

Developing Mobile-Based “Blended Learning System” In Order To Improve The Learning Quality Of FIP UNNES In 4.0 Industry Revolution Students

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Abstract as one of the faculty in Universitas Negeri Semarang that manage a study program which develop international curriculum and pilot-project of international class in PGSD program, Faculty of Educational Science (FIP) is expected to project other study programs to implement international curriculum that may support UNNES to become World Class University (WCU). More innovations are required in the Faculty of Educational Science thus the learning activity could run well and the learning quality would improve. One of the innovations that is worth to be developed and implemented as a response to this matter is developing a learning implementation that could combine both conventional learning (face to face) and e-learning implementation. As a result, mobile-based blended learning would be created to improve the quality of learning. This research aims at (1) identifying the need in developing the lecture activity through mobile-based Blended Learning System, (2) developing a lecture system through the development of mobile-based Blended Learning System, and (3) examining the validity of mobile-based Blended Learning System. The research model applied in this study is R and D research with SDLC development model. This research used mobile-based technology, and the population in this research is the students of FIP UNNES. The findings presented that the needs in developing mobile-based blended learning system are learning model. Software and hardware component, availability on the facilities, learning implementation policy, and the socialization along with the training for the lecturers of FIP. The product development had been completed through the stages of investigation, need analysis, as well as system design and testing. The product is currently developed and projected to be used in the second year. The product was considered valid and feasible to be used for the next stage by the media validator with the score of 87.56.

Keywords: Blended learning system, Quality of Learning, Mobile

1. Introduction

The development of science and information technology has started to shift conventional education into technology-based education. The vast and uncontrollable development of technology serves as the indicator of the disruption era since uncertainty starts to occur due to the rapid changes. The use of technology in every aspect of life, including education, has marked the occurrence of 4.0 industry revolution. In technology-based education, lecturers are

no longer the sole source of knowledge. Currently, students could easily access the knowledge through internet or other means of technology.

Faculty of Educational Science (FIP) is one of the faculty in Universitas Negeri Semarang that manage to run a study program which develops International Curriculum (PGPAUD) and a pilot project of international study program (PGSD). Therefore, it is expected that FIP could project other study programs to implement international curriculum that may support UNNES to become World Class University (WCU). Many needs to be considered to achieve this goal. One of them is by improving the quality of learning in the Faculty of Educational Science. In other words, the learning implementation should be conducted more innovatively, not only limited to a conventional lecture activity in the class. Based on the observation, only a few of lecture activity if the Faculty of Educational Science that utilize e-learning facility provided by the university (elena.unnes.ac.id). The lecturers were not able to optimally utilize the facility as the face difficulties in using technology. This is unfortunate since one of the requirements to face disruption era is through the use of technology. World Class University also require the collaboration between learning implementation and Information Technology. In other words, the implementation of e-learning is essential in lectures.

More learning innovations are required in the Faculty of Educational Science in order to conduct a well-run learning activity and improve the quality of education. One of those innovations to overcome this matter is developing a learning that combine conventional learning (face to face) and e-learning altogether to create mobile-based blended learning. According to Koohang (2009), "blended learning is defined as a mix of traditional face-to-face instruction and e-learning". The reason behind developing mobile-based blended learning was acquired from a former research by Kiviniemi (2014) which showed that improvement of students' learning activity was indicated through the use of blended learning approach. Students' learning activity is one of the indicators in the quality of learning (Depdiknas dalam Prasetyo, 2013: 13). Therefore, it is expected that the implementation of mobile-based blended learning system could also improve the quality of learning in other indicators. This research aims at (1) identifying the need in developing the lecture activity through mobile-based Blended Learning System, (2) developing a lecture system through the development of mobile-based Blended Learning System, and (3) examining the validity of mobile-based Blended Learning System.

2. Methods





The research method implemented in this study is R and D research with Life Cycle (SDLC) Waterfall Development System. This system is considered to be the most suitable system to develop information system or IT application. The population in this research are the students of FIP UNNES. This study was conducted for 6 months in the Faculty of Educational Science UNNES that consists of 6 Study Program (BK, PNF, PGSD, PGPAUD, TP, and Psychology).

3. Results and Discussion

Blended learning can be interpreted as a combination process of traditional teaching with the teaching that uses the technological device and can be given through internet (Cambridge,

2013). Generally, it can be defined as the combination of instruction of face to face with the mediated instruction using the computer (Osguthorpe and Graham 2003, Graham 2006). The combination of these classes is a wise decision that has the potential to improve the effectiveness and the efficiency of the more meaningful learning experience (Garrison and Kanuka 2004). The other term explained that blended learning used to described various variation of teaching and learning that generally involve the information and communication technology. Various form of its usage are such as on corporation, long distance education, and also used on various type of educators (Dron 2004).

