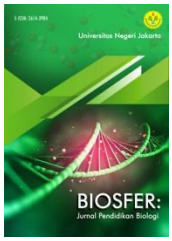
Biosfer: Jurnal Pendidikan Biologi

Journal homepage: http://journal.unj.ac.id/unj/index.php/biosfer



Students' communication skills and creativity in learning biotechnology with discovery learning combined with role-playing on

Fahdilah Cahya Ningrum, Yudi Rinanto*, Slamet Santosa

Biology Education, Faculty of Teacher Training and Education, Universitas Sebelas Maret, Indonesia

*Corresponding author: yudi.rinanto@staff.uns.ac.id

ARTICLEINFO

Article history
Received: 05 August 2024
Revised: 23 December 2024
Accepted: 26 December 2024

Keywords:
Communication Skills
Creativity
Discovery Learning
Role-Playing

ABSTRACT

Biotechnology is often seen as a difficult topic to be understood by students due to the prevalence of foreign terms and complex concepts. Therefore, a suitable, effective, and engaging learning method is essential. This research aims to determine an engaging learning method, namely role-playing, to enhance students' communication skills and creativity. This role-playing learning method is integrated with the discovery learning model. This research is quantitative research with a quasi-experimental model. This study used instruments in the form two types of post test questions, namely questions to determine communication skills and questions to determine student creativity after the experiment was conducted. Distributed in two classes used after two learning meetings in class. These results indicate the differences in communication skills and student creativity before and after the application of the role-playing learning method. The results indicate that the application of role-playing learning can facilitate the development of students' communication skills and creativity.

INTRODUCTION

Education requires significant attention. Education contributes significantly to national development. Education is a strategic sector to prepare quality human resources. The challenges of the 21st century require every individual to explore their potential and character that is relevant to the demands of society. This can be achieved through education. Every country is obliged to ensure the provision of adequate education. Industrial Revolution 4.0 and Society 5.0 necessitated human resources with better quality in all aspects of life. High-quality education at the primary, secondary, and tertiary levels represents a pivotal strategy for ensuring quality human resources to compete in the Industrial Revolution 4.0 (Doringin et al., 2020).

In the contemporary era, the role of qualified human resources in shaping people's lives cannot be overstated. In line with the findings of Ramdani et al. (2018), in the 21st century, qualified human resources are expected to possess high-level thinking skills. Higher-order thinking Skill (HOTS) is a complex cognitive process involving interpretation, critical analysis, and the formulation of solutions to problems. HOTS is comprised of three distinct abilities: critical thinking, creative thinking, and problem-solving. Saraswati & Agustika (2020) posit that these abilities collectively constitute HOTS. One aspect of HOTS is creative thinking. Creative thinking is a crucial element in the advancement of humanity, particularly in knowledge and technology. The absence of creative thinking impedes problem-solving (Munandar, 2016).

The importance of creativity in education has two aspects. Firstly, it improves the quality of education. Secondly, it is obtained from environmental stimuli and due to the process of learning (Heryanti et al., 2023). According to Rahmawati et al. (2022), creative thinking can create new ideas and find possible solutions to problems. Some of the key attributes related to creativity are flexibility, fluency, elaboration, and originality. It is important to recognize that everyone has the potential to be creative and this potential can be developed and trained. There is a clear link between creativity and success, as creativity allows humans to solve problems in unique and creative ways. This in turn can lead to an improved quality of life. The capacity for creativity within the educational context has undergone a process of evolution, particularly in light of the advent of media, digital literacy, and information (Rosa, 2023).

One method for fostering creativity is to enhance communication skills. Communication skills refer to the capacity to express ideas and present the outcomes of the thinking process in both written and oral formats (Goos & O'Sullivan, 2023). Communication skills represent a component of the science process skills utilized in conveying information (Masdul, 2018). Communication is an important aspect, especially in the current Merdeka Curriculum. Merdeka Curriculum is designed to foster students' self-confidence and active involvement in the learning process; learners with proficient communication skills are better equipped to convey ideas and information in a structured and logical manner. Effective communication can confer benefits, such as the ability to make informed choices (Fischhoff, 2013).

