

Implementation of Role-Playing Models in Learning Biology of High School Students

GUSMAWETI^{a*}, Meiliza ARDILLA^b, Wince HENDRI^c

^{abc}*Biology Education Study Program, Bung Hatta University, Padang, Indonesia*

*Corresponding Author: gusmaweti1960@gmail.com

Abstract

This study aims to look at differences in biology learning outcomes using role-playing models and conventional methods (lectures, discussions, questions, and answers) of class X SMA Negeri Lubuk Linggau. This type of research is experimental research. The population in the study were all students of class X SMA Negeri 1 Lubuk Linggau. Sampling was carried out by purposive sampling technique, then the determination of the experimental class and control class was carried out by random method. Obtained class X.1 as the experimental class, and class X.2 as the control class. The research instrument was used in the form of test questions for cognitive aspects of student learning outcomes, and observation sheets for affective and psychomotor aspects of learning outcomes. Hypothesis testing was carried out by t-test. The results showed that the average score for biology learning outcomes for students using Role Playing was 74.70 and 66.80 with conventional methods. There is a significant difference at the 0.05% alpha level. The results of observations of student learning in the experimental class affective aspects were 90.8 and psychomotor and 91.3, while in the control class affective aspects were 64.8 and psychomotor 66.6. It can be concluded that the application of the role-playing method in biology learning is better than conventional learning.

Keywords: Models, learning outcomes, learning, role-playing.

Acknowledgments: The author would like to thank the Chancellor of Bung Hatta University, the Dean of FKIP, and his staff, LPPM for funding and facilitating this research. Furthermore, thanks are also conveyed to all members of the research team who have helped until the realization of this article.

For citation:

Gusmaweti., Ardilla, M., Hendri, W. (2022). Implementation of Role-Playing Models in Biology Learning of High School Students. *Journal of Digital Learning and Distance Education*, 1(6), 250-257.

Introduction

Education reform must continue to be carried out to improve the quality of national education, namely by improving the curriculum or teaching models and methods used in the learning process, which are expected to improve the quality of education by producing quality learning outcomes. Until now, education has no limits to fully explaining the meaning of education because of its complex nature as its target, namely humans (Rahman et al., 2022).

In the process of learning biology, the selection of appropriate approaches, models, and methods is also a very important factor, because in addition to achieving goals one must really consider the characteristics and setting of the biology lesson. So far, the teacher uses a learning model with lectures and assignments. In this learning, the teacher dominates in teaching and learning activities while the students act more as listeners and note-takers. Teachers tend to transfer their knowledge into the minds of students, students are positioned as people who "know nothing". As a result, students become passive and less actively involved in learning activities. Meanwhile, the teacher is required to carry out an effective learning process so that the learning objectives are achieved properly.

Effective learning can achieve learning objectives. Zein (2021) states that effective learning is learning that empowers students to actively enable students to learn easily, and have fun and learning objectives can be achieved as expected. Therefore, many efforts can be made by educators to increase the importance of learning, especially in learning biology. Learning outcomes are abilities that students acquire after going through learning activities. Learning itself is a process of change from someone who seeks to obtain a form of quality behavior change in behavior such as skills, knowledge, attitudes, skills, and other abilities. Based on the opinions above, it can be concluded that learning outcomes are quality abilities possessed by students as changes in behavior after participating in the teaching and learning process by involving various cognitive, affective, and psychomotor aspects (Setiawan et al., 2022).

Success in the learning process, especially science, depends on aspects that include good collaboration between students and teachers, self-management, methods used in learning, evaluation strategies applied, as well as external factors that indirectly determine success. learning such as the cultural, social, and environmental context in which the individual grows up and growing (Bayuaji, 2020). The teacher's habit of delivering material in class often uses the lecture method so that the learning process becomes boring, students only listen, there is no stimulation of student interest and motivation, it is boredom that can result in low scores on student learning outcomes.

So far, the teacher uses a learning model with lectures and assignments. In this learning the teacher dominates in teaching and learning activities while the students act more as listeners and note takers. Teachers tend to transfer their knowledge into the minds of students. Students are positioned as people who "know nothing". As a result, students become passive and less actively involved in learning activities. Even though teachers are required to carry out an effective learning process so that learning objectives are achieved properly (Prasetyo, 2022).

