Blended learning with schoology in learning macromedia flash-based instructional media

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Abstract. Macromedia Flash, one of ICT program, is an animation program that can be explored to design instructional media. However, time allocation in the class is not sufficient to facilitate students for understanding how to design and work with Macromedia Flash. Blended learning is carried out to facilitate student learning in the classroom and online class. Online class is using Schoology as learning platform so that students can learn anytime and anywhere. This study aims to describe how the process of blended learning using Schoology in teaching Macromedia Flash-based instructional media for mathematics education students of Universitas PGRI Palembang and how students’ responses. Qualitative and quantitative descriptive research method is used. Data was analyzed from documentation, questionnaire, and interviewing. The results show that blended learning using Schoology can be employed by students to learn, practice, and discuss material of Macromedia Flash-based instructional media from inside and outside class. It also facilitated students to collect their task. Most of students can produce Macromedia Flash-based instructional creatively. Students give very good response to the implementation of blended learning using Schoology about 82.19%.

1. Introduction
In the Industrial Revolution Era 4.0, the development of information and communication technology (ICT) is rapidly increasing and has a considerable impact on the world of education. This encourages higher education to innovate and improve the learning quality continuously in order to generate graduates who master their fields. One of the abilities that must be mastered by mathematics education students as teacher candidates are able to design ICT-based instructional media. In [1, 2, 3], it is said that the mastery and the integration of ICT in the learning process is an obligation for teachers in managing learning. For that reason, one of the materials taught to them is to design instructional media based on Macromedia Flash.

Macromedia Flash as an ICT can be explored and utilized as mathematics instructional media. It is a program used to process vector images, animations, and also imported bitmap images, sound objects and avi objects [4]. This is in line with the opinion of [5, 6] that this program can display information in the form of images, writing, and animation so that students are more interested in participating in learning mathematics. Unfortunately, learning this Macromedia flash requires practice that takes a lot of time especially for beginners. It is based on experience in teaching ICT course last year. Some students admit that they lacked of mastering Macromedia Flash. Sometimes students were not careful when inputting the action script so that the program is not running. They need to double-check what is causing it. This causes learning in the classroom is considered insufficient to accommodate it.
Therefore, the lecturer must facilitate students’ needs by implementing learning which can cope with this problem.

Lecturers, as one of the spearheads in producing good quality graduates, must improve the quality of learning by utilizing existing technology. According to [7], with the development of ICT use, there are five shifts in the learning process, namely from training to appearance, from classrooms to where and whenever, from paper to online, from physical facilities to network facilities, and from cycle time to time real. It is in line with suggestion of [8] that the world of education with utilizing latest technology can conduct an online-based learning strategy or commonly called as online learning. Before implementation online learning, lecture can start learning with combination of online and offline learning. One way that can be carried out is to provide learning experiences through blended learning.

Blended learning is an innovative approach in the world of education [9]. It was further explained that blended learning is an innovative concept that has the advantage of face-to-face learning in class and ICT-supported learning including offline and online learning. The same opinion was also conveyed [10], blended learning is a combination of face-to-face / traditional learning models with online learning, utilizing technology-based learning media where all participants are sometimes separated by distance. According to Carman in [11], there are five keys to implementing blended learning, namely: live event (face-to-face learning); self-paced learning, (combining with independent learning that allows participants to learn anytime and anywhere online); collaboration (there is collaboration between teachers and collaboration between students); assessment; and performance support materials, materials can be accessed by students both offline and online. In this research, e-learning is done by utilizing web Schoology.

Schoology is one of programs which are free and popular Learning Management System (LMS) platform worldwide [12]. It is one of the LMS which provides facilities for lecturer and students to interact with each other and also exchange information via online [13]. One hand, students are allowed to download instructional material, video tutorials, online discussions, submit the assignment from lecture/teacher, and take online quiz and exams. On the other hand, the lecturer has the report of student data, can convey online instruction within blended learning, provide the facility for discussion, give assignments, and collect it easily.

The study of blended learning was written by [9, 11, 12, 14]. First, the study is about blended learning as an innovative approach. Second, the suggestion from this study is that lecturers can conduct blended learning using other programs besides Edmodo. Third, student responses that Schoology helped them to learn calculus material, do the tasks before entering the class, and facilitate them to submit the tasks. Fourth, blended learning in higher education can improve student performance and focus more on achieving the objectives of each activity.

Based on the description above, this study aims to describe how the process of blended learning using Schoology in teaching Macromedia Flash-based instructional media for mathematics education students of Universitas PGRI Palembang. It is also to describe how students’ responses to this learning.

