Blended and face-to-face learning on lecturing in elementary school teacher education

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Abstract. In this study, a blended learning model was designed for elementary school teacher educations in Universitas Pendidikan Indonesia Kampus Tasikmalaya. Students learned both from internet by using YouTube platform and face-to-face course. YouTube and online learning system that usually used in Universitas Pendidikan Indonesia was chosen for learning platform which can facilitate learning through texts, tests, assignments, and videos that made by lecturer itself. This research aims to determine the effects of face-to-face and blended learning model on the result and the student’s attitudes, opinions and perceptions on blended learning. This study used a combination design of both qualitative and quantitative methods. There were two different groups in this study, face-to-face group and blended learning group. The face-to-face learning group and the blended learning group consisted of 40 and 40 students. The face-to-face group conducted face-to-face lectures as usual for 16 meetings. Meanwhile, the blended learning group conducted lectures in an integrated model both face-to-face as well as online lectures through YouTube platform. The results showed that the blended learning group was more effective than the face-to-face group. The usability of face-to-face learning and blended learning in higher education is addressed in recommendations for future research and practice.

1. Introduction
Internet usage becomes more popular and important in recent year. It has penetrated many aspects of life, including communication, work space, how people interact, and also how people learn. In education, especially on lecturing in higher education, the use of internet is rapidly growing. No wonder, internet provides various learning styles, such as read-write, visual, aural, also facilitate independent and collaborative learning. Chulkov study stated that the availability of online and electronic textbook and resources is on the rise [1]. Technological benefits, such as reducing costs of education, simplicity, and usages of informational technology lead to increased interest of online and electronic textbook especially on higher education. Since 2015, instruction and lecture at Universitas Pendidikan Indonesia Kampus Tasikmalaya has been initiated to use an integrated digital and online learning platform through the online learning system called SPOT that integrated with Universitas Pendidikan Indonesia, Bandung. To implement it, a learning model is needed that combines face-to-face meetings and online material, one of which is the Blended Learning Model. The Blended Learning Model utilizes various platforms to provide learning content to students. Information technology ability and access may affect student’s ability to engage in the online environment [2]. So, the tools and services that can be accessed easily by the student must be chosen. SPOT and YouTube was chosen. SPOT (Sistem Pembelajaran Online Terpadu) is an academic platform that facilitated by the university to conduct lecture online, which can
facilitate learning through texts, tests, assignments, and videos that made by lecturer itself. Especially for videos, SPOT uses YouTube link, attached in its platform. For this reason, lecturer can provide online learning by using SPOT and YouTube. Also, university provides free-access wireless connection in entire campus environment, especially in the classrooms, laboratories, library, and free-spaces. So, students can access online environment easily, as long as they are in campus. Consequently, this research compares the effects of blended and face-to-face learning approach on lecturing in elementary school teacher education. This research aims to determine the effects of face-to-face and blended learning model on the result and the student’s attitudes, opinions and perceptions on blended learning.

