Integrating Edmodo application in science teaching and learning

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Abstract. The development of educational technology makes teachers have to integrate technology into the teaching and learning process. The purpose of this study was to determine the effect of Edmodo application of attitudes and student science achievements. The design of this study uses experimental and control class. The study sample consisted of 124 students who were divided into experimental and control class. After implementing the Edmodo application, the students were given the questionnaire to measure students' perceptions towards Edmodo application, and multiple choice questions to measure students' achievement science. Both instruments were administered to the experimental group and control group and then the results were analyzed. The data were collected using a survey and test, and then they were tabulated and analyzed using the SPSS program. The results of this study show as follows (1) The effect of Edmodo application toward students' attitude is 0.231 (2) The effect Edmodo application toward students’ science achievement is 0.478. Therefore the Edmodo application usage as a learning media affects improving students' attitude and students’ science achievement.

1. Introduction
The explosion of Information and Communication Technology (ICT) has impacted much aspect of life such as business, advertising entertainment, and education. The rise of ICT in education has changed the people paradigm within the way people work, interact, socialize, communicate, get information and learn. In education, learning has changed from the way traditional toward modern strategy. Modern strategy changed traditional classroom and transformed it into blended learning. In traditional classes, students generally do their coursework such as a writing task only on paper, getting information only reading in the library, learning indoors, much information and knowledge derived from the teacher. In modern classes, indoors and outdoors learning, freely come from various media (books, newspaper, magazine, radio, and internet), students are given more freedom to develop their competence and teachers are only facilitators [1,2].

ICT has become an important component of education in many nations. Many schools ICT is taught as a subject, and for the majority, ICT is a teaching tool. ICT can do wonders in the classroom, enhances the teaching and learning process by increasing students' motivation and helps in the explanation of difficult concepts so students' can understand those concepts easily. Integrating ICT in education is expected...
optimal output learning. One of the ICT we integrate into learning is the usage of Social Networking Sites (SNS) like Facebook, Twitter, YouTube and MySpace and Edmodo Application [1].

Edmodo Application is available at www.edmodo.com which designed for educational purposes, and there have many teachers and students who use it. Therefore, it is important to learn about student views on Edmodo. This study investigates student views on the usage of Edmodo. Why did Edmodo Application? Edmodo is a platform similar to popular SNS in which educators can safely share information, create surveys, follow up tasks and give notes, Students who are reluctant to participate in physical classrooms, fell more comfortable sharing their experience [2].

As the advantages of the platform, the students regarded Edmodo as user-friendly, practical, time-saving, funny, and motivating. Some benefits of Edmodo Application platform such as note, assignment, quiz, poll, creating a document library, share documents, files, links, commenting, and messaging, quizzes and questionnaires, online tests and connection to student’s parents [3]. There are some advantages Edmodo Application for the teacher as follows: (1) provide a lot of material and resources for teaching and learning process (2) Easy to upload and giving new material to the students (3) Can be accessed anywhere and anytime (4) Edmodo Application does not need a class, so students will get the best opportunity to improve their skill which cannot get in the large numbers of classroom (5) Teacher can handle post, quiz, assessment, and poll forum discussion and share with students in real time. There advantages Edmodo Application in the students’ opinion are: (1) Easy to share an idea because there are a chat room and forum discussion. Students can chat with friends or teacher at the same time. (2) There are a lot of material and resources such as video, powerpoint slideshow, or audio files. (3) Easy to access information and students can learn anywhere and any time they want without class or notebook. The web-based model using Edmodo is supported teaching and learning process [4,6,7]. Edmodo is also easy to integrate with all disciplines.

Integrating of ICT especially Edmodo Application in science teaching is one of the necessary alternatives. The principle of integration in the science lesson consists of (1) Orientation to the learning process, (2) The overall approach, (3) Concentration on the students. The core of integrated science learning descriptions is unifying between the concept and the scientific process as well as the individual and social science perspective [5]. In learning integration the students experience repeated exposure to interdisciplinary thinking, so learners can develop creativity, have self-confidence, can develop the thinking skills of critical, metacognitive, and have an understanding of the relationships of various disciplines.