Table 1. Display of Application of Mobile-Based Blended Learning System

No	Display	Note																												
1		The initial display from the application of mobile-based blended learning. There is a menu for login for the user who has the ID and register menu for new users. Also provided the menu of “forgot password” for the user who had registered but forgot their password.																												
2		The register menu for new users of lecturers that will register on the system. There are column for Name, NIP, email, and password.																												
3		After successfully register to the system, the lecturer can login with the user ID that has been made. The menu inside the lecturer page are class, announcement, materials, task, scoring, students and setting. The lecturer can do the class management in this page.																												
4	 <table border="1"> <thead> <tr> <th>No</th> <th>Judul</th> <th>Nama Dosen</th> <th>Aksi</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Info 1</td> <td>Wahyuni, M.Pd</td> <td>[icon]</td> </tr> <tr> <td>2</td> <td>Info 2</td> <td>Muti Karanti, M.Pd</td> <td>[icon]</td> </tr> <tr> <td>3</td> <td>Info 3</td> <td>Suroso, M.Hum</td> <td>[icon]</td> </tr> <tr> <td>4</td> <td>Info 4</td> <td>Abadi, M.Pd</td> <td>[icon]</td> </tr> <tr> <td>5</td> <td>Info 5</td> <td>Harjo, M.Pd</td> <td>[icon]</td> </tr> <tr> <td>6</td> <td>Info 6</td> <td>Zulu, M.Pd</td> <td>[icon]</td> </tr> </tbody> </table>	No	Judul	Nama Dosen	Aksi	1	Info 1	Wahyuni, M.Pd	[icon]	2	Info 2	Muti Karanti, M.Pd	[icon]	3	Info 3	Suroso, M.Hum	[icon]	4	Info 4	Abadi, M.Pd	[icon]	5	Info 5	Harjo, M.Pd	[icon]	6	Info 6	Zulu, M.Pd	[icon]	The function from the announcement menu is to find out the information announced by the lecturers. The students can see the announcement according to the subject that the students follow.
No	Judul	Nama Dosen	Aksi																											
1	Info 1	Wahyuni, M.Pd	[icon]																											
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The application of mobile-based blended learning recently has been developed. The development is done by the action of introduction that is the need analysis of media development that involves the lecturers of FIP because the lecturers are the users of this product. This was according to the opinion of the Mitchelhill (2015) that mentioned that in developing the product, it is ought to involve the users to give suggestions. The application has gone through the validity test from the experts and is announced to be valid with the score of 87.56% so that it can be used for the next phase. Valid according to Nieven in Rochmad (2012) can be seen from the product that is developed contained the materials related consistently between one thing and the other. Here are some displays from the product developed

The development of blended learning is important to be done in FIP because it gives various variation of learning method to improve the quality of learning. According to what mentioned by Olasoji et al. (2014) that the technological based learning method is important to solve various problem in the young generation to gain benefit from the expansion of technology in term of computer and smartphone. Young and Lewis (2006) explained that the learning with blended learning opens the idea for the teacher. This blended learning program also influence the attitude and knowledge of the educator as well as able to motivate to change various learning (Owston et al, 2008).

The learning using blended learning that is developed by the researcher is the mobile based or smartphone device. The reason why smartphone is chosen is because it is so popular in the university students, easy to carry, wireless, containing a lot of apps, so that it eases the students to do many tasks all at once (Ismail et al. 2013). This mobile-based blended learning can be installed on smartphones of the students because the extension is .apk. The other reason of the development of mobile-based with the utilization of smartphone is because it is able to expand the learning environment that is a trend on the university in supporting the e-learning that gives the easier learning experience to be transmitted (Ozuorcun and Tabak, 2012).

The result of research revealed that it is proven that mobile-based learning by using the smartphone can improve, expand, and enrich the concept of learning activity because the device supports every option of pedagogy including deductive for individual and group (Traxler, 2010). The learning using blended learning by using this mobile has an important role in the on time learning and according to the demand (Khaddage et al. 2016). Besides, cellphone can also be used to stimulate the motivation, strengthen the involvement of students and give and interesting content (Sung et al. 2016).

4. Conclusion

The conclusion of this research are the following: The needs of development of mobile-based blended learning system in FIP are the learning model, hardware and software for product development, the availability of facility and infrastructure, the policy for the practice of learning, as well as the socialization and the training of lecturer in FIP. The development stages of mobile-based blended learning includes investigation, need analysis, system design and testing. Currently, the program has been developed and about to be applied in the second year. The product has been considered valid by the media experts. The validation process was carried out twice. During the first validation, there were many inputs from the validator thus the product was improved in accordance with the inputs given. The product was then re-tested until considered valid with the score of 87.56.

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