Multimedia with Social Learning Networks (SNL): As Learning Innovation in the 4.0 Industrial Era

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Abstract. Technological advances have opened the door to present instructional material in various forms such as audio, visual, printed text, images, and moving images. All types of multimedia are found in one computer, which has opened the way to present learning more effectively. In addition, there were also many networking sites specifically used in learning to facilitate online learning. However, to integrate technology in learning cannot be adopted directly, it is necessary to innovate and adapt to the curriculum and learning. Based on that, it is necessary to develop a language learning model based multimedia using Social Learning Network (SNL). This type of research is Research & Development (R&D) with a 4-D development model (define, design, develop, and disseminate). The results showed that the learning model developed was categorized as very valid and could be tested in schools.

Keywords: multimedia, social learning networks, learning innovation, learning models, scientific approach

1. Introduction

Knowledge and technology are interrelated and influence each other in life. Society and technology are inseparable phenomena and changes that occur in one of them change the other [1]. Technology offers a great way to strengthen instruction, whether in the classroom, online, or in an integrated learning environment [2]. Advances in technology have opened the door to present instructional material in various forms such as audio, visual, printed text, images and moving images. All forms are found in one computer, which has opened the way to present learning more effectively termed multimedia [3].

At present, the improvement of multimedia network technology is causing a revolution in education [4]. The evolution and rapid development in multimedia technology, it has become feasible to integrate multimedia technology into the teaching-learning process [5]. Incorporating multimedia elements in educational material is an important thing to do [6][7]. Multimedia programs have been used for years to help students improve reading, spelling or math skills, as well as to improve specific cognitive processes such as memory or attention and there is plenty of evidence to show their effectiveness for learning [8][9].

Multimedia comes from the words 'multi' and 'media'. 'Multi' comes from Latin, which means 'diverse'. Meanwhile, the word 'media' comes from Latin, which means 'intermediary or something used to send, send or carry something' [10]. Multimedia is digital integration of text (written), animation, audio (dialogue, story, sound effects), graphics (program interface), images, video motion and visual stimuli. Through the integration of all these media, learning experiences become interactive which reflects everyday experiences [11][12][13].
The use of multimedia as an educational tool is a factor for effective learning [14]. This learning has a significant effect on student achievement [15]. In the learning process, using multimedia technology has great potential to empower students' higher-order thinking skills [16]. If well designed, multimedia can involve students on several cognitive levels and overcome various learning styles [17].

Learning with the help of multimedia is possible both in computerized classrooms and at home. It is also possible to adapt learning for use in distance learning systems [18]. The benefit is the flexibility it provides. Students can see the subject matter when and wherever they like, on many devices. They can rewind, slow down or speed it up, students can re-visit certain videos before the assessment [19].

Transformation in contemporary education has caused an explosion in the number of degrees delivered online, an important characteristic of which is the incorporation of multimedia to support learning [20]. Multimodality or multimedia learning environments are now common at various levels of education and technological advancements such as e-learning and online platforms, requiring that almost all students are involved in multimedia teaching modes [11]. This is partly driven by the growth of mixed pedagogy and improvements in student learning through online one of which through social networking sites [19].

Social networking sites (SNS), such as Facebook, Twitter, Instagram, WhatsApp, have been widely used throughout the world [21][22]. This site has been able to attract the attention of young people, especially those born in the digital age [22]. This has the potential to facilitate communication, interaction and collaboration centered on the use of technology to support and strengthen educational efforts [23]. It has provided many features that can serve the learning sector to communicate and foster social relations with each other to create various practice communities [22]. With the birth of SNS, it can be stated that the online learning environment is one of the renovations that must be taken into account by teachers [24]. Therefore, SNS attracted the attention of many educators, and they began to try to find out how SNS could be used in the educational environment to help their teaching [25].

Although SNS has been widely used in educational settings [26], this still has some limitations [27]. These limitations are as follows. First, because SNS tends to be used for recreational purposes, personal use and for socialization, so students may have difficulty understanding their place in learning [28][29]. Secondly, at SNS, teachers and students are friends. This situation can cause role conflict and weaken teacher authority [29]. Third, students tend to consider social life (pleasure) separate from learning [30]. Fourth, SNS which are commonly used in our daily lives, may not be easy to use in education if they do not have important functions that enable learning [30]. Fifth, SNS does not have features such as libraries, exams, and assignments that are included in the learning management system because it basically does not serve educational purposes. In addition, there can also be a lot of inappropriate content on SNS because this is for general use [31][32]. Sixth, because they are a large platform used by billions of users, security issues are still in doubt [32].

As a solution to eliminate negative effects on SNS, Social Learning Networks (SLN) emerge that function in a manner similar to SNS and basically function as an educational environment [31][33][34]. Websites like Edmodo, Elgg, Ning and ValuePulse are those that serve that purpose [31]. SNL becomes a potentially useful tool used to improve student learning skills and the quality of teaching [33]. This provides educational advantages such as student-teacher and student interaction, language skills, involvement in the learning process [35]. This minimizes security and privacy issues that can arise when using SNS and allows teachers and students to use social networking technology for educational purposes [36]. It is specifically designed for the educational environment and includes major components such as libraries, assignments, quizzes and other functions [32].