Science materials which are integrated using Edmodo Application are Additive and Addictive. This material taught in the eighth grade Junior High School. Materials Additives and addictive substances are the integrity of chemistry, biology, and physics. The reason for choosing this additive material is to provide to the students to be able to choose foods that do not contain substances that are harmful to the health of the body so that health will always be maintained. Moreover, substances addictive substances are very dangerous for humans who consume without using the correct procedure. Learners are equipped with knowledge about additive and addictive substances so as not to fall into the association that will lead to misery. To increase the optimal understanding of the dangers of consuming addictive substances, the learning is integrated with the Edmodo Application.

Based on the description above then researched the influence of learning to use Edmodo Application on the students’ attitude toward Edmodo Application and the achievement of the science lesson. The purpose this research is to examine the effect learning to use Edmodo Application on the students’ attitude toward Edmodo Application and the achievement of the science lesson.

The hypotheses these researches are

\[ H_0 = \text{No attitude differentiate between experiment and control group toward Edmodo Application usage} \]
Hi = There is attitude differentiate between experiment and control group toward Edmodo Application usage
Ho = No differentiate in score science student achievement between experiment and control group toward Edmodo Application usage
Hi = There is differentiate in score science student achievement between experiment and control group toward Edmodo Application usage

2. Methods
2.1. Research Design
The study used quasi-experimental design consists of two groups, one group as the experimental class and the other as control class. The experiment class is a class in teaching and learning used Edmodo Application. The other groups as the control class which has not to use Edmodo Application in teaching and learning yet.

2.2. Participants
The participants of this study consisted of 142 students (boy = 68 and girl = 74) from seven schools who were still in the 8th grade Junior High School. The participants were divided into two classes as experiment and two as control class. These students are still studying at eight grader Junior High School in Semarang Regency. The ages range between 12 to 15 years.
After implementing the Edmodo Application, the students were given questioner consisted of 30 statements to measure students' perceptions towards Edmodo Application, and 15 multiple choice questions to measure students' achievement science.

2.3. Instruments
We use the questionnaire as the instrument in the research. The questionnaire consist of
(1) 30 Questioners to assess students’ attitude toward Edmodo Application. It uses Likert scales (5 – strongly agree, 4 – agree, 3 neutral, 2 – disagree, 1 – strongly disagree).
(2) 15 Items multiple choice to assess students science achievement. In this item, students had to choose the correct answer option by crossing A, B, C, and D. All the instrument has been validated by experts and has been tested twice

2.4. Technique and analysis data
Data were collected using questionnaire sheets. The data already collected in the analysis using analysis of variance (ANOVA) with SPSS software. This analysis was used to determine whether students’ attitudes, about Edmodo Application, affects collectively towards students’ achievement science.

3. Results and Discussion
Before the data was analyzed, a normality test is done to find out whether the distribution of scores on each variable is normally distributed or not and then new data is analyzed. We use testing normality, homogeneity and data analysis using the SPSS program.

3.1. Testing normality and homogeneity on students' attitudes toward the use of Edmodo Applications.
The test results with SPSS based on Kolmogorov-Smirnov test obtained a score of 0.20. This number is greater than the normal threshold of 0.05. So it can be concluded that students' attitude samples are normally distributed. The homogeneity test of students' attitude variance was also analyzed by using the
SPSS program. Testing with SPSS obtained a score of 0.09. This result exceeds the homogeneity threshold of 0.05. Thus the variance of research data is homogeneous.

3.2. Testing normality and homogeneity the students’ achievement science toward the usage of Edmodo Applications

The test results with SPSS based on Kolmogorov-Smirnov test obtained 0.06. This number exceeds the normal threshold of 0.05. So it can be concluded that the samples achievement science are normally distributed. Homogeneity test of the variance of the students’ achievement science was also analyzed by using the SPSS program. Testing with SPSS obtained significance of 0.127. This result exceeds the homogeneous threshold is 0.05. Thus the variance of research data is homogeneous. After finish that was testing the normality and homogeneity, then followed by hypothesis testing with the SPSS program.

Testing of the hypothesis says that Ho = There is no difference in attitude towards the use of Edmodo Applications between experimental and a control groups, Hi = There is a different attitude towards the use of Edmodo Applications between experimental groups and control groups.

The test result shows that students' attitude toward Edmodo Application between experimental group and control group is 0.231. The critical value for sample 124 is 0.176 with a significance level of 5%. Thus the count value 0.231 is greater than the price of t table 0.176. This result shows that Ho is rejected and Hi is accepted. So it can be concluded that there is a significant difference in student attitudes toward the Edmodo Application between the control group and the experimental group.

