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Integration of The SAMR Learning Model In Vocational Education

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ABSTRACTS

The development of technology that is increasing in learning requires teachers to use a systematic model in the learning process that is integrated with ICT. One model that can be used in the learning process is using the SAMR model, which is a model in the learning process by integrating technology comprehensively. This model was introduced by Dr. Ruben Puentedura, a consultant in the field of education. This model uses a hierarchy to describe the cognitive level that can be obtained by using technology as a tool in the learning process. The process of using technology in learning must be understood in the right proportion and according to needs. The use of technology must be able to support the expected goals. The integration of ICT in the vocational education system has an influence on the role of educators and students. With ICT, educators are expected to be able to become facilitators and collaborators in the teaching and learning process so that students can play a more active role.

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1. INTRODUCTION

The demands of teachers in 21st century learning to create innovative and creative learning integrated with ICT as an effort to improve the learning process is a serious problem (Shu'aibu, et al., 2013). The development of ICT has had a great influence on the field of education in the learning process, this makes the integration of ICT into teaching and learning in the classroom continues to be a task that needs to be developed by teachers (Chai and Tsai, 2013). The integration of technology in education is still a learning innovation that cannot be applied by some teachers, teachers still have difficulty integrating ICT in the learning process

(Tsybulsky, D., and Levin., 2016). The difficulty of teachers in integrating ICT is due to the unstable nature of technology, meaning that technology continues to develop, along with this the teacher must be able to adapt to technological developments to be applied in the learning process (Kohler, et al., 2013).

The integration of ICT in the learning process introduces a new set of variables into the teaching context, and adds complexity due to the rapidly changing nature of technology (Hilton, 2016). Faced with these challenges, the approach needed to integrate ICT in the learning process uses the SAMR (Substitution, Augmentation, Modification and Redefinition) learning model, the SAMR model is a four-part series that seeks to move the use of technology to a higher level that aims to maximize education quality (Romrell, et al., 2014). The SAMR model in the learning process is like a lens, which allows teachers to see how to integrate ICT in the learning process in the classroom. Teachers can integrate ICT according to the name of the model, which is derived from the initials of each of the four levels, namely Substitution, Augmentation, Modification and Redefinition (Nakapan, 2016). The integration of the SAMR model in learning is able to make a major contribution to students' ability to use technology (Azama, 2015).

Students often feel comfortable and understand the use of ICT in the learning process, the function of ICT as a tool in the learning process and as a means of interaction between teachers and students (Lubega and Paul, 2014). Several studies have shown that technology has the potential to encourage ICT literacy, by providing tools and applications as learning media and the use of technology, to support this, the SAMR model is used to support teachers in integrating ICT in the learning process (Hamilton, et al., 2016).

Basically, the use of ICT is very helpful in the implementation of the learning process. In addition, indirectly, when students are familiar with the use of ICT in their learning, their ability to operate ICT (digital literacy) is also honed. Digital literacy is very much needed by students when they enter the world of work (industrial world) in this digital era.

2. METHODS

The articles and journals analyzed in this paper are based on the theme, namely the SMAR model, the search for journals is carried out in several databases. The analysis and study in this paper describes the description of the SAMR model in the learning process that is integrated with ICT. The study was conducted by studying literature from previous studies that discussed the use of the SAMR model in the ICT-integrated learning process.

3. RESULTS AND DISCUSSION

ICT Literacy in Education

In a historical perspective, the demands of 21st century learning were developed in America (2007), which was supported by other developed countries including Australia. The pioneer is Partnership for 21st Century Skills (Griffin and Care, 2014). The formulation of the theme raised is the result of students having adequate skills in accordance with the dynamics of the dynamic development of globalization (Savickas, et al., 2009). The skills in question are the ability to communicate, think creatively, collaborate, think critically, and solve student problems supported by mastery of ICT (Greenstein, 2012). It is hoped that the knowledge and skills obtained can be used as provisions for living in a community that has both local and

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global character and can be personally and socially accountable for the community. 21st century learning skills,

Figure 1. 21st century learning skills (adopted from the book Creative Developing ICT-Based Learning Activities)

These three important domains cannot be separated from each other, are mandatory demands as competencies that must be obtained for students (Ananiadoui and Claro, 2009). Integratedly, these components give hope in forming intelligent and competitive people, able to solve problems both locally and globally.

To facilitate the implementation, it is necessary to plan learning, strategies, activities, learning models and assessment models in learning practice. So this is where special skills are needed for teachers to meet these challenges (Bennett and Lockyer, 2004). Teachers must be creative and innovative. In addition, it requires skills in accessing the internet, browsing in obtaining information, using tools appropriately in selecting the required learning materials/materials. For this reason, an e-learning-based learning model is needed as the main capital to solve existing problems.

E-learning-based learning raises demands that must be met by schools. For example, the teacher in compiling learning, implementing learning, and the evaluation system has changed. Likewise, the way students learn, of course, changes as well. In essence, the repositioning of learning in schools needs to be done wisely.