Based on the results of observations the writer made at SMA Negeri I Lubuk Linggau with a biology teacher, that in the learning process activities in class, the teacher dominates, very few teachers give opportunities to students, for example asking questions, discussing and imagining expressions in understand the learning material, and the learning atmosphere becomes passive. When the teacher asked at the end of the lesson the students were shocked and could not answer the question. It is assumed that the student does not understand or does not pay attention. This has an impact on student learning outcomes. When holding daily tests, many student scores are incomplete. The low student learning outcomes also have an impact on the average grades of students' biology semester exams, especially grade X students with an average of 60.38 (Table 2),

under the Minimum Completeness Criteria (KKM), the KKM set is 70. To overcome the low student biology learning outcomes, several ways can be done, namely by varying the teacher's teaching methods which are more interesting and not boring.

One way to improve student learning outcomes is that teachers must create an innovative learning model. Fun learning in the classroom is something that teachers need to pay attention to. Fun learning in the classroom will create enthusiasm and enthusiasm for students in participating in a series of learning activities. The model that can be used in biology learning is role playing.

In (Prasetyo, 2022) and (Fazilah et al., 2020), it is stated that the Role Playing model is a way or also called a method that emphasizes students' mastery of learning materials through developing students' imagination and appreciation. Students are able to express and imagine independently and have fun. Learning by using role playing is the quality of role playing which is followed by an analysis of the decisions taken. In addition, it also depends on students' perceptions of real roles.

Role playing is also called the sociodrama method. Sociodrama basically dramatizes behavior in relation to social problems (Manik et al., 2013). Role playing consists of several steps, namely: a) Introduction, b) preparing topics c) preparing observers, d) compiling sentences for acting, e) determining cast members, f) each member learns their respective tasks, g) playing roles, h) Discussion and evaluation, i) Sharing experiences and conclusions (Rahmawati & Puspasari, 2020).

Learning outcomes are abilities that children acquire after carrying out teaching and learning activities. Learning itself is a process of someone trying to obtain a form of relatively permanent change in behavior. In programmed and controlled teaching and learning activities which are called learning activities or instructional activities. Learning objectives have been set in advance by the teacher. According to Mahananingtyas (2017) student learning outcomes are divided into three categories namely: cognitive (knowledge), affective (attitude), and psychomotor (skills).

Based on the description above, the authors conducted research with the title "Application of the Role-playing Method in Biology Learning for High School Students". The research objectives were 1) to find out the differences in students' biology learning outcomes in the students' cognitive domain. 2) looking at student learning outcomes in the affective and psychomotor aspects of students between learning with role playing learning models and with conventional learning methods in learning biology in class X SMA Negeri 1 Lubuk Linggau.

Methodology

The research subjects were students of class X SMA Negeri 1 Lubuk Linggau. This type of research is experimental. The population in this study were all students of class X SMA Negeri I Lubuk Linggau which consisted of 6 classes.

To obtain these two sample classes, a purposive sampling technique was used. Furthermore, to determine the experimental and control classes are carried out randomly. Then we get class X1 as the experimental class and X2 as the control class. The experimental class is a class taught by role playing model, and the control class is taught by conventional methods. The variables in this study are: the independent variable in the form of active role-playing learning, while the dependent variable is in the form of student biology learning outcomes in the cognitive field after being treated.

The type of data in this research is primary data, namely data on students' Biology learning outcomes obtained from the results of the final test after the research ends. In order to obtain the data in the research, it is necessary to carry out several stages consisting of: the data collection stage. The data needed in the research are in the form of student learning outcomes in the cognitive, affective and psychomotor domains. The cognitive domain is obtained from student learning

outcomes while participating in learning, while the psychomotor domain is obtained from students' questioning and answering skills during learning. For affective aspects of learning outcomes obtained from student responsibilities during the learning process.

The data collection instruments used were in the form of test questions for cognitive aspects of student learning outcomes, and observation sheets for affective and psychomotor aspects of learning outcomes. Data analysis to test the hypothesis used t-test.

Table 1. Number and average value of Biology class X SMA Lubuk Linggau

No	Class	Number (org)	Average Score
1	X1	34	60.38.
2	X2	36	60.59
3	X3	40	70.2
4	X4	40	71.02
5	X5	38	70.15
6	X6	40	70.02

Results and Discussion

Cognitive Learning Outcomes

Based on the learning process carried out in classes that were treated with role playing models and with conventional methods, and then statistical tests were carried out, data on student learning outcomes in cognitive aspects was obtained as shown in (Table 2).

