The Influence of Flipped Classroom on the Competence of KKPI Course

Farid Ahmadi
Universitas Negeri Semarang, Indonesia
farid@mail.unnes.ac.id

Riyanto
SMK Islamic Centre Baiturrahman Semarang, Indonesia

Wahyu Hardyanto
Universitas Negeri Semarang, Indonesia

Abstract. The application of conventional learning method at school has provided a cognitive competence of students who did not meet the passing grade and did not use smartphones to help the learning process. The flipped classroom method using moodle mobile based on android can provide solutions for student who did not meet the passing grade. The research purpose are to (1) describe the design of learning KKPI course on moodle mobile based on android, (2) test the significance and, (3) analyze the influence differences of flipped classroom teaching method using moodle mobile based on android and the conventional teaching method using moodle mobile based on android on the cognitive competence of student of remembering, understanding, and applying aspect on KKPI course. This research method is quasi experiment, the research has been conducted for 3 times learning and 1 final test in the class XI computer and networking, Semarang Islamic Center Baiturrahman Vocational High School, academic year 2016/2017. The application of flipped classroom method have the post test score 83.03, the pre test score 40.21, the score has increased 42.82, and conventional method have the post test score 74.62, the pre test score 42.55, the score has increased 32.07. The probability score showed the significance differences between flipped classroom method and conventional method, both using moodle mobile based on android, the results of flipped classroom method has provided the cognitive competence of students better than conventional method of operating MySQL database. The research findings can be used to choose methods and learning media of KKPI.

Keyword: Flipped Classroom, KKPI Course, Moodle Mobileandroid

INTRODUCTION

The development of handhelds or mobile phones is not only for the purpose of SMS (Short Message Service) and making phone calls, but also as smart communication tools (smartphones). Based on survey of APJII (Indonesia Internet Service Providers Association) (APJII, 2016) on internet users in Indonesia there is 50.7% users accessed the internet using mobile phone and computer, 47.6% via mobile phone, and 1.7% through computer. 62% of the users are employee and entrepreneur, 16.6% are housewives, 7.8% are college students, 6.3% are student and 0.6% of others. Very few internet users are included as students and others.

Based on data of smartphone users in Islamic Centre Baiturrahman vocational high School Semarang, class X and XI of sharia banking and computer networking major, 183 student use android, 15 student use Blackberry, 13 others, 4 student use Iphone,1 student use Windows Phone. Therefore, android is most favourable among vocational high school students of Islamic Center Baiturrahman.

The flipped classroom learning method with moodle mobileandroid as a media to deliver message to achieve learning purpose (Djamarah, 2002:137). The student are successful in learning when they are able to show their behavior changes (Wahidmurni, 2010:18), it is include knowledge, skills, and attitude.

One of smartphone utilizations using moodle mobile has been done by Resmana Lim, dkk. (2014). moodle mobile can be installed on android device, this application has many features to access learning resources. Another research by Hassan Sbeity and Ahmad Fadlallah (2014). E-learning management sistem (eLMS) is more preferable as online communication platform between student and teacher.

Research by Wahyu Hardyanto, Aryan Adhi, and Aji Purwinarko (2016). Total admission from SPMU was better than SNMPTN over the last five period. It showed the usability of http://penerimaan.unnes.ac.id/ page was optimal. Admission facility using web page as the basis of conducted research using moodle mobilein http://smkibaiturrahmansmg.sch.id/e-smkicb/ page, and this page is expected can make the cognitive competences of students better.

Flipped classroom is flipping traditional learning. Many researches showed that Flipped Classroom method is relevant with KKPI subject matter, that is Wichai Puurungroj (2015) apply Flipped Classroom moodle for computer programming class. Manoj Joseph D Souza and Paul Rodrigues (2015) compare the effectiveness of Flipped Classroom with traditional class. Chang Xu (2013) using flipped classroom method as method that used to develop Mobile Application Development class. Research by Jerzy Letkowski (2014) showed that “the important aspect of database management is the design and implementation, and the recomended software is MySQL, the most used, open source (can be used free)”. 
Learning to use flipped classroom method can increase students engagement, the students were largely motivated to involve in various class activities, which could solve certain problems previously found in prior classes (Wichai Puarungroj, 2015). Learning media like moodle mobile have 3 main functions by Kemp dan Dayton in Arsyad (2005:19) namely “motivate interest and action, present information and give instruction”. Moodle Mobile has been tested on some android devices, and can run well, students can take the quiz through their smartphone with moodle mobile (Resmana Lim, dkk., 2014) and cause time execution is faster and less data consumption during download process when compared to accessing moodle via a regular web browser (Hassan Sbeity dan Ahmad Fadlallah, 2014).

**METHOD**

This research method is quasi experiment that include None equivalent Control Group Design (Sugiyono, 2010:114), consisting of experimental and control groups. Experimental group learning are using Flipped Classroom method with moodle mobile based on android, control group learning are using conventional method using moodle mobile based on android.

