

The Mobile Media Development in Learning A Need Analysis

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ABSTRACT

The purpose of this study is as follows. 2) limitations faced by teachers in this area when teaching materials on the basics of electricity and electronics; 3) Know what kind of educational materials to develop on the basics of electricity and electronics. In this study, the IDI model was used. The IDI model has three stages: definition, design, and evaluation. Needs evaluation was performed in the identification stage and feasibility evaluation was performed in the design stage. The requirements assessment was conducted in the form of questionnaires, observations and interviews using the requirements assessment tool. The results of this study are as follows. 1) In the basic competencies to apply current and potential, the basics of electricity and electronics were used as the learning environment, and the material concept of this learning environment was current and potential, and the students who were the subject of this study were X in the specialized field of “electrical work”. I was a class student. 2) The material concepts of electric current and potential are defined as abstract materials and difficult to convey. Teachers need textbooks to render abstract material, and teachers can teach effectively. 3) The educational medium to be developed based on the electric and electronic basics is the Android education medium. In this way, students can learn independently using mobile-based learning materials. Students can study at home and at school.

Keywords: *Mobile Media, Need Analysis, Validity*

1. INTRODUCTION

Mlearning (mobile learning) is a learning approach that includes mobile devices such as cell phones, PDAs, laptops, and tablets, allowing users to access materials and applications related to learning topics anytime, anywhere, without time and space restrictions them.

Mobile learning Instructional media-based android can make students in touch with teacher and other students with using internet connection. Technology based online can be implemented in the learning effectively [1]. The technology that is offered by mobile learning does not limit the learning on schedule face to face only. Therefore, Coordination of using mobile learning in learning will offer the amazing advance in the future, the conclusion is the combination of mobile learning

technology in the learning will increase effectiveness and accessibility of learning activity in the future, mobile learning and academic achievement are due to the high learning relationship between teachers and students [2]. Development of mobile learning in the future will greatly expand and assist student in completion the assignment and learning material with their smartphone. Even mobile learning or smartphone gives as opportunity to understand the learning in the 21st century with a new way [3] and mobile learning can answer conceptualization challenge by exploiting ideas from pragmatic and socio-cultural [4]. Smartphone greatly assists everyone from making job easier, instructional media and communication tools [5]. Emerging of three characteristics that build mobile learning pedagogy, are follows: authentic, collaboration, and personalization [6] prove that mobile learning greatly useful to be developed in the learning.

Smartphones are mainly used for access to social media such as Facebook and Twitter, and do not play an important role in education. One of the mobile roles in education is using of mobile learning as media of learning support. The nature of mobile learning is so flexible and portable that students can access learning-related materials, guidance and information anytime, anywhere.

Based on observation that carried out in several vocational high school in Solok regency on in each school, most students and teachers using smartphone just for call, message, listening the music, watching video, accessing social network like Facebook, twitter, WhatsApp, and playing the game.

Development of mobile learning-based android on Basic of Electricity and Electronic course, because students cannot learn directly with the invisible because there is abstract material, so that required the act of media of learning support so that student can understand the material easier. The competence in this material needs high understanding so that required media as learning support and student can reply the material whenever and wherever they need. With the development of learning-based media to support learning, it is hoped that it will make it easier for teachers to deliver material and students can understand the material at any time without being limited by place and time. Mobile technology is one of media that can be better for science learning [7] and can increase students' academic performance [8].

Based on the background, this study needs to be carried out as preliminary study to develop mobile learning-based android on Basic of Electric and Electronic course for students of Electrical Engineering at Vocational High School. According with systematic review by Helen Crompton explains that 51% study about mobile learning aimed at explaining about design of mobile learning [9]. It explains that preliminary study about mobile learning design is important in the development of mobile learning. Teacher needs a paradigm how they can integrate mobile learning in classroom effectively [10].

2. METHOD

Research and development (R&D) were a type of this study, and this study aims to create a product in the form of an Android-based mobile learning tool. Research and development is research used to manufacture a particular product and test its effectiveness [11]. Research and Development method is a study deliberately, systematic aims at

seek a finding, formulate, refine, develop, produce, test the effectiveness of product, model/strategy/ways, services, specific procedure that more better, new, effective, efficient, productive, and meaningful [12].

Procedure on development of this instructional media is used IDI development model, IDI model has system approach principles that there are three phases, are follows: define, develop and evaluate. The first phase is defined (determination), which contains steps to identify problems, analyse curriculum, analyse students' characteristics, and analyse the concepts/learning material. The second phase, the develop phase (development) which contains the preparation of preliminary product (prototype) and product validation. The third phase, the evaluate phase (assessment) which contains steps of test and analysis of test results.

Needs assessment include in the first phase that is define stage (determination). In this stage is carried out Core Competence and Basic Competence analysis, students' analysis, and concept analysis, to analysis what is constraints that faced by teachers in explain the material on Basic of Electric and Electronic course, and then analysis what kind instructional media that will be developed.