Table 2. Average Biology learning outcomes of sample class students

Sample Class	Number of Students (N)	Grades Average (X)	Grades (S)
Experiment	34	74.7	8.95
Control	36	66.8	11.22

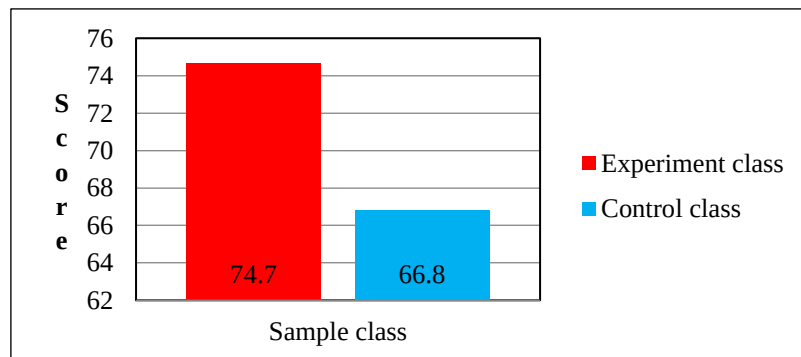


Figure 1. Cognitive Learning Outcomes of students in Experimental Class (role playing model) and Control Class (conventional method)

Table 2 and Figure 1 show the results of students' biology learning in the experimental class (X.1) with a total of 34 students who were treated with the role playing learning model, obtained an average value of 74.70 with a standard deviation of 8.95, and learning outcomes in the control class (X.2) with 36 students, an average of 66.80 was obtained with a standard deviation of 11.25.

The use of appropriate and varied learning methods can have a different impact on each student, especially the use of role-playing models. Model role-playing (role playing). Playing a role is dramatizing and expressing the behavior, expressions, and movements of a person in social relations between humans. With the role-playing method, students play a role or play a role in the dramatization of the problem/psychology. So that activities in such a way can provide a strong stimulus for students to have high motivation in teaching and learning activities (Azizi & Irwansah, 2020).

The results of this study also coincided with the results of other studies, that there was an increase in student activity and learning outcomes using the role-playing method for class XI A 5 SMK Negeri 2 Singaraja in the 2017/2018 academic year for the subject of processing and serving continental food (Sukelasmini, 2019).

Results of the Assessment of Affective and Psychomotor Aspects of Learning Outcomes

Assessment of student learning outcomes in the affective and psychomotor aspects using the role-playing model and conventional methods of students in class X SMA Negeri 1 Lubuk Linggau. The results of the assessment of the affective and psychomotor aspects can be seen in Table 3.

Table 3. Results of the assessment of psychomotor and affective aspects in the experimental and control classes

Meeting to	Score (%)			
	Class Experiment		Class Control	
	Affective	Psychomotor	Affective	Psychomotor
1	93,8	91	67	68
2	89,6	85,4	63,3	66,2
3	89,02	97,6	64,5	65,6
Σ	272,42	274	194,6	199,8
Average	90,8	91,3	64,8	66,6

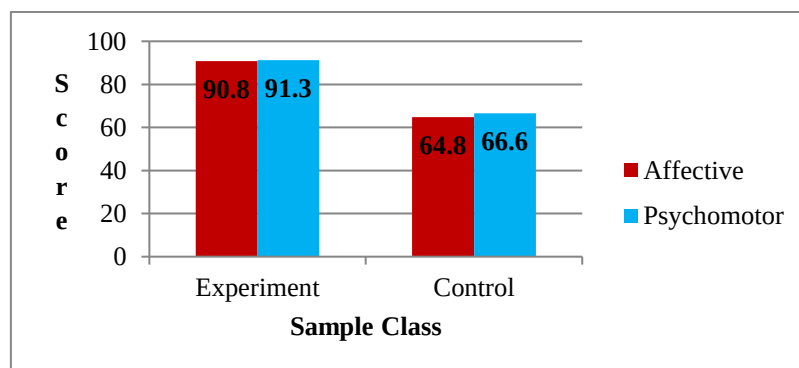


Figure 2. Results of the Assessment of Affective and Psychomotor Aspects in the Experimental and Control Classes

Table 3 and Figure 2 show the results of student learning assessments on the affective and psychomotor aspects of each meeting in the experimental class and the control class. The average result of the affective assessment in the experimental class was 90.8% and the control class was 64.8%, while the psychomotor assessment in the experimental class was 91.3% and the control class was 66.6%. Those taught by the role playing model were higher than the control class by the

conventional method, meaning that students were more skilled at asking and answering questions, and also had responsibility for their respective roles.

The results of this study are supported by the results of research that has been done before that learning by using role playing on the circulatory system in junior high schools has a positive and more effective impact on students in teaching and learning activities (Karim, 2022).

