concept of the use of technology has been used in software development courses in CD-ROM and Web [3]. There are many interests and benefits obtained if the teaching and learning carried out using technology. The advantage gained is as it is more interesting and enjoyable because of a combination of graphics, animation, sound and video encouraging students and not tedious [5]. Students can also bring learning materials anywhere (in the form of CD-ROM) and students are free to use it at any time. In addition, students can repeat their own learning and that they follow the form of teaching is in the form of individual lessons, where students have the opportunity to control the speed and delay the process of learning according to their abilities. Another advantage is that it involves the use of more senses than one. According to the study, the use of more senses than one can be sure that the lessons will be remembered and not tedious [5].

The use of software in the process of learning and teaching in schools and other educational institutions become more active. Teachers and students began to be trained to acquire skills to use computers in teaching and learning. Computer Aided Learning is an approach that uses a computer for the purpose of teaching and learning. PBK can be shaped using a computer to learn a step by step, the planned program or use the computer for learning and teaching was the discovery that provides the freedom for students to explore information through computers [5].

### **3. Technology learning materials construct**

According to previous study, there are many types of construct that always being using in the development of learning materials. Although there are various types of materials available, it has different construct from each other and each has advantages and disadvantages. There are a lot of researches that shows positive effects when using the materials. This includes research that are conducted by Juhazren Junaidi and Mohd Fadzli Ali [6], Mohammad Nur Azhar and Baharudin Aris [7], Yeong Lai Vang and Zaidatun Tasir [8], Lim Goik Chu and Rio Sumarni [9], Lee Chee Hong and Jamalludin Harun [10], Roslina Abu Bakar and Noraffandy Yahaya [11], Ahmad Rizal and Yahya Buntat [12] and others. The construct or aspect that most important in learning are such as [5]:

- Learning strategy

Learning strategies should be in accordance with the selection of teaching materials. There are a variety of learning strategies that will maximize teaching and learning process. The strategies selected must be suited to the learning environment and in accordance with the teaching of students to be served.

- Learning content

Learning contents should be comprehensive and meet the requirements of the learning curriculum. In addition, the selection of content and difficulty level will be tested to be in accordance with the objectives to be achieved and the content should be clear and easily understood by students.

- Motivation

Motivation should be applied to the design of learning materials properly. Motivation is said to give a deep impression on students where they can indirectly attract users and can help in making choices in learning. Good learning material for example is able to present material and concrete example of an interesting visual representation, from a simple arrangement of materials to be difficult, using the repeated strengthening and so on. In motivation, they have a component such as attention, relevance, confidence and satisfaction.

### **4. Data analysis**

Based on the previous study, the construct mean of the effectiveness of the technology learning materials in teaching and learning will be investigate. This finding will help the researcher to get the same and the new

construct for the future research in developing the new technology learning materials. The finding data will be presented in Figure 1.

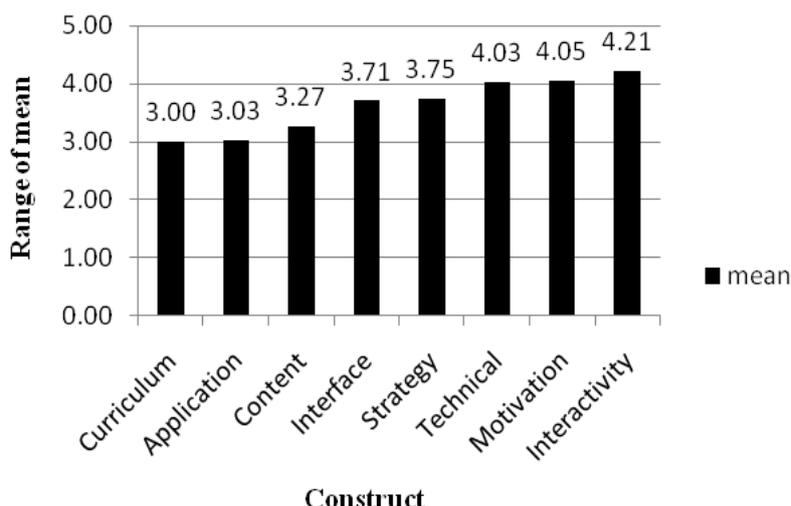


Fig. 1: The construct mean of the technology learning materials in teaching and learning in higher education.

Fig 1 above show that from the previous research, there are eight construct that always being using in technology learning materials. From the figure, it's show that the interactivity is the most higher construct with mean 4.21. Next the mean for each construct are follow with motivation mean 4.05, technical mean 4.03, strategy mean 3.75, interface mean 3.71, content mean 3.27, application mean 3.03 and curriculum mean 3.00. It's seems like all the findings is in a good range.

However, not all construct will be chosen. In this paper, the construct will be selected based on the range that suggested by Wiersman (1995). The construct that achieve the high level in the range only will be chosen. The range are as below in table1.