Testing of the hypothesis that says that Ho = No different score science student achievement between the experimental group and the control group. Hi = There is a different score science student achievement between the experimental group and the control group.

The results show that the score of science student achievement between the experimental group and the control group is 0.478. The critical value for sample 124 is 0.176 with a significance level is 5%. Thus the count value 0.478 is greater than the price of t table 0.176. This result shows that Ho is rejected and Hi is accepted. So it can be concluded that there is a significant difference in score science student achievement between the control group and the experimental group.

From these results, we can conclude that the usage of Edmodo Application affects the improvement of attitude and achievement of science learning achievement on additive and addictive substance of class VIII SMP Negeri 1 Bandungan year lesson 2017/2018.

3.3. Discussion

The impact of using Edmodo Application on science material learning shows that most students have a positive attitude towards learning. Learners are more active in discussing through their class groups by commenting on their friends' opinions. They can also directly communicate with the teacher if they a problem. Face feature on Edmodo gives students the opportunity to expand both the type and the number of their communications that give them the opportunity to increase their confidence and motivation. Edmodo can also help shy students to communicate with their friends or teachers by face-to-face directly by communicating in writing via the chat feature on the Edmodo Application. Edmodo also facilitates the uploading, storing, and sharing of learning materials to learners. These findings support the emerging consensus that learners should take advantage of the offerings offered by new technologies to enhance their learning opportunities [8]. As a meaningful social interaction, Edmodo revealed a fairly high level of acceptance [9]. It also serves as a document repository that allows students to gain access to relevant classroom material and create sustainable learning processes that are not limited to the capacity of the classroom seat.

The use of Edmodo as a tool for encouraging informal, student-centered, informal, social learning and support for distance learning that meets the requirements of good learning. Other interpretations may be
related to the feedback feature. Any content sent directly by students begins receiving comments, reviews, opinions, and additional information about the topic either by the teacher or by other students in the Edmodo group. By doing this, more discussion can be established, and more avenues can be made to foster self-reliance and self-learning. Furthermore, Edmodo offers a unique opportunity to collaborate among students where they can improve their team building skills and cooperative learning.

Enriquez argues that the ability for teachers to create groups makes Edmodo a unique and useful platform for online discussions. This can be done when a teacher creates a group page. Then, a special code is created where he can share it with his students. When students use this code, they can participate in online discussions with other students and their classroom teachers. These features encourage students’ involvement and responsibility for their learning since incorporating Information and Technology (ICT) as in using Edmodo to build academic networks between teachers and students. Edmodo Application to create a responsible learning environment through online activities conducted in their self-learning style. Edmodo's implementation by educators as a learning platform for students can be a powerful medium that expands a responsible learning environment outside the classroom [10].

Edmodo Application establishes student collaboration within the network learning community; online space is considered suitable for students to learn by directing their learning to accomplish tasks. Students in the network will follow up with the activity classes while managing their time they interact with friends and teachers. Discussions among group members are facilitated with text, and social interaction can enhance students' understanding, thinking skills and self-responsive participation in social networking. As a result, the self-regulated study of student behavior in learning network significantly improved successfully increased the interest in motivational students in learning to read comprehension.

Edmodo application can improve students' interest in learning science. They show excessive excitement when what they write is immediately commented by the teacher, especially when they get an achievement and the teacher gives the label their pleasure can be doubled. They are more confident to explore by using Edmodo Application to increase his knowledge [11].

The links feature features self-motivated motivation for students, and it is directly connected with other websites. They are very concerned when teachers post some examples of the impact of people who are food poisoning, the physical and psychical impact of drug use and psychotropic. Images of horror as a result of the use of psychotropic substances displayed on the page can motivate students to stay away from drugs and psychotropic. In other words, the use of Edmodo Application in learning, in addition to being a medium for delivering science materials can also be a filter for participant danger of psychotropic substances.

4. Conclusion
The results of this study indicated that the learning process by integrating Edmodo Application as a learning media affects improving students' science achievement. The influence of integrating Edmodo Application in Science learning toward students' attitudes is 0.32. The influence of integrating Edmodo Application in Science learning toward students' science achievement is 0.32. In another word, integrating Edmodo Application in Science learning should also change their teaching habits offering their students innovative opportunities to improve their self-confidence monitor their learning and to practice their language skills in and outside the classroom. Edmodo Application in learning a medium for delivering science materials can also be a filter for student danger of psychotropic substances.

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