3. RESULTS AND DISCUSSIONS

Needs assessment phase is carried out so that instructional media based mobile learning that developed accordance with Core Competence and Base Competence that available in the instructional curriculum, according with the concepts that available in the curriculum, according with student's characteristic, can answer the constraints that faced by teacher in explaining the material of basic of Electric and Electronic course.

3.1. Analysis of Core Competence and Basic Competence

Define phase is carried out by setting Core Competence and Base Competence which refer to syllabus and Lesson Plan on Base of student Electric and Electronic course of Electrical Engineering at Vocational High School. Key competencies include: 1) understand, implement and analysed conceptual and procedural and factual knowledge based on interest in knowledge, skills, arts, culture and humanities to solve problems of understanding of relevant humanity, nationality, nation and civilization; on the causes of phenomena and events in the realm. 2) Processing, reasoning, and

communication in specific and abstract areas of development that allow students to learn on their own at school and perform specific tasks under their direct supervision.

Base Competence that used are follows: 1) Apply the electric concepts that related with current physical symptoms and electric potential, 2) Demonstrate electrical concept (current and electric potential).

This competence is chosen because on Core Competence the students need media in the learning. Basic of Electric and Electronic course certain the understanding of electric current and potential electric materials are abstract materials, so that it is need visualization through animations, so that students can understand and differentiate electric current and electric potential concept.

3.2. Concept Analysis

Concept analysis aims at determine the content and Basic of Electric and Electronic material that need in this development of mobile learning. Researcher arranges the main concepts that will be developed systematically and identification the support concepts that relevant and relating with electric current and electric potential. The main concept in this material are follows: electrical charge and electric phenomena, theory of atom, electric style phenomena, electric field, Coulomb law, electron current, the amount of electric current value, properties of electric current, and generating an electric voltage.

3.3. Students Analysis

Student analysis is carried out to see and know student characteristic and environment. This analysis is carried out as consideration of making mobile learning on Base Competence are follows: 1) Apply the electric concepts that related with current physical symptoms and electric potential, 2) Demonstrate electrical concept (current and electric potential) for student of Electrical Engineering of Vocational High School.

The subjects in this study are Electrical Engineering students of Vocational High School that learn about Basic of Electric and Electronic course. In general, the students have reached age of 17 until 19 years old. At the age, students basically able to analyse and make their own hypothesis toward a problem. Each category in revision of Bloom's Taxonomy, students at the ages lies in the create categories in which students already able to design,

build, plan, produce, find, update, complete, strengthen, beautify, change [13]. Older students have opportunities and opportunities to develop their knowledge and understanding. Thus, reaching this stage allows students to learn on their own, and teaching skills allow students to better see and experience independent research, how the technology works, as well as teacher explanations.

Based on observation and interview that are carried out on teachers at Vocational High School. Teacher had made their own instructional media, but the teachers have constraints in developing instructional media, such as inadequate means because to develop this instructional media needs accuracy and detail. So finally, the instructional media cannot be used optimally by students.

Teachers also state that instructional media need to be developed is mobile learning instructional media-based android, because most of the student have used smartphone. In Indonesia, the data from kemenperin.go.id explains that growth mobile phone in Indonesia up to 62% each year and the use of smartphone with Android OS up to 50-60%. So that, the smartphone can be put to good use, it is necessary to be developed mobile learning instructional media-based android, so that student can learn independently whenever and wherever. According with several study that had carried out by the researchers explain that mobile learning can improve students outcomes [14], and students have a high desire to learn with using mobile learning [15]. With a variety of mobile learning that can be developed in learning, such as cloud computing [16], integrate WeChat with Moodle [17], and mobile cloud [18]. All of mobile learning application can be developed for learning

4. CONCLUSION

The conclusion that can be drawn from the discussion are follows: 1) The Core Competence are follows: (1) knowledge, to solve problems related to the causes of phenomena and events in a particular field, based on an understanding of humanity, nationality, nation, and civilization, based on a curiosity for conceptual, procedural, knowledge, skills, arts, culture and humanities. (2) processing, reasoning, and communication in concrete and abstract areas related to development in which the student has studied independently at school and is capable of performing specific tasks under direct supervision. Base Competence are follows: (1) Apply the electric concepts that related with current physical symptoms and electric potential, (2) Demonstrate

electrical concept (current and electric potential). The main concepts in this material are follows: electrical charge and electric phenomena, theory of atom, electric style phenomena, electric field, Coulomb law, electron current, the amount of electric current value, properties of electric current, and generating an electric voltage. The subjects in this study are Electrical Engineering students of Vocational High School that learn about Basic of Electric and Electronic course. In general, the students have reached age of 17 until 19 years old. At the age, students basically able to analyse and make their own hypothesis toward a problem, so that give the possibility to students to learn independently and the use of instructional technology. 2) Constraint that faced by teacher is electric current and electric potential material is abstract material, so that teachers need instructional media to visualize it. 3) Media that need to be developed is mobile learning instructional media-based android, where by using the mobile learning instructional media, students can learn independently wherever and whenever using their smartphone. This article contributes to existing knowledge that can add the references of media in learning. The effect of the mobile media has not been studied in this research. Therefore, it can be the recommendation for further research.