In addition, face-to-face learning still has its teaching roles. Some studies compare online, e-learning and face-to-face learning [3-6]. Nevertheless, only a few studies discuss and compare blended learning and face-to-face learning on lecturing in elementary school teacher education. In this study, lecturing in elementary school teacher education using both blended learning and face-to-face learning. So, student can learn by online mode, traditional mode, and mix of them. Face-to-face is a common teaching style in Universitas Pendidikan Indonesia Kampus Tasikmalaya, meanwhile blended learning uses face-to-face and online or digital resources. Student usually uses online platform, which facilitated by the university, from college contract, academic guidance, until they check their marks. In this condition, student has to use informational technologies, such as internet-connected computer, gadget, or computer laboratory. Simply conclude that they always interact with informational technologies and use it for daily life, because they have to. Without informational technology, they cannot access multiple services in academic life, which is also shaped into an online academic environment. Historically, since development of distant learning is considered, primarily there was one-way communication such as radio, television, and so on. Recently, the advances in technology brought about computer and web-based education [7]. Chuang et al. study stated that internet-based instruction has been widely spread on the internet in recent years [8]. In the internet-based learning environments, students may have a variety of new learning opportunities. However, not everyone, including students and lecturers, responds well to these technological developments. Students still need direct meetings with lecturers. Bicen et al. states digital learning generally consists of resources that meet certain educational goals, with each resource facilitating the acquisition of concepts that must be learned [9]. The blended learning combines online theoretical content with direct practical applications, and facilitates learning styles that are diverse both visual, aural, literary, and kinesthetic [10]. Technology has changed the learning paradigm by raising various assumptions about changes in learning for students, assumptions about learning design and emotional assumptions or psychology of educators and students. Competition increasing so fast is a challenge that must be faced by generations born in the 21st century, they were born during a period of technological openness, ways of thinking, behaving, and the availability of educational facilities that are far more effective and efficient and paperless than the previous generation. Their characteristics have high skills and digital literacy in accessing and absorbing information so that they have more and more open opportunities to develop themselves. Blended learning model combines the different advantages of face-to-face education and online learning to ensure an effective learning environment is provided to the students [11]. Shachar and Neumann provided evidence that students in a distance learning setting outperform their counterparts in traditional learning environments [12]. For this reason, blended learning model can be used to be a solution to provide students to access online learning for the first time. Lapsley et al. investigated the online learning and classroom-based learning of an undergraduate course in human resources [3]. Blended learning consists of blended words (combination/mix) and learning (learning). Another term that is often used is a hybrid course. Original meaning as well as the most common blended learning refers to learning that combines or mixes face-to-face learning and computer-based learning (online and offline). Thorne describes the Blended Learning Model as “It represents an opportunity to integrate innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning” [13]. While Bersin defines the Blended Learning Model as: “the combination of different media training (technologies, activities, and types of events) to create an optimum training program for a specific audience [14]. The term blended means that traditional instructor-led training is being supplemented with other electronic formats. In the context of this book,
blended learning programs use many different forms of e-learning, perhaps complemented with instructional training and other live formats". The term blended learning was originally used to describe courses that tried to combine face-to-face learning with online learning.

This study stated that equal lecture provided in both learning approaches, learners using the online approach performed better than the classroom-based learners. Also, this study showed that blended learning is effective in improving learning outcomes and reducing dropout rates. Lopez-Perez et al. study stated the student’s positive perceptions of blended learning were interrelated with improving their learning outcomes [15]. The use of technology and information in the field of education gives a lot of influence in the learning process, there is a tendency to: (a) shift education from teacher-centered learning systems to student-centered students; (b) growing and increasingly popular in open or distance education (c) more and more choices of available learning resources [16]. With the development of information technology teachers can provide services or facilitate without having to deal directly with students, as well as students, can obtain information in a wide scope from various sources through virtual space using computers or the internet. This study aims to determine the effects of face-to-face and blended learning model on the result and the student’s attitudes, opinions and perceptions on blended learning.

2. Methods
This study used a combined two approaches, both quantitative and qualitative. The quantitative method consisted of exams that held in mid-term and end-term exams. The qualitative method consisted of interview and participatory observation.

2.1. Setting
This study was carried out at Universitas Pendidikan Indonesia Kampus Tasikmalaya. This study used Sistem Pembelajaran Online Terpadu (SPOT), which is an online learning platform that carried out at Pendidikan Guru Sekolah Dasar, Universitas Pendidikan Indonesia Kampus Tasikmalaya.

2.2. Participants
The study population was students of Pendidikan Guru Sekolah Dasar in Universitas Pendidikan Indonesia Kampus Tasikmalaya semester 4 on academic year 2017-2018. Of the 189 students, 80 volunteered to participate in this study, divided into two classes. One class using face-to-face learning, amounted 40 students, while one class using blended learning, amounted 40 students. Both classes carried out lectures for 16 meetings, consisting of 14 lectures and 2 meetings for examinations. The face-to-face learning class carries out lectures face-to-face as regular. Meanwhile, the blended learning class conducts 7 meetings for face-to-face lectures and 7 meetings for online lectures through SPOT, as well as 2 meetings for examinations also through SPOT exam.

According to Fraenkel and Wallen, there are no specific rules for determining the size of a group in experimental research [17]. In order to determine whether or not the GPA of students in each group affected the results of the study, and, if it was necessary to form new groups, the GPA of students in each group was tested using homogeneity test.

