# BLENDED LEARNING-BASED MEDIA USAGE
# TO PRACTICE PROBLEM SOLVING SKILLS

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**Abstract:**
The pace of information technology is a hallmark of the lives of knowledgeable people. Knowledgeable communities have the characteristics of 21st century skills. The speed of information is utilized in education through blended learning. This research develops blended learning based media by using Edmodo. Edmodo facilitates teachers and students in online learning, especially in this study about the facts of environmental pollution. The development of learning media based on blended learning was carried out with the ADDIE development model with a sample of research being students of class VII of SMP 1 Simpang Empat. The results of the study showed that media based on blended learning had a significant impact on students' problem solving skills.

**Keywords:** media, blended learning, problem solving skills

## 1. Introduction

Today's society is called a knowledgeable community with 21st century skills as a feature of their lives. Knowledge society cannot be separated from the fast information or knowledge that is circulating in the midst of society through technological assistance, especially the internet. The development of internet usage continues to increase. Through the internet, a lot of information can be given and obtained. According to the

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Ministry of Communication and Information (Kominfo), Indonesia ranks 6th in the world of internet users after China, the US, India, Brazil and Japan. Indonesian internet users reach 123,000,000, 40% of internet users are social media enthusiasts (Yudhianto, 2017).

The use of the internet is very high in Indonesia in line with the regulation of the Minister of Education number 38 of 2008 concerning the use of information technology in the national education environment on learning content and teaching materials according to the standards of the national education standard body (BSNP). The use of technology, especially the internet in learning, is known as blended learning. Blended learning combines online classes and offline classes.

Blended learning is able to accommodate the objectives of the 2013 curriculum which is to train 21st century skills. Among 21st century skills are technology literacy skills and information and problem solving skills.

The 2013 curriculum on environmental pollution material aims at students being able to provide ideas about solving environmental pollution problems. Students must get the facts of environmental pollution so they can solve environmental pollution problems. Short learning time does not allow the teacher to bring students to the field to witness firsthand the facts of environmental pollution.

The blended learning media using the Edmodo web is able to provide an overview of the facts of environmental pollution through video. Easy and fast information through blended learning also makes it easier for students to find and choose the right source of information.

## 1.1 Blended Learning Based Media

The development of technology, especially the internet, is very fast; this affects the world of education. The internet can be used as a learning media. The internet can be used as a learning media. The advantage of using media as a medium is that students are easy to access. In addition to that, students are also not limited to space and time, with this media the material can be studied anywhere and anytime (Astra et al, 2012).

Social media that is familiar with students is able to be used as a learning medium (Stice, 1987). Social webs like Facebook, YouTube, can be used as learning media because the web is very familiar among students (Gray and Tobin, 2010).

Edmodo is a learning web that is able to upload status, photos, videos such as Facebook that is great with students. Edmodo is also equipped with online file upload and quiz skills that are equipped with live assessments. The look of Edmodo, which is like Facebook, is easier to use for peseta students because they are already familiar with the look of Facebook. Adjustment of its use is easily understood by students, so that teachers only need to direct and learners are easier to use.

Use of Edmodo web media in online learning and discuss solutions to problems in offline learning. Learning that combines online and offline learning is called Blended learning. Blended learning is a new trend in the world of education (Weltering et al., 2009). The mix between online and face to face is 30% -80% online and 70% -20% face to face (Avgerinou, 2008).

Blended learning is divided into three models, namely the web course, the Web centric course, and the Web enhance course. Web course is the use of the internet that dominates in learning and almost no face to face except very little proportion. The web centric course is an almost balanced use of the internet and face-to-face, where students are asked to find other sources of information using the internet. The web centric course model is more effective than the other two models, while the web enhance course is used very little by the internet to support enrichment only (Rusman et al, 2012). This study uses a web centric course.

Blended learning based learning that requires students to be active and learning to focus on these students supports students to explore information from various sources, especially through the internet. This fast and easy information search facility will shape learning independence and train the ability to think higher (Suarsana & Mahayukti, 2013). Blended learning has the potential to train and improve high-level thinking skills, learning outcomes, collaborative learning and quality learning (Donnelly, 2010).

## 1.2 Problem Solving Skills

Problem solving skills are basic human activities. Practicing and teaching students to solve problems makes students more analytical in making decisions in their lives (Hertavi, et al., 2010). Problem solving skills have been recognized as important skills and are one of the characteristics possessed by knowledgeable communities. Problem solving skills are also one of the skills that must be trained in students to face the 21st century.

The thing that becomes very important in solving problems is the existence of a variety of information that is owned by students either through experiments or reading. The internet provides facilities in finding information in a fast time. Although the internet provides a variety of information in a fast time but it should be noted the accuracy of the selection of information for the problems being discussed.

