The Influence of the Discovery Learning Learning Model on Student Learning Outcomes in Physics Subjects Phase F at SMA Negeri 4 West Sumatra (Sports Giftedness)

Olivia Syafitri [1] , Hidayati [2] , Mirah Kencana [3], Erizal [3]

[1] Department of Physics, Padang State University, West Sumatera, Indonesia, [2] Department of Physics, Padang State University, West Sumatera, Indonesia, [3] SMA Negeri 4 West Sumatra (Sports Giftedness), West Sumatera, Indonesia.

ABSTRACT

Learning outcomes are an indicator of educational attainment. The discovery learning model is a learning model that has been proven to have a positive impact on learning outcomes. This research aims to describe the implementation of learning using Discovery Learning model to improve student learning outcomes at SMA Negeri 4 West Sumatra (Sports Giftedness) in physics subject stage F. The research method used is Classroom Action Research with three cycles in its implementation. The research instrument used in this research is test questions in the form of descriptions which are given to students at the end of each cycle carried out. Based on the results of data analysis carried out using quantitative descriptive methods, it was obtained that in each cycle there was an increase in student learning outcomes after the Discovery Learning learning model was implemented. In the last cycle, student results were in the very good category.

INTRODUCTION

One of the most important things in human life is education (Fitriyah et al., 2017) . Education is an essential foundation in giving birth to the nation's next generation of young people. Because, with education, people will be created who are potential, creative, and have many skills as provisions to face various challenges in the future.

One of the determining factors for the success of education is learning outcomes. Learning outcomes are an important indicator for teachers and students. Teachers can use learning outcomes as a reference for the success of the programs they have implemented during the teaching and learning process. So, teachers can gain reflection and make improvements and improvements to the programs implemented during the teaching and learning process. Apart from that, learning outcomes can also be used as a parameter for teacher performance in schools. As for students, learning outcomes are a measure of whether the student has fulfilled the completeness of a lesson or not, as well as to see the extent of the student's understanding of a particular concept.

Physics is a subject that discusses various phenomena or events in the universe. In studying physics, students must truly understand the concepts in order to be able to solve various related problems. However, its abstract nature often makes students think the material presented by the teacher is difficult (Hariyanto, 2017) . These difficulties can of course affect the learning outcomes obtained by students (Sartono, 2019) .

Based on information obtained by researchers during observation activities or Pre-Cycle I, student learning outcomes at SMA Negeri 4 West Sumatra (Sports Giftedness) for physics subjects were in the very less category. This certainly requires appropriate treatment so that student learning outcomes can be improved. Because learning outcomes do not only depend on students' willingness to learn, but also the learning model used by teachers during the teaching and learning process (Irdam Idrus & Sri Irawati, 2019) .

One innovative learning model that has been proven to have a positive influence on student learning outcomes is the Discovery Learning learning model. This learning model requires students to search for and interpret a concept themselves to reach a conclusion with the teacher's guidance (Efendi, 2019) . So that the learning carried out focuses on students finding and building their own understanding of a concept. So, in this context the researcher aims to see how the application of the Discovery Learning learning model influences the learning outcomes of Phase F student participants at SMA Negeri 4 West Sumatra (Sports Giftedness).

METHOD

This research is a type of action research in the form of Classroom Action Research (CAR). The research model used is the Kemmis and Mc. Taggart model cycles through planning, action, observation and reflection, then continues back to planning again as a solution in solving problems (Salim et al., 2020) . The research subjects in this Classroom Action Research (CAR) were all students in class This school is located in Sungai Sapih Village, Kuranji District, Padang City, West Sumatra Province. The time for this research is from August 7 to December 16 2023.

