Application of Probing Prompting Method in Physics Course

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Abstract. The aims to determine research are: (1) The Application of probing prompting methods on physic; (2) The Positive impact of using probing prompting methods on physic; and (3) The Weaknesses found in the application of probing prompting methods on physics. This research used an experiment approach. These researches were located in Universitas Hamzanwadi. The time of the research was held from April to May 2019. The population in this research were second students of Informatics Education Program, while the sample was students of Informatics Education Program who were taking physics courses students totalling 48 peoples. The data collection techniques used is observation and final grade calculation. Based on the results of the research, it was concluded that: (1) The application of probing prompting methods on physics learning starts from the assignment phase, the implementation and accountability of the tasks that have been made; (2) The positive impact of using probing prompting methods on physics learning includes: increasing student creativity, fostering student responsibility, improving students' physics skills, and providing new experiences to students; (3) Weaknesses found in the application of probing prompting methods on physics learning appear in the lack of student participation, difficulty in controlling and supervising tasks done by students, different levels of student intelligence, and limited supporting capacity or infrastructure available on campus.

1. Introduction

Part of education process to the life of the nation and state, in which the vision of national education is implied in the national education law system to realize a peaceful, intelligent, democratic Indonesian society, skilled, highly competitive, developed and prosperous in the State the unity of the Republic of Indonesia cautious, possesses technology, has a high work ethic and discipline. Education is an effort to grow the potential of human resources through learning activities. Education is not a static activity but a dynamic activity so it can change over time[1][2]. The key success of a nation is human resources owned by a nation, especially the young generation. One of the efforts to improve the quality of human resources is by improving the quality of education because it is a foundation for human character, mental and spiritual development[3][4]. This learning change encourages the learners have ability to solve problem, have critical thinking, being able to communicate orally and in writing and have expertise in the field of technology.

Physics is one of the natural sciences that studies nature's behaviour or phenomena systematically. Physics for someone can be interpreted as a joy or mental pleasure that contains scientific nature, in order to understand the symptoms and techniques of nature and the universe.
Physics learning is the process of providing guidance or assistance to students in making the process of change in aspects of skills, attitudes, knowledge, and understanding relating to behaviour and natural phenomena automatically[5][6]. Probing prompting learning method is learning by presenting a series of questions that are guided and explore students' ideas so that they can jump-start the thinking process that is able to link students' knowledge and experience with new knowledge being learned[7]. The probing-prompting learning model is one of many cooperative learning models that are considered capable of improving students' conceptual understanding skills[8][9]. Probing prompting learning model implements learning where the teacher presents a series of guiding questions and explore the student’s way of thinking to create student's thinking process to the new knowledge being studied. The application of probing-prompting learning method is expected to be able to have a positive influence on student physics learning outcomes and motivation. probing-prompting learning method is suitable to be used as a physics learning strategy because it directly affects students' thinking and creativity activities in solving problems given by the lecturer[10][11]. With that, motivation and activeness of student learning will be formed automatically.

The aims to determine research are the application of Probing Prompting method in physics courses in the second semester of informatics education.

2. Methods
Probing Prompting learning is learning by learning a series of questions that are guided and support students can jump-start the thought process that can link students' knowledge and assistance with what has just been learned[10][12]. Next, students construct concepts, principles and rules into new knowledge, and thus new knowledge is not shared. Probing Prompting learning was very closely related to the question. The questions posed during this study are called probing questions. Probing question was a question that was digging to get deeper answers from students who intend to develop the quality of answers, so that the next answer is clearer, more accurate, and reasonable while Prompting question can motivate students to understand a problem more deeply so students were able to reach answers that are headed. During the process of finding and finding answers to these problems, they try to connect their knowledge and experience with the questions to be answered[13][14]. The question and answer process in learning by pointing at random students so that each student inevitably has to actively participate[15][16][17]. Students can’t avoid the learning process, because at any time he can be involved in the question and answer process.

Probing prompting learning trains students to explore the knowledge and skills possessed in accordance with the circumstances surrounding which will be integrated with the problems given by lecturers in the class during the learning process[8].

3. Result And Discussion
In this research, increase student learning outcomes in the second semester of Informatics Education who were taking physics, an increase in learning outcomes by 25% from previous learning with the same material but with a different treatment with the use of group discussion methods. Besides increasing student learning outcomes, it turns out that learning motivation automatically increases in working on learning physics. In learning physics with probing prompting method reduces boredom and increases student motivation.

3.1. The application of Probing Prompting method in the Physics Program Learning
The steps in learning Probing Prompting are described through seven techniques as follows[18]:

- The teacher exposes students to new situations, for example by paying attention to pictures, formulas, or other situations that contain problems.
- Wait a few moments to give students the opportunity to formulate answers or conduct small discussions in formulating it
• The teacher raises issues with students in accordance with the learning objectives or indicators to all students.
• Wait a few moments to give students the opportunity to formulate answers or conduct small discussions.
• Appoint one of the students to answer the question.
• If the answer is correct, the teacher asks responses from other students about the answer to ensure that all students are involved in the on-going activity. However, if the student experiences traffic jams for the answers or answers given that are incorrect, incorrect, or silent, then the teacher asks other questions whose answers are indicative of the answer. Then, the teacher gives questions that require students to think at a higher level, so students can answer questions according to basic competencies or indicators.
• The teacher asks the final question to different students to emphasize the indicator really understood by all students.

3.2. The positive impact of Probing-Prompting method in the Physics Program:
• Encourage students to think actively
• Give students the opportunity to ask things that are unclear so the teacher can explain again.
• Differences of opinion between students can be compromised or directed to a discussion
• Questions can attract and focus students' attention, even when students are noisy, who are sleepy again refreshed and lost sleepiness.
• Develop students' courage and skills in answering and expressing opinions.

3.3. Weaknesses that arise in the application of the Probing Prompting method various learning methods have advantages and disadvantages, as well as weaknesses in the Probing Prompting method, namely:
• Students feel afraid; especially teachers are less able to encourage students to be brave by creating an atmosphere that is not tense but familiar.
• It is not easy to make questions that are appropriate for students' level of thinking and easy to understand.
• Time is often wasted when minimum two or three students cannot answer the questions.
• A large number of students may not be enough time to give questions to every student.

The results of this research that has been conducted using the probing-Prompting method in physics learning in the second semester of program study of the informatics education, it turns out that it can contribute and make it easier for students to understand the lesson because each student is required to prepare subject matter first before learning takes place. The deficiencies that occur in the classroom can be overcome by creating a pleasant classroom atmosphere to reduce student fears, for example by combining this method with games. In this method, each group should consist of heterogeneous members to create an active group discussion and efficient in time. In addition, students should be given an award with the aim to foster student motivation to learn physics.

4. Conclusion
Based on the results of research conducted on the second semester Informatics Education students at Universitas Hamzanwadi, it was concluded that: (1) the application of probing prompting methods to physics learning starts from the assignment phase associated with physics learning competency standards. The second phase is the implementation of tasks in groups. The last phase is responsible for
the task by presenting the results of group work done in the classroom; (2) The positive impact of using probing prompting methods on physics learning includes: increasing student creativity in the process of deepening and broadening knowledge related to physics learning materials discussed, fostering responsibility among students, improving students physics skills in class discussions, and provide new experiences to students; (3) Weaknesses found in the application of probing prompting methods on physics learning appear in the lack of student participation, difficulty in controlling and supervising the tasks being taught by students, different levels of student intelligence, and limited supporting capacity or available infrastructure.

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