Table 1: The range of mean

Range	Level
1.00 - 2.49	Low
2.50 - 3.49	Intermediate
3.50 - 5.00	High

## 5. Finding and discussion

From the finding, only five construct will be chosen for the new construct theme building. The construct are interactivity, motivation, technical, strategy and interface construct. This is because the range of the mean was achieving the high level of range. According to that, the researcher will develop a new model of construct in technology learning materials for the future studies. The new model is presented in figure 2.

However, teaching and learning process need more focus into the learning strategy, learning content, curriculum aspect and so on [13]. From this research finding, the curriculum and the content construct not show the best result. From the researcher view, this is maybe because overall the selections of the learning content in few learning materials are not suitable with the objective in learning. To avoid this problem the content should be clear and easily understood by students.

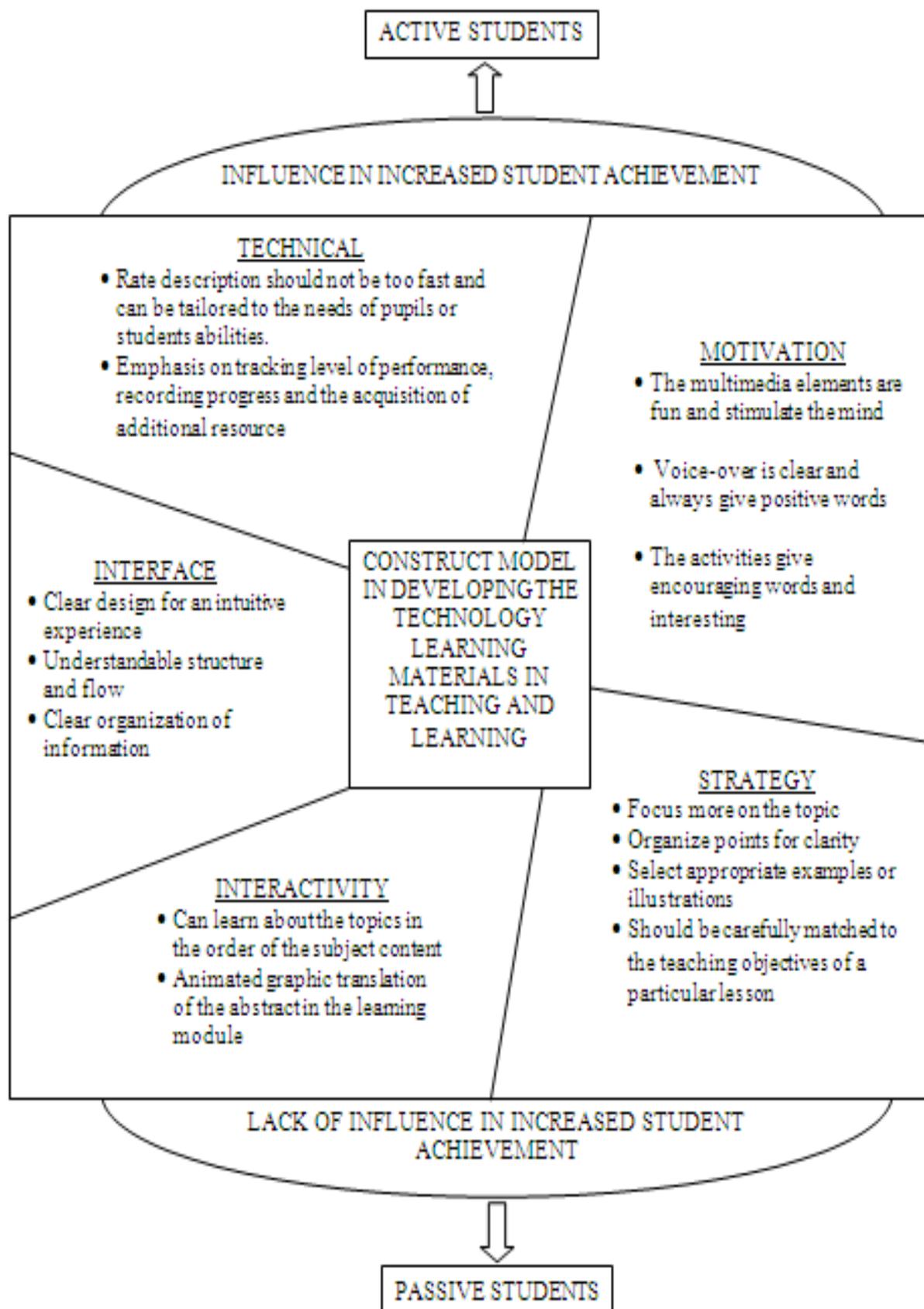


Fig. 2: The construct model of the technology learning materials in teaching and learning.

## 6. Conclusion

This paperwork generally covers about the effectiveness of the technology learning materials in teaching and learning in higher education. Even though there are various researches that use the technology learning materials, all of them usually not overall focus in the learning aspect such as the construct and so on. In

conclusion, the finding from this paperwork is an early survey before this new model of construct in technology learning materials will try to be applied and adapted to the future research.

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