Communication skills and creativity can be developed using learning models that involve concrete learning experiences. One such model is the discovery learning model, which requires students to be creative and encourages active exploration of discoveries through making and doing. Discovery learning is a learning model that teaches learners to be active in finding concepts or knowledge of themselves, thus facilitating longer-term memory retention (Kusuma & Mustari, 2023). This learning model encourages students to develop exploration and search systematically, logically, and critically to gain knowledge, skills, and attitudes to develop abilities (Alfarizi, 2022). One of the topics that is suitable to sharpen students' creative thinking is biotechnology. Learning biotechnology is not merely memorization; rather, it can build students' knowledge and creativity. Learning biotechnology necessitates an understanding of the principles underlying bioprocesses (Setiadewi et al., 2015).

The discovery learning model is designed to facilitate student-centered learning. The discovery learning model encompasses several stages, including stimulation, problem statement, data collection, and data verification (Ekaputra, 2023). Discovery learning can be integrated with learning methods that enhance students' communication skills and creativity, such as role-playing-based learning. The role-playing method can be employed to facilitate learning more enjoyably. Assertion by Rahmat, (2010) posits that some students perceive biotechnology to be a challenging topic due to their inability to comprehend the underlying concepts and the dearth of innovative pedagogical approaches employed by educators. Teachers tend to use discussion, Q&A, direct lectures, experiments, demonstrations, and independent assignments. A mere 12% of teachers use the role-playing method (Rahmat, 2010). The

role-playing learning method employs the following steps: identifying problems, analyzing, role-playing, and discussing. Students will assume the role of objects that have been previously determined, thereby facilitating interaction between students (Hartati et al., 2021).

Research conducted by Gamanik et al. (2019) produced findings related to creative skills in two main dimensions, namely the process dimension and the product dimension. In the process aspect, the data obtained revealed that students' creative abilities in the aspects of imagination and risk-taking reached 79,4%. This indicates a high level of creative skills, with an overall percentage of 77,8%. On the other hand, in the product dimension, students' creative skills were recorded at 76%. Meanwhile, for the aspect of students' curiosity, the value obtained was 63,5%, which indicates the level of curiosity among students. The utilization of role-playing in learning is designed to stimulate imagination, arouse curiosity, and facilitate interaction, thereby enhancing the acquisition of scientific concepts. This research was conducted by integrating the discovery learning model with the role-playing method. The role-playing method allows for the engagement of multiple sensory abilities, including auditory, visual, writing, and kinesthetic (Hartati et al., 2021). The discovery learning model has the potential to utilize role-playing because it can engage students in both non-verbal and verbal actions that facilitate dynamic learning. The discovery learning model and role-playing method have the potential to improve students' communication skills and creativity in the learning process.

METHODS

Research Design

This research was a quantitative quasi-experiment. Quantitative research is defined as research that employs calculations, measurements, formulas, and numerical data in the planning, processes, making conjectures, techniques, and analysis of data, which can be used to conclude (Waruwu, 2023). The experiment is employed to elucidate the causal relationship between one variable and another (X, Y variables) (Syahrizal & Jailani, 2023). The research used a post-test-only, non-equivalent control group design. The independent variables used are discovery learning and role playing, while the dependent variables are students' communication skills and creativity. By using one class as the treatment class and one class as the control class.

Population and Samples

The population was students in the 10th grade at SMAN 3 Sukoharjo, Indonesia, during the 2023/2024 academic year. The population was divided into four classes, designated as X1, X2, X3, and X4. The sample was selected using cluster random sampling in the form of randomization to select two classes to be used for the experiment. Each class contains 36 students. Two classes selected randomly from the population were selected as the samples. One class was the control group, receiving instruction through only the discovery learning model. The other was the experimental group, receiving instruction through the discovery learning model combined with the role-playing learning method.

