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Learners Perceptions of the Use of the Process-Oriented Guided Learning Model (POGIL)

Mar'atush Sholihah[1], Hasan Subekti[2]

[1,2] Department of Science Education, Universitas Negeri Surabaya, Indonesia

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ABSTRACT

This study aims to describe students' perspectives on using the POGIL model on liquid pressure material. The method used in this research is the descriptive approach. The subjects of this study were VIII-grade students selected by purposive sampling technique. The instrument used in this research is a questionnaire sheet distributed to students after using the POGIL model. The data analysis technique used is in the form of average calculations which are described based on the calculation results. The results obtained from this study were positive student perspectives on the use of the POGIL model. The average percentage generated by using the POGIL model in the aspect of learning motivation is 93% and material understanding is 98%.

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Corresponding Author:
Hasan Subekti
Department of Science Education, Universitas Negeri Surabaya, Indonesia
**Email Correspondence: hasansubekti@unesa.ac.id*

1. Introduction

Education can potentially improve the quality of life of the nation through efforts to improve the quality of human resources (Aman et al., 2022). According to law number 20 of 2003 concerning the national education system, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential (Ismail et al., 2021). Efforts to develop students' intellect through education. The role of the teacher is the benchmark for the success or failure of achieving goals in learning at school or other equivalent education.

Science learning is one of the subjects that teaches the components of the universe to find out the cause-and-effect relationship through the learning process (Azim, 2021). Science lessons study related events and symptoms of the universe, one of which is related to physics. Learning in physics materials requires an

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understanding of concepts and emphasizes the process of forming students' knowledge in understanding concepts.

Based on initial observations made in one of the schools in Surabaya, it appears that science teachers usually teach with a teacher-centered learning model. As a result, students become less actively involved in the learning process because learning is not learner-centered, and they can only repeat what has been delivered by their teacher. As educators, teachers should be able to understand and have skills in developing various learning models, so that the role of students is more active in the learning process (Sailer et al., 2021). POGIL is one of the learner-centered and process-oriented learning models (Özkanbaş & Taştan Kırık, 2023). The problem that is often found in students is the tendency of students to memorize learning material without understanding the concept of the material being taught (Alam, 2020). This will cause students to have low curiosity.

These problems can be overcome with the POGIL learning model. Learning with the POGIL model is evidence-based learning that is collaborative and constructivist (Udu et al., 2020). In POGIL learning, students work together in groups that have a role for each individual. The roles in this POGIL model itself consist of:

(a) The manager oversees ensuring each learner stays on task.
(b) Recorder or minutes, in charge of recording group answers and ensuring that all members get the right answers.
(c) Presenter or spokesperson, is in charge of presenting the group's answers during the presentation.
(d) Reflector, in charge of considering the performance of the group in carrying out the responsibilities of each role and resolving a conflict if it occurs in the group.

The activities carried out are designed to guide learners to find and understand the concept of the material taught through experiments. Through POGIL learning, students can develop their skills such as science process skills (Samosir, 2022); communication skills; critical thinking skills (Kevin A. Artuz & B. Roble, 2021); and problem solving skills (Mamombe et al., 2022). The teacher's role in this case is as a learning facilitator who periodically assesses and guides the groups while working. The teacher can use some questions as a short discussion to ensure that all groups get the answers right. The teacher also monitors group progress and interaction and helps groups that are working too slowly. There is some evidence that the POGIL model is more effective when they interact and discuss topics with others so that they can build their knowledge based on learning experiences. The learning stages of the POGIL model consist of five of them (Hanson,2006):

(a) Orientation, a step that aims to prepare students to learn by providing stimuli such as showing phenomena that occur in real life.
(b) Exploration in this step students are given a series of activities related to learning material. Learners will be guided and directed to the correct conclusion.
(c) Concept Discovery, in this step students are given questions that direct them to think about the results of exploration.
(d) Application, in this step students are given questions or questions related to the application of concepts found which can build confidence to solve problems in

life so that students' understanding of concepts is better.

