

Students' Opinions about Blended Learning in Redox Material and Compounds Nomenclature

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Abstract

This study aims to determine the response of learners to Blended learning models - Problem Based Learning. The method used is pre experimental design. The sample in this study was the students of class X SMA Negeri 1 Ungaran and SMA Negeri 2 Ungaran, amounting to 143 learners. To study the response of the students to use the questionnaire. Learners' questionnaire responses were analyzed descriptively by calculating the average of each aspect. Likert Scale questionnaire was analyzed by being converted into a quantitative scale. Item statement consists of a positive statement which amounts to 15. The questionnaire was given to the students after participating in the learning process with a model Blended- Problem Based Learning. The results showed that the students responded positively to the model developed, indicating the learning model Problem Based Learning Blended- very useful to help learners to understand the concept of redox and nomenclature of chemical compounds. In addition to understanding the concept, Blended-Problem Based Learning also help learners to solve problems in everyday life associated with redox material and nomenclature of chemical compounds.

Keywords: Blended- PBL, Redox, Nomenclature, Response Students.

I. PRELIMINARY

Globalization has changed many aspects of human life in all areas, for example in terms of communication, social, cultural, trade, transportation, and education. One trigger the advance of globalization is the development of information technology is very rapid and allows access to information without the limits of space and time. Education is one sector that can answer the demands of globalization that continues to evolve today. Therefore it is necessary to have new innovations in the learning process that can answer these demands. Education plays an important role in preparing qualified human resources and able to compete in the development of science and technology. Therefore, education should be implemented as well as possible to obtain maximum results.

The most important principle in education is that learning should be able to

change the mindset of students in receiving the information obtained. The information obtained cannot just knowledge given by the teacher. Learners must construct their own knowledge. Teachers can also give learners stairs that bring learners understanding higher, with a record of learners who have to climb (Slavin, 2005). Thus, learners have the opportunity to develop new ideas and implement new ideas in the learning process. According Sardiman (2007) explains that the learners or students is one of the human component that occupies a central position in the learning process. Learners or students into the subject and as a pedestal attention. In the learning process, the learner as the parties want to reach ideals, goals and want to achieve an optimal manner. So in the process of learning to consider first is the learners about the circumstances and abilities. The information received by the learners more stuck

in his mind through a series of process of building the information based on the experience gained.

Through direct experience will bring closeness learners with the material to be learned, so that what is learned has significance for him an example is the direct observer of the rusting process of iron. According Trianto (2015), that meaningful learning will not be realized simply listening to a lecture or read a book about the experience of others. Therefore, it needs a certain method or model of learning so that students feel the meaning of what has been learned. Based learning blended learning is a good option to improve the effectiveness, efficiency, and greater appeal in the interaction between people in a diverse learning environment (Abdullah, 2018). Blended learning is learning that combines e-learning, online mixed learning with face-to-face learning in the classroom involving IT-based learning tools (Afdhila *et al.*, 2018; Bain *et al.*, 2018). Shen (2016) mentions that blended learning is effective for learning, while Jeffrey (2014) states that the blended learning method can maximize teaching by teachers through online and regular learning in the classroom. In addition, one of the benefits of blended learning based learning is to increase the attractiveness of learning. With blended learning interaction and communication between students and between teachers and students can continue and this is the attraction of learning in the 21st era.

By having an attractiveness, of course, learners will be happy and feel challenged to keep learning. Someone who is happy about something will be motivated to perform these activities so that learners usually become more active passive (Hamzah & Mohamad, 2012). Learning approaches that integrate various strategies, models and methods of learning in a learning process are known as blended learning (Bernard *et al.*, 2017).