Data collection was carried out using test and observation methods. Observations were carried out during the pre-cycle to determine the initial state of student learning outcomes before the Discovery Learning learning model was implemented. The test given at the end of each cycle is in the form of competency test questions in the form of descriptions which aim to determine student learning outcomes after implementing the Discovery Learning learning model . The percentage of student scores obtained through the test is then calculated. This percentage is calculated classically. The scheme of this research is presented in Figure 1.
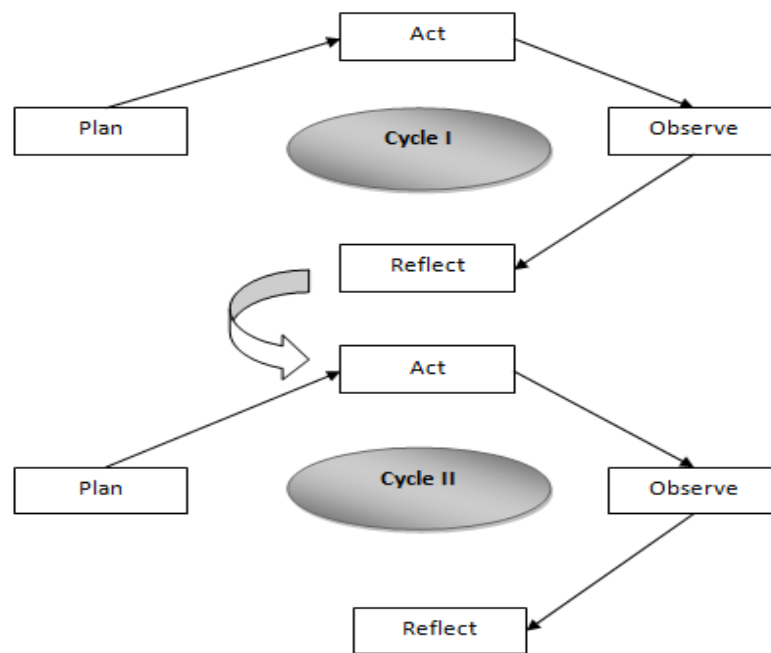
Figure 1. Kemmis and Mc. Taggart's Classroom Action Research Model.

Data analysis in this research used quantitative descriptive techniques. The student scores obtained are then processed statistically and then described using certain categories. The categories used to describe variable relationships in this research are as follows:

Table 1. Student Learning Outcome Categories in Percent Units (%)

No	Value Range	Category
1	86-100	Very good
2	76-85	Good
3	60-75	Enough
4	55-59	Not enough
5	<55	Very less

Source: (Malik, A., & Chusni, 2018)

RESULTS AND DISCUSSION

Obtaining data in this research was carried out in three stages, namely Precycle or the initial stage before the Discovery Learning learning model was implemented, then Cycle I and Cycle II, namely the stages when the Discovery Learning learning model was implemented . The results of Class Action Research carried out in class XI F 1 Odd Semester of SMA Negeri 4 West Sumatra (Sports Giftedness) at the three stages are shown in Table 2.

Table 2. Recapitulation of Research Results for Each Cycle

Pre-Cycle Completion Percentage	Cycle I Completion Percentage	Cycle II Completion Percentage
0%	69%	100%

From this table it can be seen that there is an increase in the completeness of learning outcomes achieved by students in each cycle. At the Pre-cycle stage, student learning

outcomes are in the very less category. Then in Cycle I there was an increase of 69% so that the student learning outcomes category at this stage was enough. For the last cycle, Cycle II, there was an increase of 21% from the previous cycle. Student learning outcomes at this stage are in the very good category. The application of the Discovery Learning learning model in this research had a positive influence on the learning outcomes of class XI F 1 Odd Semester students at SMA Negeri 4 West Sumatra (Sports Giftedness). From initially learning outcomes in the Pracycle being in the Very Poor category to being in the Very Good category after the implementation of the Discovery Learning learning model .

Discovery Learning learning model has various advantages. Some of these advantages include: 1) Students are actively involved throughout the learning process. 2) Learning activities are more meaningful compared to just doing exercises in class or reading textbooks. 3) Students develop investigative and reflective skills that can be applied to other things. 4) Students learn new skills and ways. 5) This approach is formed from students' initial knowledge and experience. 6) Discovery Learning builds an independent attitude in students to learn. 7) Students will find it easier to remember concepts, data and information they encounter themselves. 8) Discovery Learning encourages students to collaborate and work in groups (Permata et al., 2024) .

The increase in student learning outcomes occurs because the application of the Discovery Learning learning model can provide active learning experiences to students. Where this learning model will encourage students' curiosity, make students experience investigations, and even guide students in discovering knowledge or concepts that are new to them (Asrizal et al., 2019) . So students will be enthusiastic when gaining new knowledge and can interpret and apply the knowledge they have acquired in their daily lives (Masril et al., 2018) .

