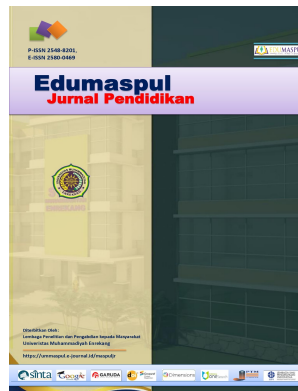


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## Efforts to Increase Motivation and Completeness in Learning Mathematics Through the Wordwall-Assisted Problem Based Learning Model

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### ABSTRAK

Terdapat factor-faktor yang mempengaruhi ketuntasan belajar peserta didik yaitu motivasi belajar, ini merupakan factor dari dalam diri yang harus dimiliki oleh peserta didik. Penelitian bertujuan untuk meningkatkan motivasi dan ketuntasan belajar matematika melalui model pembelajaran Problem Based Learning berbantuan wordwall pada materi Eksponensial dan Logaritma pada siswi kelas X SMA Santa Maria Yogyakarta tahun pelajaran 2023/2024. Jenis penelitian ini adalah Penelitian Tindakan Kelas Kolaboratif. Subjek penelitian ini adalah seluruh peserta didik kelas X SMA Santa Maria Yogyakarta. Prosedur penelitian dilakukan dalam dua siklus, masing-masing siklus terdiri dari 4 tahapan yaitu: 1) perencanaan, 2) pelaksanaan, 3) pengamatan, 4) refleksi. Variabel penelitian ini adalah model pembelajaran *Problem Based Learning* (PBL) berbantuan wordwall, motivasi belajar dan ketuntasan belajar matematika peserta didik. Teknik pengumpulan data dalam penelitian ini yaitu observasi, angket, dan tes. Instrumen penelitian yang digunakan adalah lembar observasi, lembar angket, dan lembar tes. Persentasi motivasi belajar siswa pada siklus I yang memiliki motivasi sangat tinggi 0 %, tinggi 25,71 %, 40 % sedang, 34,29% rendah dan 0% rendah sekali. Sedangkan motivasi belajar siswa pada siklus II mengalami peningkatan yaitu pada kategori sangat tinggi menjadi 2,86%, kategori tinggi 65,71%, 17,14 % kategori sedang dan 14,29% kategori rendah, dan 0% kategori rendah sekali. Berdasarkan hasil tersebut terlihat bahwa peningkatan motivasi belajar matematika peserta didik dari rendah ke sedang, sedang ke tinggi, dan tinggi ke sangat tinggi. Pembelajaran matematika dengan model pembelajaran *Problem Based Learning* berbantuan wordwall menunjukkan adanya peningkatan pada hasil tes peserta didik. Pada siklus I rata-rata nilai mencapai 94,29 dengan jumlah peserta didik yang mencapai KKM yaitu 19 peserta didik dari 23 peserta didik, sedangkan pada siklus II rata-rata nilai mencapai 95,68 dengan jumlah peserta didik mencapai KKM yaitu 21 peserta didik dari 23 peserta didik. Dapat disimpulkan bahwa model pembelajaran Problem Based Learning berbantuan wordwall dapat meningkatkan motivasi dan ketuntasan belajar matematika peserta didik kelas X SMA Santa Maria Yogyakarta.

### Kata Kunci:

Motivasi Belajar, Ketuntasan Belajar, Pembelajaran Berbasis Masalah

### ABSTRACT

There are several factors that influence student learning completeness, one of which is learning motivation, an internal factor that students must possess. This research aims to improve the motivation and learning completeness in mathematics through the Problem-Based Learning (PBL) model assisted by Wordwall in Exponential and Logarithmic materials for the 10th-grade students at SMA Santa Maria Yogyakarta in the 2023/2024 academic year. This study is a Collaborative Classroom Action Research. The subjects of this research are all 10th-grade students at SMA Santa Maria Yogyakarta. The research procedures were carried out in two cycles, each consisting of four stages: 1) planning, 2) implementation, 3) observation, and 4) reflection. The variables in this study are the Problem-Based Learning (PBL) model assisted by Wordwall, learning motivation, and student mathematics learning completeness. Data collection techniques in this study included observation, questionnaires, and tests. The research instruments used were observation sheets, questionnaire sheets, and test sheets. The percentage of student motivation in cycle I showed that 0% had very high motivation, 25.71% high, 40% moderate, 34.29% low, and 0% very low. However, student motivation in cycle II increased, with 2.86% in the very high category, 65.71% in the high category, 17.14% in the moderate category, 14.29% in the low category, and 0% in the very low category. Based on these results, it can be seen that there was an increase in student motivation from low to moderate, from moderate to high, and from high to very high. The mathematics learning process using the Problem-Based Learning model assisted by Wordwall showed an increase in student test results. In cycle I, the average score reached 94.29, with 19 out of 23 students meeting the minimum completeness criteria (KKM), while in cycle II, the average score reached 95.68, with 21 out of 23 students achieving the KKM. It can be concluded that the Problem-Based Learning model assisted by Wordwall can improve the motivation and learning completeness in mathematics of 10th-grade students at SMA Santa Maria Yogyakarta.