Teachers have an important role in education, especially in the learning process to create conditions conducive learning for educational purposes can be

achieved. In practice, teachers can use for effective learning models to achieve the learning objectives of the maximum. The response of students in the learning model applied by teachers is needed, so teachers can evaluate the learning model. Djamarah *et al.*, (2010) suggests that the use of varied teaching methods can increase the passion of learners. In this case the teacher has an important role in designing learning by applying the method of learning that is not monotonous, interactive and conducive so as to increase the motivation of learners. In accordance with the curriculum of 2013 learners are also required to know the information technology developed at this time. According Nurhayati *et al.*, (2013) Problem Based Learning (PBL) is a learning model that positioned learners in a position to learn the most good because they are connected with the study process and discover knowledge for themselves, not when the teacher explains the material in the classroom and provide knowledge to them. This is in line with the skills that must be possessed of learners in the 21st century, not when the teacher explains the material in the classroom and provide knowledge to them. This is in line with the skills that must be possessed of learners in the 21st century, not when the teacher explains the material in the classroom and provide knowledge to them. This is in line with the skills that must be possessed of learners in the 21st century.

There are three main characteristics of problem-based learning; (1) is a series of learning activities, that is to say in its implementation there are a number of activities that must be performed learners. In problem-based learning, requires students to actively engage communicate, develop thinking, searching and processing data and deducing not just listening, recording learning materials; (2) The learning activity is directed to solve the problem; (3) Resolution is done with scientific thinking approach.

Based on that the researcher is interested to know the response of learners

in learning activities with Blended- Problem Based Learning. As for the subject matter is chosen as supporting material in this study is a matter of redox reactions and nomenclature of compounds.

II. RESEARCH METHODS

This research uses descriptive design and research methods used are pre experimental design, carried out to determine the impact of a treatment that is subjected to a study.

2.1. Research subjects

This research was conducted in senior high school 1 Ungaran and 2 Ungaran. The population in this study were all students of class X senior high school

1 Ungaran and 2 Ungaran the second semester of 2018 / 2019. The sample in this study was 143 Learners Class X consists of 72 students from senior high school 1 Ungaran and 71 learners from senior high school 2 Ungaran.

2.2. Data Collection

The data collected in this study consisted of learner response data on the use of the learning model Blended- PBL on redox materials and nomenclature of the compounds by using a questionnaire that measured by the Likert Scale, and analyzed descriptively by calculating the percentage of items.

Table 1. Scores State Response

No.	Criteria Statement	Score Statement
1	Strongly agree (SS)	4
2	Agree (S)	3
3	Disagree (TS)	2
4	Strongly Disagree (STS)	1

2.3. Data analysis

Learner response data to the application of learning models Blended- PBL analyzed by calculating the percentage of table 1 in the below.

In order to be described, the response data of learners on the implementation of PBL

Blended- models obtained from a questionnaire completed by students mixed with formula.

$$\% \text{ Response} = x \times 100\%$$

The following criteria are based on the interpretation score shown in Table 2.

Table 2. Criteria for the response of learners against Blended-learning model Problem Based Learning

percentage%	Category
0% - 20%	Very less
21% - 40%	Less
41% - 60%	Enough
61% - 80%	Well
81% - 100%	Very good

III. RESULTS AND DISCUSSION

Learner response data to the learning model Blended- Problem Based Learning on redox materials and nomenclature of compounds obtained through a questionnaire containing 15 items of the statement. Data were analyzed using a Likert scale is converted into a quantitative scale. Item statement consists of a positive statement.

Learner responses given to the application of the model proposed Blended- Problem Based Learning as a reference to assess the level of interest of students to the application of Blended models - Problem Based Learning on the material of redox reactions and nomenclature of compounds. The results of analyzing the response of learners to Blended- PBL learning model shown in Figure 1.

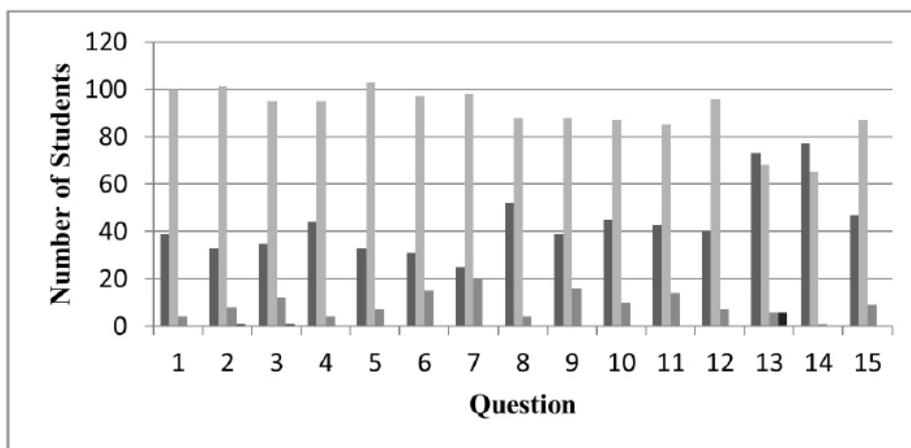


Figure 1. Response of learners towards learning model PBL Blended-

From the results of the response was created percentage of learners and categorized into categories, excellent, good,

