Design and Multimedia Teaching Math Savi Close Together As Efforts to Increase Self Efficacy of College Students (Study in Program PGSD Unimed)

Daitin Tarigan¹, Andri Kristianto Sitanggang² & Arifin Siregar³

¹Daitin Tarigan, ²Andri Kristianto Sitanggang & ³Arifin Siregar
Lecturer Department of PPSD Prodi PGSD FIP Unimed
Medan, North Sumatra, Indonesia

Abstract: This research is the development research (Developmental Research), which aims to produce a multimedia learning of mathematics is practical and effective for improving self-efficacy of students on the course the basics concepts of mathematics. Multimedia learning is then be synonymous and analyzed the impact of the final prototype for study program PGSD college student in the Faculty of Education Unimed. The method to be used to achieve the goal (target) above, applied the methodology of developmental research with 5 stages of development of Plomp (1997), namely: (1) the initial assessment (define), (2) design (design), (3) realization (construction), (4) testing, evaluation, and revision (develop), and (5) widespread implementation (experiment) by taking into account three criteria of product quality Nieveen (1999), namely: validity, practicality, and effectiveness. In the first phase of this study, will be designed and constructed a mathematical learning multimedia with SAVI approach and revision. Furthermore, based on the test results will be obtained multimedia mathematics learning is practical and effective. In the second stage, conducted dissemination (implementation) products through the implementation of learning mathematics in the experimental class.

Keywords: Multimedia Learning, Mathematics, Self Efficacy, SAVI & Experimental Class.

1. Preliminary

Human resources (HR) is competent and character into capital in national development (capital humanity), otherwise HR incompetent and not character has become a burden of nation building. Containers that are able to transform the human resources in order not to burden the nation is education (Kemendikbud, 2013). Quality education supported by the curriculum, educators, learning tools, and learning good management. The graduate education is believed to have the ability to adapt themselves, have a high fighting spirit, the ability to connect knowledge and skills in the world of work, solve new problems creatively and able to turn a problem into an opportunity (Soedjadi, 2003; Sitanggang, 2015; Sinaga, 2015). In fact, these competencies difficult to achieve an optimal.
The formation of attitudes, knowledge and skills of Indonesian human resources quality and to respond to the demands of the future, the Government (Kemdikbud) issued an important policy in elementary school (SD) and High School (SM), which imposed a national curriculum in 2013. The main idea of the curriculum between another is the identity formation of students in the form of motivation, traits, self-concepts, knowledge and skills developed through the learning process. The national policy on high perdosenan level (especially institutions that produce lecturer) set out in Permenristekdikti No. 55 Year 2017 on Standards of Education Lecturer in Article 20 which says that the characteristics of the learning process should be interactive, scientific, and innovative.

Both of these policies is still a conceptual level, required that concrete efforts towards the improvement of characters graduate after studying mathematics and mathematical learning process improvement itself. In connection with the character, students LPTK as a potential lecturer should be given the space to positive characters into new habitus in his life. One way these characters improvements achieved through increased college student Self Efficacy in learning mathematics. Increased Self-efficacy is intended to have a high fighting spirit and did not easily give up facing the problems experienced. In connection with the learning process, prospective lecturers need to be helped to understand, control, and develop multimedia learning mathematics as a manifestation of the creative and innovative.

1.1 Formulation of the Problem

Based on the description of the background of the above problems, formulation of research problems is described as follows: 1) How to design multimedia products based SAVI mathematics practical and effective way to improve self-efficacy college student the basic concepts of mathematics courses ?, 2) What is the impact of the final prototype (multimedia learning math) resulting in increasing self-efficacy college student study program PGSD Unimed?

1.2 Research Purposes

Operationally, objectives and specific benefits of this research are: (1) Produce a multimedia learning mathematics practical and effective way to improve self-efficacy mahamahasiswa the basic concepts of mathematics courses. Multimedia learning produced can be used as a medium of learning for students. (2) disseminate and analyze the impact of the final prototype multimedia-based learning math SAVI for college student study program in the Faculty of Education PGSD Unimed.