Keywords :*Learning motivation; learning mastery; Problems Based learning*

## INTRODUCTION

The development of science and technology today demands an increase in the quality of human resources. Efforts to improve the quality of human resources are carried out through the teaching and learning process in educational institutions. Reforms in the education system are continuously carried out by the government to improve the quality of education in Indonesia. Improving the quality of education is an integral part of efforts to improve the quality of Indonesian people as a whole which aims to produce human resources who have the ability to master, apply and develop science and technology and have high competitiveness. Efforts to improve the quality of education are carried out comprehensively, covering various aspects such as improving the learning system, improving the quality of the curriculum, improving the quality of educational staff, and improving educational facilities.

In connection with efforts to improve the quality of education in terms of improving the learning system, one of which can be done by improving the learning model. The learning model is one of the factors that plays an important role in determining the success of the learning process. Improving the quality of education cannot be maximally successful without being supported by improving the quality of learning. One way to improve the quality of education is by developing the curriculum. This curriculum, which gives freedom to teachers as curriculum developers in classroom settings, has not been able to be utilized optimally, due to limitations, one of which is the limited ability of teachers. The limited ability of teachers has an impact on the emergence of an indifferent attitude in using learning strategies, especially in using a variety of learning models. This condition results in the low quality of

learning outcomes. Success in the learning process can be seen from the learning competencies achieved by students after the teaching and learning process takes place. Learning competency is a reflection of the learning outcomes achieved by students after making learning efforts. The level of learning competency will contribute to achieving student future success. Teachers as instructors hope that students will obtain good learning competencies.

In the learning process problems are often encountered, namely when teachers deliver material in conventional learning models, students often do not pay attention to the explanations given by the teacher. This happens because teachers do not invite their students to be active in learning and students tend to only be passive subjects in learning. This will cause students to have difficulties in learning because the transfer of knowledge between teachers and students is not going well. Therefore, the level of completion in mathematics lessons is often low.

The success of the learning model and media used cannot be separated from the characteristics of the students, one of which is related to the students' own learning motivation. Motivation is the basic impulse that drives a person to carry out a process and is able to maintain his behavior until the desired goal is achieved (Susanti, 2019). The learning process will be achieved if students have good learning motivation (Emda, 2018). Without encouragement (motivation) from within oneself, the learning process will experience obstacles (Juliya & Herlambang, 2021). Therefore, students must have good learning motivation for successful learning and achieving learning goals.

The quality of Indonesian education, especially mathematics, is still low compared to other countries. One of the causes is the low motivation to learn from

students at school. Learning motivation is a process that explains the intensity, direction and persistence of an individual to achieve his goals. Motivation to learn is the reason underlying an action carried out by an individual. A person is said to have high motivation if that person has a very strong reason to achieve what he wants by doing his current job. In teaching and learning activities, student learning motivation is one of the spearheads in achieving student success at school. A student is said to have motivation to learn if he feels happy doing the work given by his teacher. Students who have high motivation have a lot of energy to carry out their learning activities, but on the other hand, students who do not have motivation will carry out learning activities because of coercion or simply ceremonial. Learning motivation contains students' goals or aspirations. With these goals or aspirations, it is hoped that students will get a source of learning motivation so that they understand what the goal of learning is. Besides that, according to Dimiyanti and Mudjiono (2010) a student's good learning condition will cause the student to be enthusiastic about learning and able to complete assignments well, in contrast to students who are sick, they do not have passion for learning. Therefore, motivation to learn in Students need to be strengthened continuously. Based on the results of research conducted by Fendiyanto (2020) with the title "Analysis of Student Mathematics Learning Motivation at SMP Negeri 3 Arjasa Sumenep" it was found that students' mathematics learning motivation which was analyzed on average got an intrinsic score with an average of 4.01 in the very category. good, extrinsic scores with an average of 3.78 are in the good category, task scores with an average of 3.98 are in the good category, control confidence for learning with an average of 3.87 is in the good category, self-confidence with an average of 3, 66 are in the good category, and the anxiety level with an average of

3.64 is in the good category. The overall average indicator of motivation to learn mathematics is 3.82, which is in the good category. For research conducted by Sofri (2016) with the title "Analysis of Mathematics Learning Motivation of Students at SMP Negeri 2 Grati" the results found that the average student learning motivation was 2.78. The level of student motivation for learning mathematics at SMP Negeri 2 Grati, Pasuruan Regency is included in the quite good category.