2. Method

This study was conducted using a qualitative and quantitative descriptive method. It was focused on 28 mathematics education students of the sixth semester in Universitas PGRI Palembang, academic year 2018/2019, as research subjects. Data were analyzed from documentation, questionnaire, and interviews. Documentations are about display of Schoology for teaching Macromedia Flash-based instructional media, students’ activity there, and products they have made. The questionnaire was used to know how student response to blended learning using Schoology in producing Macromedia Flash-based instructional media and data was confirmed by interviewing students. The questionnaire is modified from [15] and calculated in percentage. The percentage of students’ responses was interpreted following the modification of category [16].
3. Result and Discussion

3.1. Online Learning Preparation

Blended learning is learning that combines face-to-face learning (face to face) and virtual learning or internet-based learning (e-learning) [10, 11, 17, 18]. For online learning using Schoology, the lecturer creates Schoology classes by providing usernames and passwords for students to be used to log in to a Schoology account. The lecturer provides material in the form of Macromedia Flash, create student discussion forums and assign assignments for each material, while for video tutorials uploaded on google drive. The display of material about designing Macromedia flash-based instructional media in Schoology can be seen below.

![Image](image_url)

**Figure 1.** The display of material in Schoology.

Figure 1 shows that the lecturer gives the software file of Macromedia Flash 8 before the first meeting. The display picture in the top left corner is a cover of the tutorial book of design instructional media with Macromedia Flash. This book is used in virtual learning. Other material and tasks are uploaded before or after each meeting. Video tutorial recorded by Camtasia Studio is also a source of learning and uploaded in google drive. For this course, Schoology features are not explored optimally such as upload video, grade book, and attendance.

3.2. Face to Face Learning

This research took place for 3 meetings which were enrolled by 28 students as subject of this study. In face to face learning, students is given a tutorial book as instructional material in recognizing the features in macromedia flash and how to apply it to make instructional media. The picture of this book can be seen in Figure 2.
Figure 2 on the left displays the cover of book entitled Designing Instructional Media With Macromedia Flash 8. This book is written by researcher as a guide for student in learning how to produce instructional media using Macromedia Flash. The right one displays of some chapters in this book.

The first meeting was held on 11 April 2019. Before learning began the questionnaire was given to learn independence first. The material at the first meeting was the introduction of Macromedia Flash 8 and made a log-in page using Macromedia Flash 8. Learning activities at the first meeting were carried out according to plan, but learning proceeded slowly because students had never learned Macromedia Flash. Researchers provided information that online learning could be accessed on a Schoology account with each username and password. Students can conduct discussions and learn more material that has been studied in class and can watch videos uploaded on Google Drive. For the first meeting, students work on assignments that will be collected on a Schoology account.

The second meeting was held on 18 April 2019 with learning material making pages of material on Macromedia Flash. Learning activities at the second meeting were carried out according to plan, students began to get used to learning using Macromedia Flash, in addition to tutorial book that are used as learning resources to create material pages on Macromedia Flash, students can view video tutorials, and can discuss with friends and lecturers through Schoology.

The third meeting was held on 25 April 2019 with learning material making multiple-choice questions with Macromedia Flash 8. Learning activities at the third meeting were carried out according to plan. Students began to complete the assignments they had made from the beginning to be collected as independent assignments in Schoology.

3.3. Online Learning

Students log in to a Schoology account using the username and password that has been given, study the available material, and discuss each other about learning and assignments given. While researchers monitor student activity in online learning, including student participation and student activity to discuss and collect assignments through web Schoology. Display discussion in Schoology can be seen in Figure 3, while the collection of assignments can be seen in Figure 4.

The third meeting was held on 25 April 2019 with learning material making multiple-choice questions with Macromedia Flash 8. Learning activities at the third meeting were carried out according to plan, students began to complete the assignments they had made from the beginning to be collected as independent assignments in Schoology.
Figure 3. Online discussion between students.

Figure 3 shows one of student discussion in Schoology. Era Dona Safitri ask about her problem in checking syntax error whereas she already input action script according to table, student identity number, and subject with capital letter. Two other students give responses to her question. First, Akhamd Sumbandari give an explanation and suggestion that she should input action script with small letters and capital letters that is similar to the name of variables used (name, student identity number, and subject) in the field box. It turns out Dewi Septiani asking the solution of the same problem with Era. Era comments Dewi’s question that it is already explained by Akhmad and also repeated Akhmad’s explanation. In Schoology, students can discuss outside of campus to learn together and can help each other [11, 18]. Another feature in Schoology can be seen in Figure 4.