2. Literature Review

2.1 Multimedia Learning Mathematics

Terminology is defined media as a tool to convey information or a message from one place to another. Media used in the communication process, including teaching and learning activities. The learning process communication contains five components, namely professors (communicator), instructional materials, instructional media, students (communicant), and learning objectives, Santyasa (2007: 3). Thus, learning media is anything that can be used to deliver the message (study materials), so as to stimulate attention, interests, thoughts, and feelings of students in learning activities to achieve the learning objectives. Each of the learning process requires the selection and use of at least one medium to deliver learning. Therefore, learning media contains information that can form the knowledge nor the means for learners to undertake learning activities (reading, watching, trying, do the problems, answer questions, etc.), it is closely related to the instructional media learning resources. Learning resource is anything that can be used by learners to facilitate the learning process so as to achieve learning goals effectively and efficiently.

In terms of appearance, learning resources can be divided into two kinds, namely the learning resources which are designed or made specifically for learning (learning resources by design) and learning resources that are not designed or made specifically for learning but can be used for learning (learning resources by utilization). Examples of the first type of learning resources includes books, ensilkopedi, dictionary, learning materials in the form of multimedia (movies, videos, animations, slides, computer-assisted learning software), and sites of e-learning. Examples of the second kind of learning resources include: environment, physical environment, social environment, human life, these Web sites. Because of the close relationship between media and learning resources, then they are sometimes difficult to distinguish or both interchangeable meanings. However, both can be clearly...
distinguished that the media is "infrastructure" that can be used to deliver "learning materials". Media that can be used for the learners to undertake learning activities called learning resources. As illustration, a CD (compact disc) is a medium of learning, but if in the CD contains a collection of articles or instructional software that can be used by sisiwa to learn, then the CD is a source of learning. Media that can be used for the learners to undertake learning activities called learning resources. As illustration, a CD (compact disc) is a medium of learning, but if in the CD contains a collection of articles or instructional software that can be used by student to learn, then the CD is a source of learning. Media that can be used for the learners to undertake learning activities called learning resources. As illustration, a CD (compact disc) is a medium of learning, but if in the CD contains a collection of articles or instructional software that can be used by student to learn, then the CD is a source of learning.

Judging from its shape, learning media can be grouped into:

1. Visual Media: media that is capable of displaying information in a form that can only be seen or read, for example, images, photographs, charts, diagrams, charts, posters, cartoons, comics, books, etc.

2. Audial Media: media that is able to present the information in a form that can only be heard, such as radios, tape recorders, language laboratories, MP3 player, etc.

3. Projected still media: media that requires a projector to display the information in the form of pictures / posts that do not move, such as transparencies slides, slides, Power Point, micro films, etc.

4. Projected media motion: Media that require the projector to display the information in the form of drawing / writing can move, such as film, television, video (VCD, DVD, VTR), computers and the like.

Based on usability and how to use, multimedia learning can be dikelo-pokkan into two, namely multimedia presentations and multimedia self-learning.

1. Multimedia Presentation of Learning, which is a multimedia learning which can not be used to study independently by college student, but is used by lecturers / professors to assist the delivery of learning materials in the classroom. The form can be in the form of power point slides that include sound, animation, video, but does not allow interaction with (maha) students, as presented by the lecturers / professors.

2. Self Learning Multimedia: multimedia learning in the form of software that can be used by a (mighty) students to learn independently without assistance / presence of lecturers / professors.

As an integral part of the learning system, learning media has several functions, including:

1. Learning media can transcend the limits of the classroom.

2. Learning media can overcome the limitations and differences in the experience of the learners so as to produce uniformity observations.

3. Learning media can reach a large audience numbers (distributive capabilities) and memung-enable them to observe an object simultaneously.

4. Appropriate learning media can provide a true illustration of the basic concept, concrete, and realistic, so the learning media can provide an integral experience / completely from the concrete to the abstract.

5. Good learning media can also stimulate and encourage motivation and interest in learning.

6. Interactive learning media enables a direct interaction between the learners with learning resources and learning implementation in accordance with the abilities, interests, and time respectively, (Santyasa, 2007).

2.2. SAVI Learning Approach

SAVI approach (Somatic, Auditory, Visual, and Intellectual) or learning by utilizing the senses is the theory advanced by Dave Meier. SAVI own short term: somatic meaningful gestures (hands-on, physical activity) in which learning by experiencing and doing; Auditory which means that learning must be through listening, listening, speaking, presentations, argumentation, express opinions, and responding; visualization meaningful learning must use eye senses through observing, drawing, demonstrate, reading, using the media and props; and intellectually which means that learning must use the thinking skills (minds-on), must learn to concentrate the mind and practice using it through reasoning, investigating, identifying, locating, creating.
Some SAVI learning principles are as follows:

1. Learning involves the whole mind and body. Learning does not only involve the brain but also involves the whole body or mind with all the emotions, senses and nerves.
2. Learning is a creation, not consumption. Knowledge is not something that is absorbed by the learner, but rather something created by learners.
3. Cooperation helps the learning process. All businesses have learned that good social foundation. Students generally learn more by interacting with friends than they learned in any other way.
4. Learning takes place on many levels simultaneously. Learning not only absorbs one little thing at a time linear but rather absorbs a lot of things at once.
5. Learning comes from doing the work itself (with feedback). The best learning is learning context.
6. Positive emotions are very helpful lesson. Feelings determine the quality and quantity of a person.
7. Image brain absorbs information instantly and automatically. The human nervous system is more than a word processor image processor, Meier (2000: 9-10).

SAVI approach emphasizes learning-based activities, namely moving physically active while studying utilizing the senses as much as possible and make the whole body / mind engaged in the learning process. As disclosed by Meier (2000: 42) "does not automatically improve learning by having people stand up and move around. But combining physical movement with intellectual activity and the use of all the sense of can have a profound effect on learning. In other words SAVI approach involves the five senses and emotions in the learning process.

Previous DePorter already explained that there are three modalities of learning styles namely, visual, auditory, and kinesthetic. According to Bandler and Grinder (DePorter, 2013: 123) even though most people have access to the three modalities of visual, auditory and kinesthetic almost everyone tends to one learning modality that acts as a filter for learning, processing, and communication. But this is different from the opinions expressed by Markova (DePorter, 2013: 123) that people not only tend to be at a certain modality that gives them certain natural talents and shortcomings.

Meier (2000: 49) adds another intellectual learning style. Intellectual learning style is characterized as a thinker. Learners use the intelligence to reflect on an experience and create relationships, meaning, purpose, and value from the experience. "Property" is the part of the brood, to create, solve problems, and construct meaning. That means by which the mind to turn the experience into knowledge, knowledge into understanding and understanding into wisdom.

2.3. Self Efficacy

Etymologically, self-efficacy comes from two syllables, namely 'self' which means the element of personality structure and 'efficacy' which means the self-assessment on the actions good or bad, right or wrong, can or can not be in the grind. Self-efficacy is a person's evaluation of the ability or competence in undertaking a task, to achieve the goal or solve a problem. Self-efficacy affects the motivation of each individual, what efforts made to foster a sense of confidence and the extent to which they can be confident in the performance of duty, (Siegel, 2007; Sartawi, 2012).

High and low self-efficacy someone in every task varies greatly. It is caused by factors that affect the ability to perceive oneself. There are four main sources that affect self-efficacy, namely:

1. Experience success. Someone who is having success in life will be the higher of its self-efficacy. If success is achieved due to external factors, then it will not much affect his self-efficacy. Conversely, if the success obtained through great obstacles and is the result of hard work, then this will impact the success of increasing one's self-efficacy.
2. The experience of others. Someone can sometimes make a judgment about his own ability to care for others who share certain similar tasks. The experience of others is usually obtained through a model in social interaction.
3. Persuasion. Relating to the encouragement of persuasion / influence others. Self-efficacy someone can rise through the influence of others are respected and competent.

Psychological and emotional state. Sometimes, a person often rely on emotions to see their capabilities. If there is a negative thing, like a tired, anxious, depressed will reduce a person's self-efficacy, whereas if you have a good shape, will contribute positively to the development of his self-efficacy, (Simanungkalit, 2015: 32)
3. Research Methods
This research is the development of (Developmental Research), which aims to produce a plan to build a multimedia learning mathematics with SAVI approach to improve student self-efficacy.

4. Discussion of Results
Formulation of the problem and the purpose of this study related to product development SAVI-based multimedia learning mathematics to improve the quality of learning. After passing through the process of developing the model of Plomp, then obtained a valid mathematical learning Multimedia theoretically (based on the results of the assessment experts and practitioners). Thus, the conclusions of this study are translated as follows
1. Multimedia Learning Mathematics generated based SAVI to improve the quality of mathematics instruction are valid.
2. Generated a learning tool to support the implementation of Multimedia learning of mathematics in the implementation of the subject matter of learning the basic concepts of numbers. The learning device consists of Books Multimedia mathematics, Class Plan (RP), Handbook Lecturer (BPG), the Student Book (BS), and the Student Activity Sheet. The level of validity SAVI-based multimedia learning of mathematics and all the learning tools are used including a valid category.

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