Based on the results of initial observations, it can be concluded that there are student weaknesses during the learning process at Santa Maria Yogyakarta High School in mathematics subjects, namely low motivation to learn mathematics in the learning process. This is based on the teacher's statement that student motivation in class X tends to be low. When studying in class, most of the students in the class were still chatting and not following the learning process. This is also supported by the results of diagnostic tests for students in class X which show that student motivation is still low. , Students' learning completeness is not yet optimal. This can be seen from the large number of students who obtained scores below the KKM during the mid-semester exam, namely 19 students who did not complete it, while only 4 students who completed it can be said to be 17.39% who completed it, while those who did not complete it were 82. 61%, and the low motivation and completeness of mathematics learning that occurs is possible because of the conventional learning model applied by class teachers.

In connection with the above, the researcher offers a solution, namely by changing the learning model and with the help of learning media so that mathematics learning can take place effectively and enjoyable so that good results can be achieved. Researchers try to increase students' level of learning completeness from low to higher, as well as increase



students' motivation in the learning process. The alternative taken to find a solution is through teacher creativity in choosing a learning model that is fun and in accordance with student characteristics so that learning objectives can be achieved. The alternative learning model that researchers propose is the Problem Based Learning learning model with the help of a wordwall. With the Problem Based Learning model with the help of wordwall, it is hoped that it can overcome problems as described above.

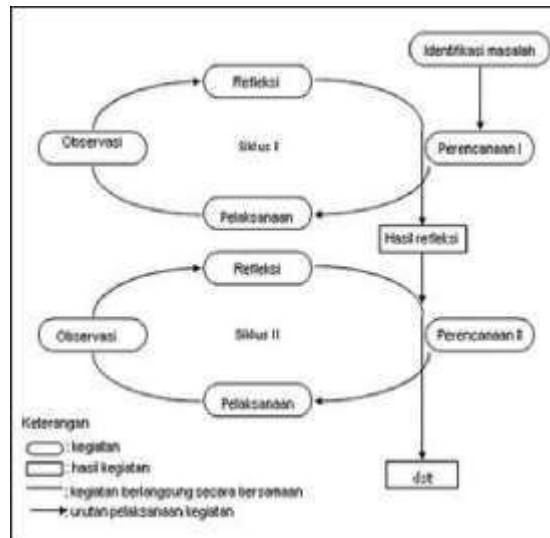
### **Method**

This research uses the classroom action research (PTK) method in collaborative form. Researchers collaborated with Mathematics Teachers at Santa Maria Yogyakarta High School. Suharsimi (2010: 130) believes that classroom action research is an examination of activities that are deliberately created and occur in a class. In classroom action worked well or not.

research, it is characterized by cycles and each cycle consists of 4 steps, namely planning, implementation, observation and reflection.

In PTK (classroom action research) the Kemmis and McTaggart model is popularly used. PTK according to Kemmis and McTaggart includes four activities, namely: (1) planning, namely planning actions to overcome problems, or to improve the current situation, (2) action or implementation of actions, namely carrying out actions that have been designed, (3) observation or research, namely examining whether the action being carried out (process and results) is good, (4) reflection or assessment, namely examining, studying, reflecting on, or evaluating actions that have been/are being carried out (process and results) whether it has

Picture 1. PTK Kemmis dan McTaggart



Data collection techniques through observation, questionnaires, post-test and documentation. This observation aims to obtain data regarding the process of implementing learning using the Problem Based Learning learning model assisted by wordwall. The observations carried out are direct observations during the teaching and learning process and are carried out by observers who always remain. Mathematics learning is carried out in accordance with the learning model applied if at least it meets the good criteria. The qualifications can be seen in Table 2.

| Implementation Percentage | Category  |
|---------------------------|-----------|
| $k > 90$                  | Very Good |
| $80 < k \leq 90$          | Good      |
| $70 < k \leq 80$          | Fair      |
| $60 < k \leq 70$          | Poor      |
| $k < 60$                  | Very Poor |

Observation sheet to determine the implementation of learning using the Problem Based Learning learning model assisted by wordwall. The scale used in this observation sheet uses the Guttman scale, the observer puts a check mark ( $\checkmark$ ) on the learning steps carried out in the "yes" and "no" columns. Each aspect that is implemented (in the "yes" column) is given a score of 1, if it is not implemented (in the "no" column) it is given a score of 0. Data collection is also through questionnaires. Through this questionnaire, the aim is to obtain data regarding students' motivation

to learn mathematics. The questionnaire is in the form of a Likert scale with 5 alternative answers, namely always, often, sometimes, rarely, never. The mathematics learning motivation questionnaire consists of 20 statements. Questionnaires are given at the end of each learning cycle.