Figure 4. Collection of tasks in Schoology.

Figure 4 shows the submission task given by lecture. It ease lecture to collect students’ assignments which is Macromedia Flash-based instructional media. This benefit is also said by students in research conducted by [11]. Moreover, There gives lecture the information whether student collect it on time or late and the information of the number of students who have submitted the assignment.
3.4. Students’ Responses to Blended Learning

After three meetings, students are given a questionnaire about their responses to the implementation of blended learning using Schoology in teaching Macromedia Flash-based instructional media. Student responses to blended learning using Schoology in teaching Macromedia Flash-based instructional media focused on four aspects. Three aspects are based on Keller's motivation theory namely attention, relevance, and confidence, and one aspect about literacy towards ICT [11]. The recapitulation of students' responses is presented in Table 1.

Table 1. Students' responses to blended learning using Schoology in learning Macromedia Flash-based instructional media.

|                                | Percentage (%) |
|--------------------------------|----------------|
| **Attention**                  |                |
| I am happy when learning takes  | 87.86          |
| advantage of ICT like blended  |                |
| learning using Schoology       |                |
| I have already enrolled blended | 85             |
| learning (the combination of  |                |
| online and face-to-face, e.g.  |                |
| searching information online   |                |
| or discussing through social   |                |
| network: facebook, line, or    |                |
| through a blog, email, Schoology, Moodle, etc.) and I am fond of it. | |
| Regardless of whether it suits | 84.28          |
| me or not, I want to take part |                |
| in learning that combines      |                |
| online and face-to-face.       |                |
| Learning on material “Producing | 81.43          |
| Macromedia Flash-Based Instructional Media” by implementing blended learning with Schoology is innovative and fun learning. | |
| **Relevance**                  |                |
| ICT-based learning (like       | 85             |
| Schoology program) relevant to |                |
| present life.                  |                |
| The future learning tends to   |                |
| be ICT-based instruction so    |                |
| learning on material “Producing |                |
| Macromedia Flash-Based          |                |
| Instructional Media” by        |                |
| implementing blended learning   |                |
| with Schoology is very         | 86.43          |
| suitable and useful.           |                |
| Now it is time for learning    |                |
| innovation to be directed at   |                |
| the use of ICT because the     | 86.43          |
| tools already exist and it has  |                |
| high potential to facilitate   |                |
| learning.                      |                |
| **Confidence**                 |                |
| Learning that is partly        | 42.86          |
| conducted online (through      |                |
| Schoology including tutorial   |                |
| video) will only keep me busy  |                |
| and not enough to help me to   |                |
| learn.                         |                |
| Online discussion through       | 42.14          |
| Schoology increase discusses   |                |
| activity since it can be       |                |
| carried on different times and | 82.86          |
| places.                        |                |
| Blended learning using         | 82.86          |
| Schoology makes me confused.   |                |
| Learning of combination of      |                |
| online and face-to-face will    | 82.14          |
| acceptable, providing that it   |                |
| is designed well.              |                |
| **Literacy on The Internet/Schoology** |                |
| I am used to using the internet | 80.71          |
| in my daily activity.          |                |
| I am used to using the social   | 77.14          |
| network in learning.           |                |
| I am used to searching for      |                |
| information from the internet   | 87.86          |
| and reading online course       |                |
| material.                      |                |

Table 1 reveals that students are happy when learning takes advantage of ICT like blended learning using Schoology and are used to searching information from the internet and reading online courses material with the highest percentage response about 87.86%. The lowest response is 42.86% for the statement that online learning partly will only keep me busy and not enough help them to learn. It means that average students almost neutral or undecided about the statement. Meanwhile, from interviewing students, they admit that Schoology helps them to accomplish the assignment by discussing and asking the lecturer and other friends if there are difficulties through the discussion forum at Schoology. Blended learning is running very well. It can be seen by solving the obstacles...
problems that they do not understand. Students stated that they can ask questions and discuss anytime and anywhere with the help of Schoology discussion forums so that learning can be broader and not only limited to face to face in the class. In addition, the feature of task submission in Schoology can make students more discipline in the submission task because of deadlines that have been made by a lecturer. This is in line with the results of the study [14] that the discipline of students in submitting assignments is more on time when compared to submitting directly or via email.

4. Conclusion
The results show that blended learning using Schoology can be employed by students to learn, practice, and discuss the material of Macromedia Flash-based instructional media from inside and outside class. It also facilitated students to submitting their task and become more discipline of it. Most of the students can produce Macromedia Flash-based instructional creatively. Students give a very good response to the implementation of blended learning using Schoology about 82.19%.

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