The problems raised by the teacher are expected to be able to attract the attention of students and motivate them to solve the problems given (Fahmi, 2016). The problems given are also expected to be able to integrate various concepts and knowledge, so as to be able to train other than other skills. As explained by Fatimah (2012) and Af'idayani et al. (2018) that in learning that trains and improves problem solving skills, students will also be trained to think critically and creatively in triggering the right solution of the problems presented. Besides being trained in critical and creative thinking, searching for information from various sources including the internet will also train students' independence.

## 2. Methods

Blended learning-based media are developed using the ADDIE development model. Blended learning-based media are developed according to the objectives and research needs analysis. The device is designed using a problem-based learning model. Blended

learning based media is validated by 5 expert validators in their fields and tested through the stages of development.

The population of this study was students of Simpang Empat 1 Public Middle School. The number of research samples for VIIB class is 24 students. Research time was 3 weeks.

Data on thinking skills of problem solving for students who are collected are analyzed and taken the average value of each indicator thinking about problem solving by averaging those values. The thinking skills of problem solving for students on worksheets are classified in Table 1.

**Table 1:** Classification of problem solving thinking skills categories

| Score | Category |
|---|---|
| 0 – 3,2 | Very Poor |
| 3,3 – 6,4 | Less capable |
| 6,5 – 9,6 | Fair enough |
| 9,7 – 12,8 | Able |
| 12,9 – 16 | Very capable |

(Adaptation Sunarti & Selly, 2014)

## 3. Result and Discussion

Problem solving skills in the seventh grade of junior high school are also trained and measured. The data on students' problem solving skills are shown in Table 2

**Table 2:** Data on Problem Solving for Students

| Problem Solving Indicator | Group | 1 | | | 2 | | | 3 | | | 4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Meeting | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Identifying Problems | | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 4 |
| Determining Steps for Solving Problems | | 3 | 3 | 3 | 3 | 3 | 4 | 2 | 3 | 4 | 2 | 3 | 4 |
| Searching for information | | 2 | 2 | 3 | 2 | 3 | 4 | 1 | 2 | 3 | 2 | 3 | 4 |
| Declare Solution | | 2 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 4 | 2 | 3 | 4 |
| Total | | 10 | 12 | 13 | 12 | 13 | 16 | 9 | 13 | 15 | 11 | 12 | 16 |
| Category | | Able | Able | Very capable | Able | Very capable | Very capable | Fair enough | Very capable | Very capable | Fair enough | Able | Very capable |

The results of this study show that almost all groups in each indicator experienced an upward trend except identifying problems and determining steps to solve the problem. On these indicators (identifying problems and determining steps to solve problems) 2 of the 4 groups that became the study sample tended to remain. Based on the data obtained, the indicator identifies the problem of students experiencing confusion because they consider some conditions of environmental pollution to be a natural thing they see. The indicators determine the steps to solve the problem students experience confusion about the information provided which they should consider as a problem. This happens because considering the information is not a problem and is not used to solving problems.

The use of blended learning based media that recurs every meeting with the same pattern of questions focusing on the problem and easy to find additional information actually makes students think deeply to take one complete conclusion that they will write. This is what ultimately can train problem solving skills. This is in line with (Dwi. Dkk, 2013; Sophonhiranraka, P. et al., 2015) stating that blended learning is able to improve problem solving skills beyond offline learning alone. Students are directed to give their best thoughts and knowledge in order to solve problems in the form of determining the accuracy of the information obtained, making choices and giving correct and rational opinions to the choices they make. Students are also directed to utilize all learning resources in order to get a variety of information and determine the right information, conveying ideas about environmental pollution.

The results of the research on each good indicator on the problem solving skills of the students showed an increasing trend, which meant that students did not experience difficulties in the learning process. To be able to provide solutions to the right problem in the environment pollution problem. The increasing trend in problem solving of students also shows that students have the ability to determine the right information in learning by utilizing the internet as one of the sources of information seeking. The accuracy of the selection of information is what will provide environmental pollution. This is in line with (Nurhayati et al., 2013) stating that the activeness of students in seeking information and accuracy in determining information in the teaching and learning process is able to improve critical thinking skills, creative thinking and problem solving and learning independence of students.

## 4. Conclusion

Blended learning based media using web Edmono is a learning that combines between online and offline. Researchers and teachers believe this method is able to boost problem solving skills of students, because students will be faced with problems and facilitated in finding and determining the right information in solving problems. This study proves how the increase occurred in students after learning to use blended learning based media. Quantitatively, the fact is that blended learning-based media improves students' problem solving abilities.

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