The design of an e-learning model that can fulfill all learning activities starting from teacher, student and school admin activities as well as classrooms as usual, from lesson activities, assignments, to evaluations can be carried out online, can be made on a website (web) which are interesting. Nowadays, various web models have developed very rapidly, but the suitable ones that can fulfill all learning activities are very limited.

SAMR Model

Technology as a tool in the learning process is changing very quickly in the current digital era (Kihoza, et al., 2016). The process of using technology in learning must be understood in the right proportion. The use of technology must support the expected goals, without a good understanding technology will become a less meaningful tool in the learning process.

There are several kinds of models in the integration of technology into the learning process. The SAMR model, is a simple model but can describe the process of integrating technology into the learning process comprehensively (Aprinaldi, et al., 2018). This model was introduced by Dr. Ruben Puentedura, a consultant in the field of education. This model uses a hierarchy to describe the cognitive level that can be obtained by using technology as a learning tool (Savignano, 2017). The SAMR model consists of four levels, namely:

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1. Substitution: In this level, technology is used instead of the equipment that is used with no change in function.
2. Augmentation: In this level, technology is used instead of equipment that is used with the addition or improvement of functions.
3. Modification: In this level, technology makes it possible to change the way we work for the better.
4. Redefinition: In this level, technology allows to create ways of working that we never even imagined before.

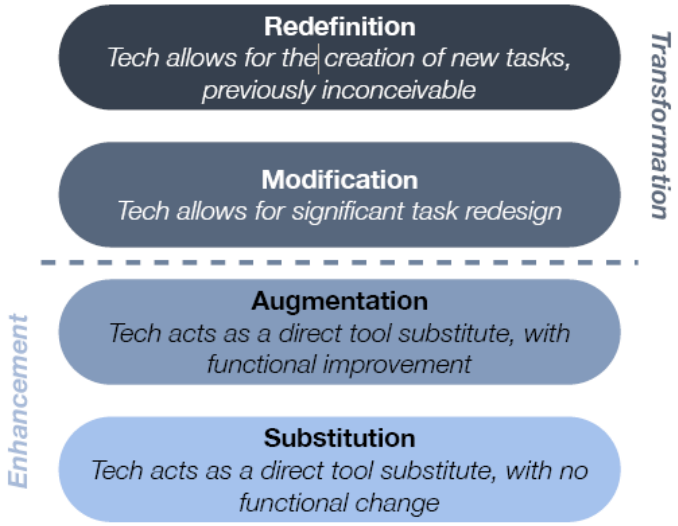

Figure 1. SAMR Model

The implementation of the SAMR model can be seen in the use of computers as a technology that we use in everyday life.

1. Substitution level, a computer with word processing software such as MS Word functions to replace the writing process that we usually do with pen and paper.
2. Augomentation level, we use the same software by utilizing the available functions, for example the function to check spelling, even grammar.
3. Level modification: By using the same computer, we can connect to the internet. By using the google docs application, we can do the work process together with colleagues who are far apart. With google docs, our friends can even correct what we have done.
4. Redefinition: By continuing to use the internet and better software, we can make the writing process richer by using multi-media applications. This application can be used for, for example, digital story telling.

The stages of applying the SAMR model to learning consist of four stages, namely at the substitution stage, technology acts slightly to replace traditional tools, activities, and learning. Then in the augmentation stage, technology still acts as a substitute for traditional methods, but specifically makes the old way more efficient by adding other benefits for teachers and students (Hunter, 2015).

Then, in the modification phase, the most significant elements of the classroom and teaching methods are modified to suit the more specific goals of the technology, thereby

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providing new opportunities for learning not available through traditional methods. In the modification stage, the teaching and learning process begins to become more effective.

Then in the last stage, is the stage of redefinition. At this stage a truly transformative experience occurs where the learner himself, becomes better. This is the last stage that provides the greatest opportunity for teachers and students to restructure the education system and meet the educational needs of the population who are digital natives.

The simple SAMR model is certainly reminiscent of the earlier model in the realm of cognitive education. This model is parallel to the model from Bloom's taxonomy (Foreand, 2010), a model that is very often used in cognitive learning. SAMR has been widely applied in the higher education system to motivate students. In addition, the SAMR learning model is good for vocational education. In this study, the main advantages that can be obtained from using the SAMR model are for learning benefits, increasing motivation, interaction, and collaboration (Allen, 2016).

4. CONCLUSION

The SAMR model as an effective learning model is used by teachers in integrating ICT in the learning process. In the SAMR model there are four levels that can be integrated in the application of ICT, namely:substitution, augmentation, modification, and redefinition. This model uses a hierarchy to describe the cognitive level that can be obtained by using technology as a learning tool. This SAMR model can be paralleled with the model from Bloom's taxonomy. Because the level is in accordance with the stages used in Bloom's taxonomy model.

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