Population in this research is class XI TKJ 1 with 29 students, and class XI TKJ 2 with 29 students. The next step is conducting the pre-test to look for the learning outcomes average, data homogeneity, data normality. After that tests, population is randomized then select one for experimental group and control group using cluster sample method (Arikunto, 2006:141).

The variables in this research are independent variable, dependent variable and moderator variable. Independent variable in this research are learning method, that is flipped classroom method and conventional method using moodle mobile based on android, dependent variable in this research are cognitive aspects include remembering, understanding, and applying, moderator variable in this research are attitude of students in learning. data collection techniques were performed with test and non-test. Instrument test using multiple choice 30 questions with five answer options (A, B, C, D dan E).Non-tes instrument include questionnaire, observation, and photo documentation.

**RESULTS**

This research was conducted for 2 months, lasted from 10 April to 31 May 2017 in Islamic Centre Baiturrahman vocational high school Semarang. Research started with a pre-test to know knowledge of students in operating database software. Pre-test has been done one experiment and control group.

Design of KKPI learning on moodle mobile based on android below.
On experimental group, student make resume and questions from e-book outside the classroom, while in the classroom students make group and discuss about their resume, teacher explains to students who still have problem in learning the material. On control group, in the classroom students pay attention to the teacher’s explanation, discussion, and the outside activity the classroom is e-book learning session.

Outside of classroom students watch tutorial video, in the classroom students do the lab work following the tutorial video.

Based on the pre-test result, the mean value of experimental group is 40.21, the mean value of control group is 42.55, the probability is 0.545 > 0.05, therefore, there is no difference in pre-test results between experimental group and control group.

The final test result show that mean value of experimental class is 83.03 > 74.62, the probability 0.031 < 0.05, it means there is significant differences between flipped classroom learning method and conventional learning method in the final post-test on the cognitive competences of student of remembering, understanding, and applying on KKPI course.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Cognitive Competences (Remembering, Understanding, dan Applying)</th>
<th></th>
<th>Final Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Post-test 1</td>
<td>Post-test 2</td>
<td>Posttes 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Sig.</td>
<td>Mean</td>
</tr>
<tr>
<td>Flipped Classroom</td>
<td>29</td>
<td>69.66</td>
<td>0.367</td>
<td>77.59</td>
</tr>
<tr>
<td>Conventional</td>
<td>29</td>
<td>61.72</td>
<td>0.90</td>
<td>66.90</td>
</tr>
</tbody>
</table>

On the KKPI Quiz on Moodle Mobile

The students in the experimental group do the assignment and quiz in the classroom, while students in the control group do the quiz in the classroom, while outside of classroom the students do the assignment.

Picture 4. Tutorial Video on Moodle Mobile

Picture 5. KKPI Quiz on Moodle Mobile

Picture 6. Cognitive Competence Differences of Experiment and Control Group
Based on the research result, the pre-test score was 40.21, after using flipped classroom method with moodle mobile based on android, the post-test score was 83.03. The score increased 42.82 after treatment. The pre-test score was 42.55, after using conventional method with moodle mobile based on android, the post-test score was 74.62. The score has increased 32.07.

Influence difference of flipped classroom and conventional method is 42.82 - 32.07 = 10.75, and mean on the post-test of experimental group is higher than control group, also the probability is smaller than 0.05, the conclusion is the flipped classroom using moodle mobile based on android more influential than conventional method using moodle mobile based on android in the cognitive competences of student of remembering, understanding, and applying on KKPI course.

Research by Sudarmin, Muhamad Taufiq, Parmin, and Regilita Annisetyas (2016), the research was conducted for 3 meetings, the teachers of ≥ 80% have pass in understanding, identifying the media type, appropriate media selection, how to make a media study card, and applying conservation soft skills in learning.

The treatment was done for 3 times learning, it was in the form of treatment repetition for 3 times learning. It provided a better cognitive competences result, this treatment in is accordance with the theory of connectionism that learning is formation between stimulus and response, and repetition of the experiences can increase the chance of right response (Hergenhahn, 2008:60), the right response can provide the better cognitive competences result.

The success treatment in the students also is proven by research by M. Elfin Noor, Wahyu Hardianto, and Hari Wibawanto (2017) that using e-learning with project based learning, Research by Sumarni, Wardani, Sudarmin, and Gupitasari (2016) that using Project Based Learning method to increase students’ psychomotorism in chemistry learning, other research by Ninok Eyiz Sumianingrum, Hari Wibawanto, and Haryono (2017) using e-learning with Discovery Learning method.

**CONCLUSION**

Based on the result and discussion, as well as the research purpose, there are three conclusions, namely (1) learning using moodle mobile based on android was conducted for 3 times learning and one meeting for final test, learning content include e-book, tutorial video, discussion forum, and quiz, (2) there was significant difference between flipped classroom method and conventional method using moodle mobile based on android, (3) the flipped classroom method provided the cognitive competence of students better than conventional method of operating MySQL database.

**REFERENCES**