(e) Closing, in this step the teacher can monitor the extent of students' understanding so that it can be an evaluation of further learning (Rahma & Novita, 2024).

There are two main parties involved in the learning process carried out in a class, namely teachers and students. Efforts to produce good learning activities require good interaction between teachers and students in teaching and learning activities. This interaction can be in the form of responses given by students to learning that have been applied by teachers in teaching and learning activities. This response is called the perspective of learners who have undergone the application of the POGIL model. The perspective of learners that appears in each individual is different depending on the individual in understanding it. Perspective is said to be a reaction or action in the form of acceptance, rejection, or attitude obtained after the stimulus is given (Gaiseanu, 2020). This study aims to find out the perspective of students after the implementation of the learning process with the POGIL model. Researchers limit the learning material in this study, namely substance pressure material, with liquid pressure sub-material.

2. Method

The research method used in this research is descriptive. The population of this study were all students of grade VIII SMP Lab School UNESA 2. The research subjects were 8th-grade students of SMP Lab School UNESA 2 which amounted to 20 students, the research subjects were selected through a purposive sampling technique based on the advice of the science subject teacher. The instrument used in this study was a student response questionnaire sheet to the POGIL learning model. The response questionnaire aims to see the students' responses to the application of the POGIL learning model. The response questionnaire consists of 10 statements which are divided into two aspects, namely related to motivation to learn and understanding of the material. The response questionnaire sheet is made in the form of positive statements according to Table 1. the following.

Table 1. Guttman Scale Response Sheet

Statement	Respone	Value/ Score
Positive	Yes	1
	No	0

(Sugiyono, 2015)

The percentage of each student's response is calculated using the following formula:

$$P\ (\%) = \frac{sum\ of\ \text{"yes"}\ answers}{maximum\ score} \times 100$$

Data collection is done by giving a response questionnaire sheet to students. The data obtained will be analyzed using descriptive qualitative.

3. Results and Discussion

Results

Learning is carried out using learning tools with the POGIL model. In this learning, students are given experimental activities related to liquid pressure material through LKPD which is adjusted to the steps of the POGIL model. Student

responses are obtained through a questionnaire consisting of 10 statements which are divided into 2 aspects related to learning motivation and understanding of student material through the POGIL model. Questionnaires are given after implementing POGIL model learning on liquid pressure material. The results of students' responses related to learning the POGIL model will be presented in Table 2. as follows.

Table 2. Learner Perception Results of The Use POGIL Model

No	Statement description	Respone		Percentage
		Yes	No	
Motivation to learn				
1.	More motivated to follow science learning after doing the learning process provided by the teacher	18	2	90%
2.	More active in science learning after doing the learning process provided by the teacher	18	2	90%
3.	Science learning that is carried out is not boring	20	0	100%
Understanding of the material				
4.	After learning, I understand the material taught more easily	20	0	100%
5.	Science learning that is carried out can train me to understand problems	20	0	100%
6.	Science learning that is carried out can train my skills in formulating problems	20	0	100%
7.	Science learning that is carried out is able to train my skills in problem solving	18	0	90%
8.	This learning is able to train my skills in formulating conclusions	20	0	100%
9.	Activities in learning train cooperation with group friends	20	0	100%
10.	Activities in learning train my sense of responsibility for the tasks given	20	0	100%

Based on the results of students' responses to the POGIL learning model, it shows that overall students agree with the statements given. The average percentage of student response results on the motivation to learn aspect and the material understanding aspect is presented in the following figure.