Results of the Normality Test for Student Learning Outcomes in Experimental and Control Classes

The normality test for experimental class and control class data was carried out using the Lilliefors test. From this test, the Lcount and Ltable values were obtained at the confidence level (α) = 0.05. If Lcount < Ltable, the data is normally distributed, as shown in Table 4.

Table 4. Data normality test results for both sample classes

Sample class	N	L _{hit}	L _{tab}	Information
Experiment	34	0.078	0.152	Normal distribution
Control	36	0.123	0.147	Normal distribution

Table 4 shows the results of the normality test for the two sample classes where in the experimental class Lcount = 0.078 and the control class Lcount = 0.123, Lcount < Ltable is obtained so that it can be concluded that the normality test results for the sample class are normally distributed.

Results of the Homogeneity Test of the Two Stamp Classes

Table 5. Data homogeneity test results for the two sample classes

Celass	A	Fcount	Ftable	Information
Experiment	0,05	0,64	1,84	Homogeneous Variance
Control				

From Table 5, showing the results of the homogeneity test of the two sample classes, it can be seen that Fcount < Ftable, meaning that the data obtained has a homogeneous variance. From the normality test and homogeneity test it turns out that both sample classes come from populations that are normally distributed and have a homogeneous variance. Thus, to test the hypothesis used t-test. The results of hypothesis testing can be seen in (Table 6).

Second Hypothesis Test Results for Sample Class

From the hypothesis testing carried out on biology learning outcomes between the experimental class (role playing learning with the control class (conventional method learning), the following results are obtained:

Table 6. Data hypothesis test results for both sample classes

Celass	T.count	T table	Information
Experiment	3.88	1/67	Hyphotesis accepted
Control			

Table 6 shows the results of the hypothesis test data for the two sample classes. Price tcount = 3.88 and ttable = 1.67. This means that the hypothesis is accepted, namely that there are

differences in student biology learning outcomes between the experimental class with the role playing model and the conventional method in learning biology for class X semester II students of SMA Negeri 1 in the 2012-2013 academic year. Thus the application of the role playing learning model shows significantly different results in the biology learning outcomes of students on the subject of the world of animals (manimalia) class X at SMA Negeri I Lubuk Linggau, meaning that student learning outcomes with the role playing model are better than conventional method. The same thing was also found in the results of research by (Mafruhah, 2021), that the role playing model has a significant effect on learning outcomes in sports learning in high school. Meanwhile, the results of student activities also experienced an increase in activity starting from being active in discussions that obtained "very good" responses, actively giving and answering questions to obtaining "good" assessment responses and actively giving conclusions by obtaining "good" responses from students. Thus the learning model using role playing, especially in circulatory system material, has an effective impact on students in teaching and learning activities in the classroom because it makes students more active, responsible for their respective roles (Karim, 2022). The results of the research by Sulistiyohadi (2021) and Fazilah et al., (2020) also reported the results of their research that there was an increase in the results and learning activities of MTsN students in the digestive system material. Furthermore, Hilala (2022) reported that the role-playing learning model for ecosystem material can increase student motivation and achievement. Increase student motivation and achievement in biology learning.

Conclusion

Based on the research results obtained, it can be concluded as follows: There is a significant difference in student learning outcomes in the cognitive aspect between the experimental class and role-playing learning with an average score of 74.70, and the control class with conventional learning methods of 66.80. The affective assessment in the experimental class was 90.8% higher than the control class 64.8%, and the psychomotor assessment in the experimental class was 91.3% and the control class was 66.6%.

References

- Azizi, A., & Irwansah, I. (2020). Pengaruh Metode Role Playing Terhadap Hasil Belajar Kognitif Ditinjau Dari Aktivitas Belajar Siswa. *Bioscientist: Jurnal Ilmiah Biologi*, 8(2), 229. <https://doi.org/10.33394/Bjib.V8i2.3094>
- Bayuaji, A. (2020). Peningkatan Hasil Belajar Siswa Pada Sistem Kontrol Terprogram Dan Pengaruhnya Dengan Menggunakan Model Pembelajaran Contextual Teaching And Learning (Ctl). *Jurnal Syntax Transformation*, 1(6), 228–233. <https://doi.org/10.46799/jst.v1i6.85>
- Fazilah, N., Kamal, S., & Hanim, N. (2020). Penggunaan Model Role Playing Untuk Meningkatkan Hasil Belajar Siswa Pada Materi Sistem Pencernaan Di Sman 1 Kuta Cot Glie Aceh Besar. *Prosiding Seminar Nasional Biotik*, 7(ii), 10–19.
- Hilala, Y. (2022). Upaya Meningkatkan Motivasi Dan Prestasi Belajar Siswa Pada Mata Pelajaran Biologi Melalui Penerapan Pembelajaran Role Playing Pada Siswa Kelas X Sma Negeri 1 Marisa. *Jurnal Pendidikan Masyarakat Dan Pengabdian*, 02(2), 703–710. <https://doi.org/10.37905/dikmas.2.2.703-710.2022>
- Karim, S. (2022). Efektivitas Penggunaan Model Pembelajaran Role Playing Terhadap Peningkatan Hasil Belajar Siswa Kelas Viii Di Smp Yp Pgri 4 Makassar. *Educator: Jurnal Inovasi Tenaga Pendidik Dan Kependidikan*, 2(2), 168–174. <https://doi.org/10.51878/educator.v2i2.1305>