AUTHORS' CONTRIBUTIONS

Kyaw Zay Ya: article final review and approve article for the submit

Rizky Hardian Sakti: Concept, design, interpret data and draft it into the article.

Ambiyar: Concepts, analyzing data and review article.

Muhammad Giatman and Nurhasan Syah: Design, collect data and review article.

Mukhlidi Muskhir and Hansi Effendi: Conduct field surveys.

REFERENCES

- [1] S. Gregory and M. Bannister-Tyrrel, "Digital Learner Presence and Online Teaching Tools: Higher Cognitive Requirements of Online Learners for Effective Learning," *Int. J. Springer*, vol. 12, no. 17, pp. 2–17, 2017.
- [2] D. R. R. Joan, "A Study on Mobile Learning as a Learning Style in Modern Research Practice," *I-Manager's J. Sch. Educ. Technol.*, vol. 8, no. 4, pp. 29–37, 2013.
- [3] S. Shuck, M. Kearney, and K. Burden, "Exploring Mobile Learning in the Third Space," *J. Technol. Pedagog. Educ.*, vol. 2016, pp. 1–17, 2016.
- [4] J. Jaldemark, "Context and Concepts in Mobile Learning," *Int. Conf. Mob. Learn.*, vol. 2013, pp. 230–234, 2013.
- [5] L. Shuib, "A Review of Mobile Pervasive Learning: Applications And Issues," *J. Comput. Hum. Behav.*, vol. 46, pp. 239–244, 2015.
- [6] M. Kearney, S. Schuck, K. Burden, and P. Aubusson, "Viewing Mobile Learning from A Pedagogical Perspective," *J. Res. Learn. Technol.*, vol. 20, 2012.
- [7] D. Sun and C.-K. Looi, "Focusing A Mobile Science Learning Process: Difference in activity Participation," *Int. J. Springer*, vol. 12, no. 3, pp. 1–17, 2017.
- [8] E. Pechenkina, D. Laurence, G. Oates, D. Eldridge, and D. Hunter, "Using a Gamified Mobile App to Increase Student Engagement, retention and Academic Achievement," *Int. J. Educ. Technol. High. Educ.*, vol. 14, no. 31, pp. 1–12, 2017.
- [9] H. Crompton, D. Burke, K. H. Gregory, and C. Gräbe, "The Use of Mobile Learning in Science: A Systematic Reiew," *J. Sci. Educ. Technol.*, vol. 2016, 2016.
- [10] R. Christensen and G. Knezek, "Relationship of Mobile Learning Readiness to Teacher Proficiency in Classroom technology Integration," in *13th International Conference on Cognition and Exploratory Learning in Digital Age*, 2016, pp. 203–306.
- [11] Sugiyono, *Metode Penelitian Kombinasi (Mixed Methods)*. Bandung: Alfabeta, 2012.
- [12] P. Nusa, *Research & Development*. Jakarta: Rajawali Pres, 2012.
- [13] L. Anderson, *A Taxonomi for Learning, Teaching and Assesing: A Revision of Bloom's Taxonomy of Educational Objectives*. Washington, DC: A Bridged Edition Addison Wesley Longman, Inc, 2001.
- [14] H.-Y. Sung, G.-J. Hwang, and Y.-C. Chang, "Development of a Mobile Learning System Based on A Collaborative Problem-Posing Strategy," *J. Interact. Learn. Environ.*, vol. 43, no. 4, pp. 1–16, 2003.

- [15] Riyadh Alhassan, “Mobile Learning as a Method of Ubiquitous Learning: Students’ Attitudes, Readiness, and Possible Barriers to Implementation in Higher Education,” *J. Educ. Learn.*, vol. 5, no. 1, pp. 176–189, 2016.
- [16] W. Heng and D. Zhong, “A Practice of Mobile Learning Based on Cloud Computing,” in *International Conference e-Learning*, 2016, pp. 69–76.
- [17] Z. Li, Y. Fan, and J. Jiao, “Integrate Wechat with Moodle to Provide a Mobile Learning Environment for Students,” in *International Conferences ITS, ICEDuTech and STE*, 2016, pp. 142–149.
- [18] M. Wang, Y. Chen, and M. J. Khan, “Mobile Cloud Learning for Higher Education: A Case Study of Moodle in the Cloud,” *Int. Rev. Res. Open Distance Learn.*, vol. 15, no. 2, pp. 254–267, 2014.