The main function of the SNL is to provide learning and learning interaction tools, including announcements, assignments, grades, manuals, time and notebooks. Furthermore, it displays content in various ways such as text with images, animations, books and references, documents and files, and important links that are relevant to clicking (course content). It also offers three ways of communication between students and instructors by receiving and sending e-mails, virtual classrooms and discussion boards [37].
Based on this explanation, Multimedia and Social Learning Networks (SLN) is a good combination used in learning in the digital age. Based on its main function, SNL makes it possible to maximize all multimedia functions, namely to be able to create content, share, view, download, upload images, files, videos, or audio [38].

In learning to use multimedia, the teacher has a major role in multimedia implementation in education [17]. To integrate multimedia in learning, teachers play an important role to include multimedia in their curriculum [39]. The introduction of multimedia into the classroom has the potential to change the way teachers teach and how learning takes place in the classroom [17]. Likewise with applying Social Learning Networks (SNL) in learning. This cannot achieve educational goals without the design of intentional learning activities [40]. With the design of deliberate learning activities, students can achieve higher learning performance [35].

The scientific approach is the basis for curriculum development in 2013 in Indonesia. The 2013 curriculum still retains ideas from the previous curriculum (KTSP) and using genre based approaches, there are significant changes in how the curriculum framework defines ideas about competence and performance [41]. The use of a scientific approach in the 2013 curriculum is a combination of genre-based and scientific approaches [42]. A scientific approach is a way of learning to facilitate students to gain knowledge or skills with scientific procedures, such as by experimenting or investigating ideas to get logical conclusions [43]. This approach is promoted as the main learning approach for all subjects, including language learning [44].

The scientific approach allows teachers to improve the learning process by breaking the process into several steps or stages containing detailed instructions for doing student learning [45][46]. Most teachers and many of their students can read from memory the steps of this process. With only minor variations: observe, develop a question, develop a hypothesis, conduct an experiment, analyze data, state conclusions, generate new questions) [47]. Every aspect has a specific purpose and, as a result, by applying every aspect students will have the same scientific attitude as that of a scientist in solving their problems [48].

Based on the explanation that has been described, the purpose of this study is to develop a language learning model based Multimedia. The product specifications developed in this study are learning models that are adapted to the Language learning curriculum using a scientific approach that is adapted for learning in the digital era, namely online learning using multimedia and Social Learning Networks (SLN).

2. Methodology

This type of research is Research & Development (R & D) with the intention of producing products through certain stages. Research and development is research that produces a particular product and tests the effectiveness of that product [49]. The study was conducted to develop a product in the form of a language learning model based multimedia. The development model used in this study is an adaptation of the existing model, the 4-D model (four D model) proposed by S. Thiaagarajan, Dorothy S. Semmel, and Melvyn. I. Semmel. This model consists of four stages, namely, define, design, develop, and disseminate [50]. In this paper, the results of the study are focused on the design stage.

The product is adapted to the 2013 curriculum which is text based and uses a scientific approach. The learning model is Multimedia with Social Learning Networks (SLN). Learning materials are presented based on the learning objectives of Core Competencies and Basic Competencies.

3. Result and Discussion

Based on the needs analysis and literature review that has been done, it was found that the learning model used by teachers in language learning needs to be innovated to fit the needs of current students. The learning model used is still limited to conventional learning, especially face-to-face learning. For now, given the development of knowledge and technology, many formal educational environments require learning to be done online. Therefore, learning models need to be developed to be used by students
in the context of digital learning or online learning. In addition to the need, based on the analysis that has been done before, that the teacher currently has enough knowledge, skills and safeguards regarding policies to implement learning using digital devices and online learning [51][52][53].

Based on this, it is necessary to develop a learning model that can be used by teachers and students for online learning that is adapted to the language learning curriculum that uses a scientific approach and is based on genre. The learning model is a language learning model based multimedia using social learning networks (SLN). The syntax of the developed model is described as follows.

A. Introduction to Learning
Every learning process that will be done, will definitely go through several processes or stages. The teacher’s activity at this stage is to condition the readiness of student learning and provide an explanation of the learning activities to be carried out. Specifically, in the use of this learning model, the teacher has ensured all students to prepare all necessary learning devices such as computer devices or mobile devices, internet activation and so on. While the activities of students at this stage are preparing themselves for learning; listen and understand the explanation from the teacher regarding the learning activities to be carried out; specifically students must prepare all necessary learning devices such as computer devices or mobile devices, internet activation and so on. If students experience difficulties, please provide confirmation or report to the teacher so that the learning process can be carried out according to the plan and time specified.

B. Observe
This stage is the core learning stage. At this stage the teacher displays examples of text, pictures, videos, or audio using digital teaching materials. At that time students see, observe, read, hear, or listen to teaching material provided by the teacher. In addition, students note the important things from the presentation of the observed teaching material.