Instrument

Data were collected using two types of questionnaires: One for communication skills and one for creativity. The communication skill questionnaire comprises 35 questions, while the creativity questionnaire contains 30 questions, all using the Likert scale. The Likert scale has two forms of questions, namely positive questions to measure the positive scale and negative scales to measure the negative scale. This scale can measure a person's opinions, perceptions, and attitudes regarding a phenomenon or event (Pranatawijaya et al., 2019). In addition, a series of teaching modules were also produced. The instruments have been validated using expert judgments.

Procedure

The experimental class used a discovery learning approach integrated with role-playing learning methods. In contrast, the control class only used the discovery learning model. The post-test-only method was utilized to compare the differences in students' learning outcomes due to different learning methods. The questionnaires were administered to assess students' communication skills and creativity. The data were analyzed to evaluate whether there are differences in students' communication skills and creativity due to different learning conditions.

The instruments were tested for validity and reliability before being implemented. The validity and reliability were tested using the Rasch model in conjunction with inferential statistics. The content validity test assessed the instrument's ability to align with the topic in question. The construct validity test and item validity test, on the other hand, use the product moment correlation formula. The reliability test used alpha Cronbach and was calculated with the SPSS.

Learning activities were given twice in both the treatment and control classes. The material given was a sub-chapter on biotechnology starting from the opening. Furthermore, after being given the material for two meetings, students from both classes were given a post-test using a previously prepared instrument to determine the differences in their communication and creativity skills.

Data Analysis Techniques

Data were analyzed using parametric statistics. Parametric statistical is based upon two assumptions: firstly, the data to be tested must be normally distributed; and secondly, the samples used in the study must be homogeneous. The prerequisite tests required for this study are normality tests and homogeneity tests. The data were obtained in the form of a communication skill questionnaire (Sudjana, 2010) and student creativity, which was obtained from a questionnaire (Pranatawijaya et al., 2019). The scores on the questionnaire were based on a Likert scale. The questions have two forms: positive questions for measuring positive scales and negative questions for measuring negative scales. The scale can be utilized to assess an individual's opinions, perceptions, and attitudes regarding a phenomenon or event (Pranatawijaya et al., 2019). The Likert scale is presented in Table 1. The communication skills scale is presented in Table 2, and Table 3 shows the scales for creativity.

Table 1
Likert Scale.

Answer	Score	
	Positive Question (+)	Negative Question (-)
Strongly agree	5	1
Agree	4	2
Moderate	3	3
Disagree	2	4
Strongly disagree	1	5

Table 2
Communication Skills Scale.

Percentage Score (%)	Category
> 90	Very effective
80 - 90	Effective
70 - 80	Quite effective
60 - 70	Less effective
<60	Much less effective

Table 3
Creativity Scale.

Percentage Score (%)	Category
81 - 100	Very high
61 - 80	High
41 - 60	Medium
21 - 40	Low
0 - 20	Very low

The independent t-test was used to address the first and second hypotheses, namely to determine the differences in students' communication skills and creativity between classes. If the p-value is less than 0.05, then there are significant differences in students' communication skills and creativity between the experimental and control groups. The Two-Way MANOVA test was employed to examine the third hypothesis, to know the difference in students' communication skills and creativity between classes. The Sig. <0.05 implies that there is a genuine distinction in communication skills and creativity between two student groups.

RESULTS AND DISCUSSION

Description of data on students' communication skills and creativity

The assessment of students' communication skills and creativity was conducted after the learning process. This study involved two class groups. Class X1 was designated as the treatment group (experimental class) and subjected to the role-playing learning method in conjunction with the discovery learning model. Class X4 served as the control group and employed the conventional discovery learning approach. The data on students' communication skills and creativity after the intervention are presented in Table 4.

Table 4
Students' Communication Skills and Creativity Score after Treatment in Each Class.

Statistical Results	Communication Skills		Creativity	
	Control	Experiment	Control	Experiment
N	36.00	36.00	36.00	36.00
Mean	70.81	76.54	64.98	70.15
Median	70.00	75.72	63.33	69.33
Std. Deviation	7.03	6.93	4.94	6.04
Minimum	61.71	65.71	60.00	62.67
Maximum	91.43	96.00	81.33	90.67

The results indicated that for communication skills, the average score in the experimental class was 76,54, while in the control class, it was 70.81. The data show that the averages in the experimental class are higher than the control class, with a difference of 5.73. The data on the maximum scores show that the experimental class achieved a higher maximum score compared to the control class. Conversely, the data on the minimum scores demonstrate that the experimental class reached a higher minimum score, while the control class exhibited a higher standard deviation. This suggests that the control class has a greater degree of variation in the students' communication skills.