fair, bad and very bad. The percentage of learners' response is shown in Figure 2.

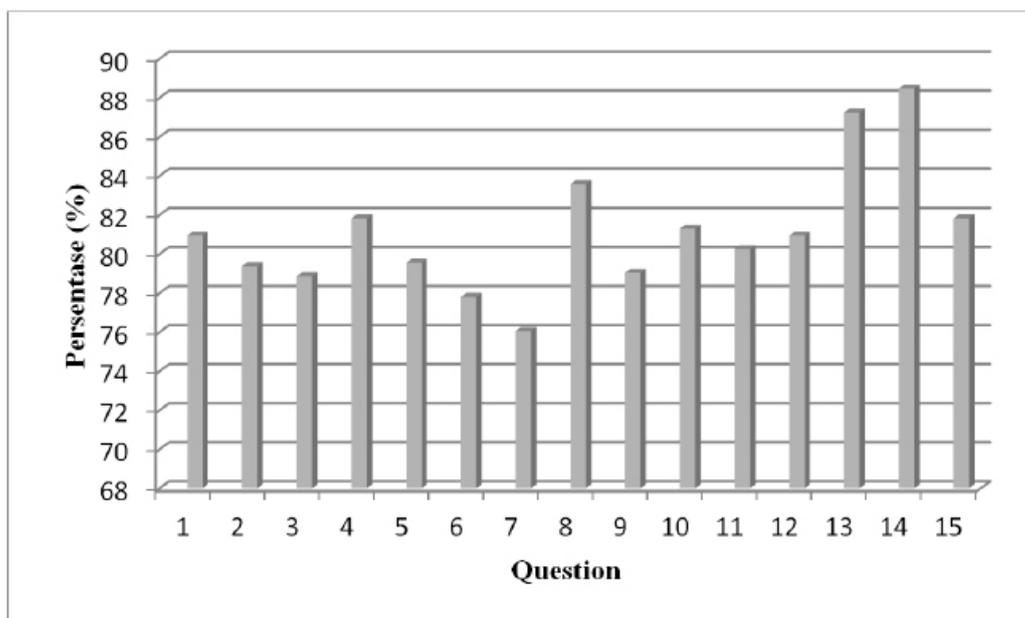


Figure 2. Percentage of learners' response to the PBL learning model Blended-

Based on the figure 2 above shows that the response of students to learning with PBL Blended- models largely agree and strongly agree. This suggests that the chemistry learning materials and nomenclature redox compound with PBL Blended- models received a positive response from students. In the first statement the majority of students agreed that the model Blended -PBL (Problem Based Learning), enables learners to restate the concept of redox reactions and nomenclature of compounds. The percentage obtained by 80.94% (excellent category).

Learners respond Blended -PBL agree that the model (Problem Based Learning), enables learners to provide an example and not an example of redox reactions and nomenclature of compounds. This is indicated in the response percentage of learners at 79.37% (both categories). In statement 3 most learners agreed that after the implementation of PBL Blended- participants are able to apply the concept of the algorithm for calculating an oxidation state of a redox reaction. The percentage of responses for 78.84 (both categories).

In statement 4 most learners agreed that after application of PBL Blended-learners are able to distinguish the concept of redox. The percentage of learners for response 81.81% (excellent category). According to Chiang *et al.*, (2015) understanding of the concept is the primary foundation must be built by students to determine future learning mechanism. Learners are largely agreed on the statement 5 that is, after application of PBL Blended-learners are able to apply the concept of redox and nomenclature of the compounds in problem solving. The percentage of responses for 79.54% (both categories). In statement 6 most learners also agreed that after application of PBL Blended- learners are able to give the name of the compound in accordance with the rules of the IUPAC as a percentage response 77.79% (both categories).