C. Question
The teacher asks questions both in the form of facts and opinions, factual or hypotheses about the learning material being carried out. The question was carried out with the help of Social Learning Networks (SLN). Questions that have been displayed on the student book can be connected with the help of a link to the SLN that the teacher has prepared. Students can answer the questions raised by the teacher in accordance with the time specified by the teacher. At this stage, students can ask questions either in the form of facts or opinions, factual or hypotheses about the learning material to be discussed further through the column provided in the SNL account that the teacher has designed, and the teacher can choose several questions that can represent the whole question from students to be able to continue the next learning phase.

D. Experimenting
The teacher instructs students through Social Learning Networks (SLN) to collect the required data based on the questions asked. Based on these questions, students collect data needed to answer questions raised by the teacher. In learning to use computer and cellular devices, students can take advantage of these facilities by searching for answers on various internet sites at trusted sources. Data collected by students can be found in various media, both print and electronic (objects, documents, books, research findings, articles, audio, videos, and so on). In the learning process, the teacher observes students in the process of collecting data and facilitates students if they experience difficulties through SLN.

E. Associating
The teacher instructs students to analyze the data found by selecting, identifying, verifying, and concluding the results of the analysis through SLN. Students analyze the data found by selecting, identifying, verifying, and summarizing the results of the analysis. After that, students write down important points of analysis to be used as material in writing text. These important points can be reported to the teacher through SNL after a set time. At this stage, the teacher facilitates students if they experience difficulties through the comments column provided on SNL.
F. Communication

The teacher instructs students to write text through SLN. Students write the text that is being studied based on data found and analyzed previously. Furthermore, the teacher facilitates students in the publication of texts. The publication is based on the text being studied. Publications can be in the form of oral, written, picture, video and other media. Based on the teacher's instructions, students publish the text in both print and electronic media such as blogs, Facebook and other public media.

G. Evaluation and Reflection

The teacher asks students about the learning and learning process that has been done through SLN. Students answer questions and provide opinions and suggestions regarding learning that has been done through SLN that has been facilitated by the teacher on the SLN page used. Next, the teacher evaluates student learning and understanding by providing assessments and feedback based on student evaluations and assignments. The teacher gives a reflection on the learning done through the SLN page used. Students discuss what are the obstacles and what makes it easier for students in the learning process by giving comments through SLN that has been facilitated by the teacher on the SLN page used.

H. Closing

The teacher provides a final explanation in learning; giving assignments and exercises; as well as providing assessments to students both attitude, knowledge, and skills. This stage can be done through text, audio, or video through the SLN page used.

The learning model that has been developed is then validated. Validation is done in two ways, namely self evaluation and expert validation. The results of the validation of the learning model developed can be seen in table 1 and table 2.

| Table 1. Self evaluation |
|--------------------------|
| Rated aspect | Score | Category |
|---------------|-------|----------|
| Content       | 87.5  | Very valid |
| Language      | 87.5  | Very valid |
| Validity result | 87.5  | Very valid |

| Table 2. Expert Validation |
|-----------------------------|
| Rated aspect | Score | Category |
|---------------|-------|----------|
| Content       | 88.54 | Very valid |
| Language      | 89.59 | Very valid |
| Validity result | 89.07 | Very valid |

The learning model developed is categorized as very valid, so it can be continued to be tested in schools. Trials are conducted to obtain the practicality and effectiveness of the learning model.

The learning framework using this approach is built on scientific thought, such as building concepts, laws and principles through several stages. Some experts claim that learning using a scientific approach can be carried out with five stages consisting of observing, asking questions, collecting data, associating, and communicating [54][55][56]. Furthermore, the scientific approach is carried out based on six stages, namely asking questions; researching questions; make a hypothesis; carry out research/experiments; analyze data and make conclusions; creating and communicating reports [44][57].

Furthermore, the scientific approach is carried out based on seven stages (Majid, 2014). The learning steps include; formulating questions; formulating research background; formulate a hypothesis; test hypotheses through experiments; analyze the results of research and formulate conclusions; if the
hypothesis is correct, it can proceed with the report; if the hypothesis is proven to be incorrect or partially true then re-test it.

Applying a scientific approach to language teaching is a necessity and it becomes significant to meet the requirements for applying the 2013 Curriculum [58]. The scientific approach is intended to provide understanding to students in knowing, understanding various materials using a scientific approach where information can come from anywhere, anytime, depending on teacher information [59]. However, the steps in the scientific approach are not easy to be adopted in learning by using digital tools in online learning, even though the approach is still relevant to be used in the online learning process. Therefore, it is necessary to develop a language learning model that can be used in learning by using multimedia and Social Learning Networks (SLN). Based on these explanations, a learning model based on six steps was developed using multimedia and SLN that can be read in the results of the above research.

4. Conclusion

Based on the results of research and discussion concluded that it is important to develop learning models based on student needs. In addition, the learning model needs to be innovated in accordance with the development of science and technology. One alternative that can be used is a language learning model based multimedia using Social Learning Networks (SLN) that can facilitate the learning process that can be done anytime and anywhere. The learning model developed is categorized as very valid and can then be tested in schools to find out the practicality and effectiveness of the developed model.

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