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| .473             | 1   | 78  | .494 |

As seen from Table 1, p-value = 0.494 > 0.05, it can be claimed that groups were appropriate and homogeneous for an experimental study.
2.3. Preparation
At beginning, the lecturer prepares teaching materials, materials, and learning media that will be used before the lecture begins. This preparation is allocated for one semester of lectures. Teaching materials, materials, and learning media that have been prepared are then converted into digital form, there are PDF (portable document format), PPT (power point), DOC (word document), and learning videos (upload via YouTube). All learning resources, materials, and instructional media are inputted to spot.upi.edu. Except for learning videos, upload them to YouTube first through the available or laboratory YouTube channel. After uploading, the video link is attached to the attachment on SPOT. When it’s attached, SPOT will shows the thumbnail that easy to determine which videos are needed.

Meanwhile the group face-to-face learning does not need to use an online platform. Lecturers simply print and copy the instructional tools needed for one semester of lectures.

2.4. Application
The face-to-face learning group conducts face-to-face lectures between students and lecturer for 14 meetings and 2 meetings for examinations. Learning tools used are textbooks, teaching materials, assignments, and instructional media. The method used is expository, discussion and seminar. Midterm exam and end term semester exam were held according to schedule.

Blended learning groups conduct 7 face-to-face lectures, 7 online lectures through SPOT, and 2 meetings for examinations. Exams are carried out through SPOT. There are three online meetings used learning videos uploaded on YouTube, while the rest used slide presentations and portable document format.

2.5. Data collection and analysis
Data collected in the form of observations, interviews, and test scores. Observation sheets and interviews are used to carry out qualitative stage. Observation sheets and interviews are made to help researchers collect data. The main instrument for this qualitative stage is the researcher himself.

Observation sheets are used to make it easier for researchers to note and record conditions during the lecture, both in face-to-face groups and blended learning groups. The indicators observed were the activities and attitudes of students when attending lecture. For example the intensity of expressing opinions, perceptions, and attitudes when the discussion took place.

Interviews were used to explore in-depth information from research participants about their experiences of the learning process, both in the face-to-face learning group and the blended learning group. These interviews are semi-structured, and include not leading questions. The experiences of participants who are excavated are their opinions and perceptions of learning. The exam results are used for the quantitative research stage at the end of the lecture. The instrument used is a test. This test has been validated by three lecturers of allied lectures. Research data analysis was carried out to answer the formulation of the problem, namely the learning outcomes, perceptions, opinions, and attitudes of the participants towards the application of face-to-face learning and blended learning in lectures in elementary school teacher education.

3. Results and discussion

3.1. Perceptions and opinions of participants about face-to-face learning and blended learning
Perceptions and opinions of participants about face-to-face learning and blended learning are taken from the analysis of interview results. Based on interviews, the group face-to-face learning suggests that learning is meaningful because it is more interactive in the classroom. Learning takes place as communication goes on. So, direct communication must run smoothly so that each student gets the opportunity to interact. This statement is dual, positive or negative. That is, students who are active in direct communication get more benefits than those who don't.

Meanwhile, blended learning groups suggest that the most important advantage in blended learning is that they can repeat learning anytime and anywhere. They can even play learning videos when they
are traveling from home to campus, even when they are at home. In addition, they do not need to carry a thick printed book, so there is no need to bother carrying heavy textbooks. When meeting face-to-face they also bring a laptop or gadget. When the discussion takes place, everyone has the same opportunity to express opinions, questions, and communicate directly with the lecturer through private chat in SPOT, if they are too embarrassed to ask questions in the forum.

Unlike online learning, e-learning, or digital learning that requires supporting tools that are not small, expensive, even difficult to obtain, blended learning can be done simply by using the facilities and tools owned by students themselves. In addition, online supporting standard facilities are available at university, such as computer laboratories, internet networks and free wireless connections throughout the campus environment.

After completing the study, the researchers asked the student several questions through face-to-face and online interviews in order to find out their opinions on the study. The student interview analyses were used to capture the general views of students towards using blended learning environment. The responses of students’ were regarded and listed according to their subjects.

In response to the question ‘What are the advantages of using SPOT and YouTube in lectures?’ blended learning group declared ‘One of the advantages is repeated feature on videos, so we can repeat the course when we needed’. A student of this group also declared ‘I’d like prefer to use video for learning than read’. Other student declared ‘I can ask lecturer privately to get more information about the lectures’. So, the advantages of using SPOT and YouTube in lectures is its audio-visual presentation and privacy of the student.