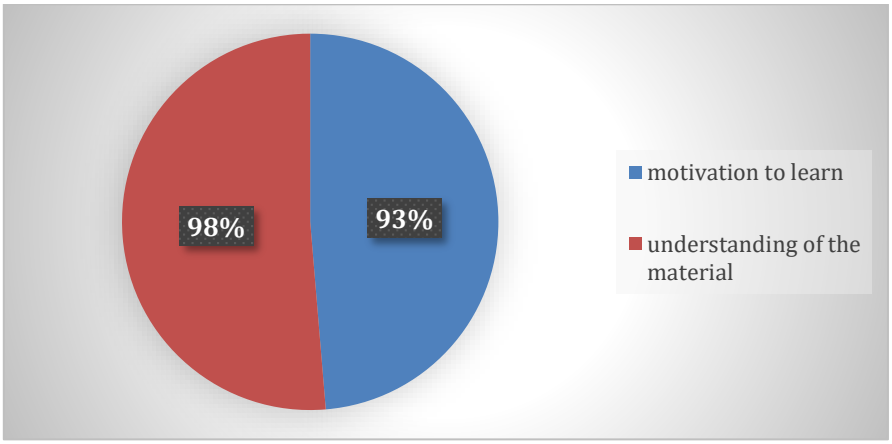

Figure 1. Average Percentage of Learner Perception

Discussion

Based on Table 1. it can be seen that in the application of the POGIL learning model, students' perceptions provide good results, although some students disagree with the statements presented. A comparison of the percentage of aspects of motivation to learn and understand the material is shown in Figure 1.

Based on the results of the research above, the total perception of students related to 10 statements agreed by responding "Yes" and disagreed by responding "No". Students' perceptions related to the aspect of motivation to learn; students gave the most positive responses to the third statement as much as 100%. This shows that learning IPA with the POGIL model is not boring for students, because the activities designed are not only teacher-centered so that students are actively involved directly in learning. In this case, experimental activities play an important role in students ' activity and responsibility with each role obtained in one group (Alkaromi, 2022). Other students' perceptions related to the statement that students are more motivated and more active when using the POGIL learning model have the same percentage of 90%. This can be due to the personality of each learner, both in terms of learning style or lack of suitability with roles or group members it can make learners less motivated and less actively involved in the learning process (El-Sabagh, 2021).

Overall, the aspect of motivation to learn with the application of the POGIL model has a good response with an average percentage of 93%. This also shows that students have a willingness to learn and are more active than just listening to the teacher's explanation which will make students quickly bored and not focus on the learning being taught. By research, students will experience success in learning if they have the enthusiasm and desire to learn (Ndraha & Harefa, 2023). In addition, other studies also state that with the application of the POGIL learning model which is oriented towards the theory of constructivism, students are more motivated to find and develop knowledge based on their experiences through the learning process (Safaruddin et al., 2020).

The perception of students related to the aspect of understanding the material almost has a percentage of 100% in each statement except for the statement that learning science with the application of the POGIL model is less able to help students practice skills in problem-solving. The statement received a percentage of 90%. This can be due to students being less able to understand learning and less actively involved with their groups (Qureshi et al., 2023). The fourth statement related to the ease of students to understand the material got a percentage of 100%. This is because learning is associated with events or events that occur in everyday life. Even so, there are shortcomings in the material associated with everyday life, such as students who have never encountered an event presented by the teacher. Therefore, the teacher participates in providing knowledge related to the events presented and better understands the events presented are more familiar to the lives of students (RivaI & Rahmat, 2023).

The fifth to eighth statements relate to understanding material related to students' problem-solving skills after applying the POGIL learning model. The fifth statement related to the application of the POGIL learning model can train students to understand problems obtained a percentage of 100%. This is because the POGIL learning model at the orientation stage presents a stimulus in the form of problems that occur in life (Ariyati et al., 2024). In addition, the teacher also provides several