In the statement of 7 most learners agreed that after application of PBL Blended-I was able classifying nomenclature ionic compounds, covalent compounds, organic compounds and inorganic compounds. The percentage obtained by 76.04% (good category). Most of the students agreed to the statement of 8 namely that after application of PBL Blended- learners can distinguish between oxidizing and reducing agent in accordance with the concept of redox. The percentage obtained by 83.56% (excellent category). In the statement of 9 most learners agreed that learners can understand redox reactions that occur in everyday life by the method of Blended - PBL (Problem Based Learning). The percentage obtained by 79.02% (both categories). Learners can understand redox reactions that occur in everyday life by the method of Blended - PBL (Problem Based Learning). This is indicated by the response of students in the statement obtained at 10. Percentage 81.29% (excellent category) *blended* - PBL can provide space for learners to express ideas, encourages creative solutions and descriptive to identify their own problems and assist in controlling the content of the materials studied (Veale *et al.*, 2018)

medicinal chemistry and the drug discovery process require experienced practitioners to employ reasoned speculation in generating creative ideas, which can be used to evolve promising molecules into drugs. The ever-evolving world of pharmaceutical chemistry requires university curricula that prepare graduates for their role as designers with the capability of applying complex concepts in pharmaceutical chemistry, thereby improving the decision-making process. Common methods of teaching drug discovery, including the linear nature of the traditional case study model, do not provide a realistic picture of the underlying complexity of the process, nor do they equip students with the appropriate tools for personal sense making and abstraction. In this work, we discuss the creation of an open-ended, nonlinear case study for 3rd year pharmaceutical chemistry students, developed from drug discovery research conducted at Rhodes University. Furthermore, we discuss blending problem based learning (PBL,

In the statement of 11 most learners if the use of PBL Blended- method is also carried out by other teachers. According to Lee (2016) in his research found that blended learning has a positive impact on the enjoyment of learners in learning. Afdhila *et al.*, (2016) in his research also found that the students give a positive response to the blended learning method. The percentage obtained by 80.24% (excellent category). Learners are largely agreed on a statement that is a model 12 PBL Blended-very appropriate to be applied to improve the understanding of concepts and problem solving skills of students in materials and nomenclature redox reaction of compounds. The percentage obtained by 80.94% (excellent category). In the learning process with Blended-PBL models. In the statement of 13 most learners stated strongly agree that the use of applications and Kahoot Plickers in Blended- PBL for assessment is very effective and fun. percentage of 88.46% (excellent category). Kahoot Plickers and application usage in the classroom is shown in Figures 3 and 4.



Figure 3. The use of the application in the classroom Plickers



Figure 4. The use Kahoot application in the classroom

In the statement of 14 mostly stated strongly agree that online learning and offline is very appropriate to apply today. The percentage of responses for 88.46. The percentage is the highest percentage. In the statement of 15 learners agreed if the material presented redox Blended methods - PBL easy to understand and very interesting. Blended Learning provides opportunities for students to learn more effectively and efficiently so that students are more motivated to learn (Naaj *et al.*, 2012).

Results of analysis of the response of learners to learning with PBL Blended-models show the percentage of overall average included in the category of good and very good. This suggests that learning chemistry with PBL Blended-models received a positive response from students. The process of learning to use this model to

improve the understanding of the concept of learners and problem solving skills of learners in everyday life associated with redox reactions and nomenclature of compounds. This is indicated by the presentation learner responses by 80, 94 in the excellent category.

IV. CONCLUSION

Based on the results of the study all aspects indicated on the questionnaire responses of learners to the learning model Blended- PBL (Problem Based Learning) showed good and excellent categories. This indicates that learners after following Blended- learning model PBL (Problem Based Learning) gave a positive response to the category of good and excellent ratings. Generally the application of Blended learning models - Problem Based Learning a positive impact on teaching and learning. Learning

becomes more fun activities, all participants can engage in the learning process and to improve understanding of concepts and problem solving in everyday life.

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