The type of research is collaborative classroom action research (PTK). The research method used in this research is a descriptive research method. The variables of this research are learning motivation, learning completeness and the Problem Based Learning Model. The

research subjects in this study were class X students at SMA Santa Maria Yogyakarta for the 2022/2023 academic year. The number of class X students is 23 people

The quantitative data analysis technique is in the form of a percentage of the results of distributing motivation questionnaires for class X students at SMA Santa Maria Yogyakarta towards learning mathematics. Data analysis from the results of students' mathematics learning motivation questionnaires was carried out by giving a score to each item on the questionnaire filling sheet. Each questionnaire item is grouped according to the indicator of the student's learning motivation, then calculated and the percentage score determined according to the observed indicators. The percentage obtained by each indicator is then averaged to determine how much motivation the students have for learning.

## Result

In making observations during the action, the researcher used the learning implementation observation sheet instrument. In cycle I, the learning process went well, but there were some students who did not pay attention when participating in group work. Some students were still seen joking and chatting and some were even using cellphones not for learning. Apart from that, there are several groups who are still confused about how to work on the LKPD provided. During discussions, some students only rely on their friends, are embarrassed to respond and fewer are willing to ask questions.

Based on a questionnaire conducted by students regarding motivation to learn mathematics in class X SMA Santa Maria Yogyakarta, the data was analyzed and presented in a table.

Tabel 7. Skala Motivasi Belajar Matematika Peserta Didik

| Siklus | Kategori      | Jumlah peserta didik | %      |
|--------|---------------|----------------------|--------|
| I      | Sangat Tinggi | 0                    | 0%     |
|        | Tinggi        | 9                    | 25,71% |
|        | Sedang        | 14                   | 40%    |
|        | Rendah        | 12                   | 34,29% |
|        | Rendah Sekali | 0                    | 0%     |
| II     | Sangat Tinggi | 1                    | 2,86%  |
|        | Tinggi        | 23                   | 65,71% |
|        | Sedang        | 6                    | 17,14% |
|        | Rendah        | 5                    | 14,29% |
|        | Rendah Sekali | 0                    | 0%     |



Self-assessment is carried out by students by assessing themselves by filling in or answering questions on a questionnaire distributed by the teacher to get the percentage of student learning motivation in cycle I which increases in cycle II. The percentage of students' learning motivation in cycle I who had very high motivation was 0%, high 25.71%, 40% medium, 34.29% low and 0% very low. Meanwhile, student learning motivation in cycle II increased, namely in the very high category to 2.86%, 65.71% in the high category, 17.14% in the medium category and 14.29% in the low category, and 0% in the very low category. Based on these results, it can be seen that students' mathematics learning motivation increased from low to medium, medium to high, and high to very high.

Mathematics learning using the Problem Based Learning learning model assisted by wordwall shows an increase in the implementation of both teacher activities and student activities. Learning mathematics using the Problem Based Learning learning model assisted by wordwall shows an increase in student test results. In cycle I the average score reached 94.29 with the number of students reaching the KKM, namely 19 students out of 23 students, while in cycle II the average score reached 95.68 with the number of students

reaching the KKM, namely 21 students out of 23 learners.

### Conclusion

Based on the results of the research that has been carried out, it can be concluded that learning using the Problem Based Learning learning model with the help of wordwall can increase the mathematics learning motivation of class X students at SMA Santa Maria Yogyakarta on indefinite integral material. Average students' mathematics learning motivation. The percentage of students' learning motivation in cycle I who had very high motivation was 0%, 25.71% high, 40% moderate, 34.29% low and 0% very low. Meanwhile, student learning motivation in cycle II experienced an increase, namely in the very high category to 2.86%, 65.71% in the high category, 17.14% in the medium category and 14.29% in the low category, and 0% in the very low category. Based on these results, it can be seen that the increase in students' mathematics learning motivation was from low to medium, medium to high, and high to very high. Second, learning mathematics using the Problem Based Learning learning model assisted by wordwall shows an increase in the number of students who complete. In cycle I the average score reached 94.29

with the number of students reaching the KKM, namely 21 students out of 23 students, while in cycle II the average score reached 95.68 with the number of students reaching the KKM, namely 21 students out of 23 learners.

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