Judging from previous research (Wahyuni et al., 2020) , entitled the influence of the discovery learning learning model on student physics learning outcomes, this research shows that there is a significant influence from the application of the Discovery Learning learning model on student learning outcomes. This is because during learning the teacher does not present the concept in a final way, but rather provides opportunities for students to discover and build their own knowledge. In this context, the teacher serves as a facilitator because the learning process focuses on students (Student Centered) .

CONCLUSION

Based on the research results described in the Results and Discussion section, it can be concluded that there is a positive impact from using the Discovery Learning learning model on improving student learning outcomes in phase F at SMA Negeri 4 West Sumatra (Sports Giftedness).

REFERENCES

Asrizal, Hendri, A., Hidayati, & Festiyed. (2019). Penerapan Model Pembelajaran Penemuan Mengintegrasikan Laboratorium Virtual dan Hots untuk Meningkatkan Hasil Pembelajaran Siswa SMA Kelas XI. *Prosiding Seminar Hibah Program Penugasan Dosen Ke Sekolah (PDS)*, *November*, 49–57.

Efendi, D. (2019). PENGEMBANGAN BAHAN AJAR MATEMATIKA DENGAN MODEL DISCOVERY LEARNING UNTUK MENGEMBANGKAN KETERAMPILAN BERPIKIR KRITIS. *Eksponen*.

Fitriyah, F., Murtadlo, A., & Warti, R. (2017). Pengaruh Model Pembelajaran Discovery Learning terhadap Hasil Belajar Matematika Siswa MAN Model Kota Jambi. *Jurnal Pelangi*, *9*(2), 108–112. https://doi.org/10.22202/jp.2017.v9i2.1898

Hariyanto, A. (2017). Pengaruh Discovery Learning Berbantuan Paket Program Simulasi Phet Terhadap Prestasi Belajar Fisika. *Jurnal Pendidikan Dan Kebudayaan*, *1*(3), 365–378. https://doi.org/10.24832/jpnk.v1i3.321

Irdam Idrus, & Sri Irawati. (2019). Analisis Model Pembelajaran Discovery Learning Dalam Meningkatkan Hasil Belajar Ipa-Biologi. *Talenta Conference Series: Science and Technology (ST)*, *2*(2). https://doi.org/10.32734/st.v2i2.532

Malik, A., & Chusni, M. M. (2018). Paraninfo Digital. In *Pengantar Statistika Pendidikan: Teori dan Aplikasi* (1st ed., Vol. 83, Issue 1). Deepublish. https://doi.org/10.1016/j.earlhumdev.2006.05.022

Masril, M., Hidayati, H., & Darvina, Y. (2018). Penerapan Discovery Learning Berbantuan Virtual Laboratory Untuk Meningkatkan Kompetensi Fisika Siswa Sma. *Jurnal Penelitian Pendidikan IPA*, *5*(1). https://doi.org/10.29303/jppipa.v5i1.160

Permata, Y. I., Sundari, P. D., Hufri, H., & Hidayati, H. (2024). Analisis Kebutuhan Peserta Didik Terhadap LKPD Berbasis Discovery Learning Pada Pembelajaran Fisika. *Jurnal Pendidikan …*, *8*, 8637–8645. https://jptam.org/index.php/jptam/article/view/13692%0Ahttps://jptam.org/index.php/jptam/article/download/13692/10550

Salim, Rasyid, I., & Haidir. (2020). Penelitian tindakan Kelas; Teori dan Aplikasi Guru Mata Pelajaran Umum dan Pendidikan Agama Islam di Sekolah. In *Indonesia Performance Journal 4*. Perdana Publishing. http://repository.uinsu.ac.id/15346/1/Buku PTK 2020 Isran.pdf

Sartono, B. (2019). Penerapan Model Pembelajaran Discovery Learning Berbantuan Lembar Kerja Siswa Untuk Meningkatkan Prestasi Belajar Fisika Materi Fluida Pada Siswa Kelas Xi Mipa 3 Sma Negeri 1 Ngemplak Boyolali Semester Ganjil Tahun Pelajaran 2018/2019. *Prosiding SNFA (Seminar Nasional Fisika Dan Aplikasinya)*, *3*, 52. https://doi.org/10.20961/prosidingsnfa.v3i0.28510

Wahyuni, S., Nasar, A., & Kaleka, M. (2020). Pengaruh Model Pembelajaran Discovery Learning Terhadap Hasil Belajar Fisika Siswa. *EduFisika*, *5*(02), 112–117. https://doi.org/10.22437/edufisika.v5i02.10431