- Mafruhah, B. D. (2021). Pengaruh Metode Role Playing Terhadap Hasil Belajar Dribble Bola (Studi Pada Siswa Kelas Xi Sma Negeri 2 Sampang) Mafruhah *, Bernard Djawa. *Jurnal Pendidikan Jasmani*, 09(01), 307–312. <https://Ejournal.Unesa.Ac.Id/Index.Php/Jurnal-Pendidikan-Jasmani/Article/View/38079>
- Mahananingtyas, E. (2017). Hasil Belajar Kognitif, Afektif Dan Psikomotor Melalui Penggunaan Jurnal Belajar Bagi Mahasiswa Pgsd. *Prosiding Seminar Nasional Hdpgsdi Wilayah Iv*, 192–200.
- Manik, K. S., Jampel, I. N., & Parmiti, D. P. (2013). Penerapan Metode Sosiodrama Berbantuan Media Kain Flanel Untuk Meningkatkan Kemampuan Bahasa Anak Kelompok B Di Tk Dharma Bhakti. *Jurnal Pendidikan Anak Usia Dini Undiksha*, 1(1), 1–11. <https://doi.org/10.23887/Paud.V1i1.1098>
- Prasetyo, T. H. (2022). Penerapan Model Pembelajaran Role Playing Untuk Meningkatkan Hasil Belajar Biologi Siswa Kelas Vii Smp Negeri 1 Kabat Semester Gasal Tahun Pelajaran 2021 / 2022. *Sosioedukasi: Jurnal Ilmiah Ilmu Pendidikan Dan Sosial*, 11(1), 139–156. <https://doi.org/10.36526/Sosioedukasi.V11i1.2039>
- Rahman, A., Munandar, S. A., Fitriani, A., Karlina, Y., & Yumriani. (2022). Pengertian Pendidikan, Ilmu Pendidikan Dan Unsur-Unsur Pendidikan. *Al Urwatul Wutsqa: Kajian Pendidikan Islam*, 2(1), 1–8.
- Rahmawati, A. P., & Puspasari, D. (2020). Penerapan Metode Pembelajaran Role Playing Untuk Meningkatkan Hasil Belajar Siswa Pada Mata Pelajaran Administrasi Humas Dan Keprotokolan Di SMKN Mojoagung. *Jurnal Pendidikan Administrasi Perkantoran (Jpap)*, 8(2), 227–240. <https://doi.org/10.26740/Jpap.V8n2.P227-240>
- Setiawan, A., Nugroho, W., & Widyaningtyas, D. (2022). Pengaruh Minat Belajar Terhadap Hasil Belajar Siswa Kelas Vi Sdn 1 Gamping. *Tanggap : Jurnal Riset Dan Inovasi Pendidikan Dasar*, 2(2), 92–109. <https://doi.org/10.55933/Tjripd.V2i2.373>
- Sukelasmini, I. G. A. M. (2019). Penerapan Model Pembelajaran Role Play Pada Mata. *Jipp*, 3(1), 9–15. <https://doi.org/10.23887/Jipp.V3i1.17104>
- Sulistiyohadi, A. (2021). Penerapan Metode Pembelajaran Bermain Peran Pada Materi Sistem Pencernaan Untuk Meningkatkan Aktivitas Dan Hasil Belajar Peserta Didik. *Jurnal Penelitian Sains Dan Pendidikan (Jpsp)*, 1(2), 104–111. <https://doi.org/10.23971/Jpsp.V1i2.3326>
- Zein, M. (2021). Pembelajaran Efektif Dan Pengenalan Terhadap Faktor-Faktor Psikis Yang Mempengaruhi Hasil Belajar. *Jurnal Manhaj*, 18, 2489–2509.