In response to the question ‘How did you communicate with lecturer and other student?’ face-to-face group declared ‘I can ask lecturer and my classmates spontaneously’. A student of this group also declared ‘It’s better to get face-to-face conversation than online forum’. Besides, the blended group declared that ‘By using SPOT forum and YouTube, our gadgets and computers are more useful, and it feels comfortable when we learn without any paper that may lost or teared’. So, the face to face group is more frequently communicated spontaneously than blended group. But also, blended group communicated privately and learn more safely (for being lost their notes because it’s saved online).

3.2. Participant’s attitude about face-to-face learning and blended learning

The students, in blended group, showed more positive perceptions compared to the students in the face-to-face group. This proved that following pre-done lectures in required time eased learning and whiteboard applications in the traditional class environment eased lecturing. According to these results, one could argue that teaching approach, both blended learning and face-to-face learning is not affected with the exception of some student’s perceptions on working in an online environment.

In order to find statistical difference before and after studying, measures ANOVA were carried out. From pre-test to post-test, ANOVA results revealed a significant gain in attitudes (F = 16.729, p < 0.001) for both face-to-face and blended groups. The students’ attitudes post-test score (M = 3.87, SD = 0.47) was significantly higher than the students’ attitudes pre-test score (M = 3.53, SD = 0.49). This result demonstrates that face-to-face and blended learning approaches both affected students’ attitudes. In addition, the results of measures ANOVA, based on groups, revealed a significant interaction for the attitudes score difference from pre-test to post-test. The blended group gained significantly more positive attitudes (F = 5270.94, p < 0.05) from pre-test to post-test than the face-to-face group.
Figure 1. Pre-test to post-test.

Post hoc results indicated that students in the blended group scored significantly higher on their attitudes post-test score ($M = 3.87, SD = 0.42$) than the face-to-face group ($M = 3.77, SD = 0.52$). This result indicates those students’ works and attitude were affected variously by face-to-face and blended learning. It is understood that the blended group’s perceptions, who gained a greater acquisition before the experiment, had more effects on increasing students’ attitudes compared to the face-to-face group.

Based on this result, similarly with Lopez-Perez et al. that implied the students, who attend blended learning activities, have positive effects at raising their marks for the exams [15]. However, Kose implied that a combination of face-to-face education and online provided better teaching and learning experiences for the students [11]. Therefore, the blended learning can be claimed more effective in elementary teacher education.

Overall, both groups attitude increased at the end of the study. Another important result revealed by the study was that the students studying in the blended group, scored higher in their attitudes than those studying in the face-to-face group. As in Lopez-Perez et al. implied that studying in blended learning was found to be more successful in many studies in literature [15]. So, the blended learning can be claimed more effective than the face-to-face learning.

Also, both groups have more positive perceptions of learning. Whatever the approaches, blended or face-to-face did not change their perceptions. However, the perceptions of the student, who study with a blended learning, are more positive compared to those of face-to-face group students. Lopez-Perez et al. identified that blended learning students have more positive perceptions [15].

The results of the students’ interviews confirmed that the students, studying with a face-to-face learning, have an advantage of receiving feedback just in time from the lecturer in the classroom compared to students using the blended learning. This was happen as the blended group were faced with internet problems creating difficulties and disrupting their learning.

Bicen et al. stated that speed of the internet is very important. In addition, the students in the blended learning group kept losing their motivation due to the problems occurred during the lectures [9]. However, the blended learning students were able to resolve these problems in the class environment with the instructors. The mutual vision of both groups demonstrated that it could be more effective when blended learning was used in lectures. The interactivity of the environment was the main reason for their success. This results show us the most important benefit of blended learning.

4. Conclusion
Perceptions, opinions, and attitudes of students towards blended learning are higher than face-to-face learning. Learning outcomes students who apply blended learning are higher than face-to-face learning. The implication of this research is the application of blended learning as an initial step towards online learning. Furthermore, research on the application of online learning needs to be implemented in the future. The urgency is that the development of academic quality needs to be improved in the face of
opportunities and challenges in the future, for example preparing students to face the Industrial Revolution 4.0, Era of Disruption, Digital Learning, and other futuristic issues. As like as in every study, there were some limitations of this study. The first limitation was the fact that only elementary teacher education was surveyed. Nevertheless, it is our suggestion that any further study in this area should include different departments in higher education so that more elaborate analyses can be performed. It concluded that the blended learning is useful for anyone interested to trying an online environment for learning. Application of blended learning is recommended for the implementation of lectures. This research hopefully can be a reference for further research on the development of special teaching materials for blended learning, methods of evaluating learning outcomes, and the like.

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