questions related to the problem and relates it to the material being taught. The sixth statement related to formulating problems and making hypotheses obtained a percentage of 100%. This is because in the POGIL learning model with experimental activities, the problem formulation is provided by the teacher and then the teacher guides the hypothesis based on the problem formulation (Palupi et al., 2020). The seventh statement related to the POGIL learning model can train students' problem-solving skills obtained a percentage of 90%. Problem-solving skills in this study are based on indicators according to Polya (1973). Indicators of problem-solving skills consist of four, namely: (1) understand the problem; (2) develop a solution plan; (3) implement the plan; (4) re-examine the results. Based on the responses given by students, some students disagree regarding the POGIL model that can train students' problem-solving skills. This can be because, in the learning process, students only understand the problems that occur, but when exploring knowledge students are still lacking an understanding between the concepts found and the problems presented (Chew & Cerbin, 2021). Therefore, some students are lacking in practicing problem-solving skills through the application of the POGIL model. The eighth statement related to making conclusions received a percentage of 100%. This can be because the activity of making conclusions is guided by the teacher based on the hypothesis and experimental data obtained during the exploration stage (Ristanto et al., 2022). However, in reality, some students still have difficulty connecting the experimental results obtained to conclusions.

The ninth statement related to the cooperation of students together with their groups received a percentage of 100%. This is because in the application of the POGIL model with experimental activities and roles for each student, communication and mutual assistance between friends are needed to achieve learning activities well (Rumain & Geliebter, 2020). This is also following research that the application of the POGIL model has a positive effect on students' communication skills (Sumanti et al., 2023). Through the POGIL model, interaction between individuals and their groups increases as the learning process progresses. The tenth statement related to the responsibility of students obtained a percentage of 100%. This is because in the POGIL model learning by giving roles to each learner, indirectly has responsibility for the roles obtained for the success of the learning process during the course (Putri et al., 2020).

Liquid pressure is a material whose application is often found in everyday life. Therefore, learning with the application of the POGIL model can help students to better understand the material based on events found in life to get positive student perceptions. This is in line with research that learning with the application of the POGIL model shows positive results when applied to materials related to daily life (Masnur & Syaparuddin, 2019). POGIL model learning with experimental activities in the learning process also provides a positive response to learning that is not boring and the material is easier to understand. This is in line with research that scientific performance can have a positive influence after applying the POGIL learning model and getting a good response from students (Aini et al., 2023). The success of students in giving a positive response also does not escape the role of the teacher as a facilitator who must be alert to guide students if they experience difficulties. In addition, teachers must also pay attention to students who are less active in engaging in teaching and learning activities during the learning process.

Based on the learners' perspective related to the POGIL model obtained from the response questionnaire sheet, overall, it has a positive influence. The POGIL model is a collaborative learning model that can develop inquiry skills through the learning process (Diniyyah et al., 2022). These skills can also increase the motivation of learners to further develop an understanding of concepts. In addition to motivation, the POGIL model also plays a role in practicing students' problem-solving skills and improving their ability to think logically compared to using a teacher-centered learning model.

The advantages and disadvantages of the application of the POGIL model. The advantages of the POGIL model based on the perspective of students are that it can foster a desire to learn; shift teacher-centered learning to learner-centered learning; learning becomes more fun because it is accompanied by experimental activities so that students are not too bored in the learning process; foster students' communication skills through the formation of small groups; foster a sense of responsibility in individual students through the division of roles to achieve the success of the learning process, especially in each group; foster cooperation between students to help each other and provide explanations so that each student is ensured to understand what has been done related to the material being taught; practice problem-solving skills through exploration activities with the group. The shortcomings of the POGIL model that have been implemented based on the perceptions of students are that some students feel less motivated by the POGIL learning model; some students are less actively involved in the group; lack of practicing problem-solving skills in each student. This is also supported by other studies that the POGIL model requires more time, so it needs proper time management in its application to the learning process.

4. Conclusions

Based on the results of the research and discussion above, it is known that the POGIL learning model can provide a positive response almost obtained in each statement both in the aspect of motivation to learn and understanding of student material. This is indicated by the percentage of response questionnaire answers on the motivation to learn the aspect of 93% and the material understanding aspect of 98%. This shows that after students involve themselves in learning using the POGIL learning model, they give a positive response with a very good category. In general, the POGIL learning model has a positive influence on the learning process. This is because the POGIL model is one of the learner-centered learning models, so it focuses on the process of forming their knowledge with small groups, thus encouraging students to involve themselves in learning because the process is very interesting and fun.

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