The results for the students' creativity show that the average score in the experimental class was 70.15, while in the control class it was only 64.98. The average in the experimental class is higher than the control class, with a difference of 5.17. Furthermore, the experimental class had a higher maximum score compared to the control class. The results also show that the experimental class achieved a higher minimum score, while the experimental class exhibited a higher standard deviation. This suggests that the control class has a greater degree of variation in the students' creativity.

Data Distribution of Students' Communication Skills and Creativity

The results show that in communication skills, the control class demonstrates a greater degree of variability than the experimental class. This is evidenced by the standard deviation, which reaches 7.03 in the control class and 6.93 in the experimental class. The data indicates that 18 students in the control class achieved scores in the 61–70 range, while the lowest score in the experimental class fell within this range (achieved by six students). On average, students in the control class achieved communication skills scores in the 61–70 range. The mean score for the experimental class was in the 71–80 range. One student scored in the 91–100 range in both the experimental and control classes. The distribution of scores can be seen in Figure 1.

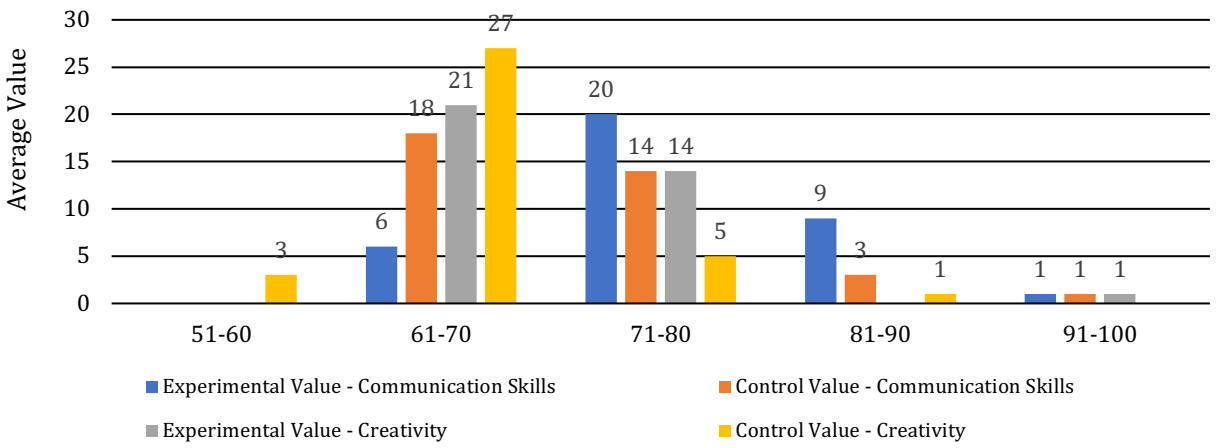


Figure 1. Distribution of students' scores on the Communication Ability and Creativity

The data on students' creativity scores indicated that the lowest score range of the experimental classes was 61–70, while the lowest score range of the control classes was 51–60. The majority of students in the experimental class were in the 61–70 range, the same as the controls. The highest students' creativity score for the experimental class is in the 91–100 range (one student). In the control class, the highest score is in the 81–90 range (one student). The results indicate that the experimental class demonstrated superior outcomes in terms of communication skills and creativity. It can be seen from the number of students who achieved the highest scores.

The impact of discovery learning and role-playing on the student's communication skills

The independent t-test shows a statistically significant difference in the student's communication skills between the experimental and control classes. The sig. The value is 0.001 <0.05. These results indicate a significant difference in students' communication skills between the control class and the experimental class. The results also show that the experimental class gains more improvement than the control. The mean difference was 5.73. The mean difference (gain) between the control and experimental classes is illustrated in Figure 2.

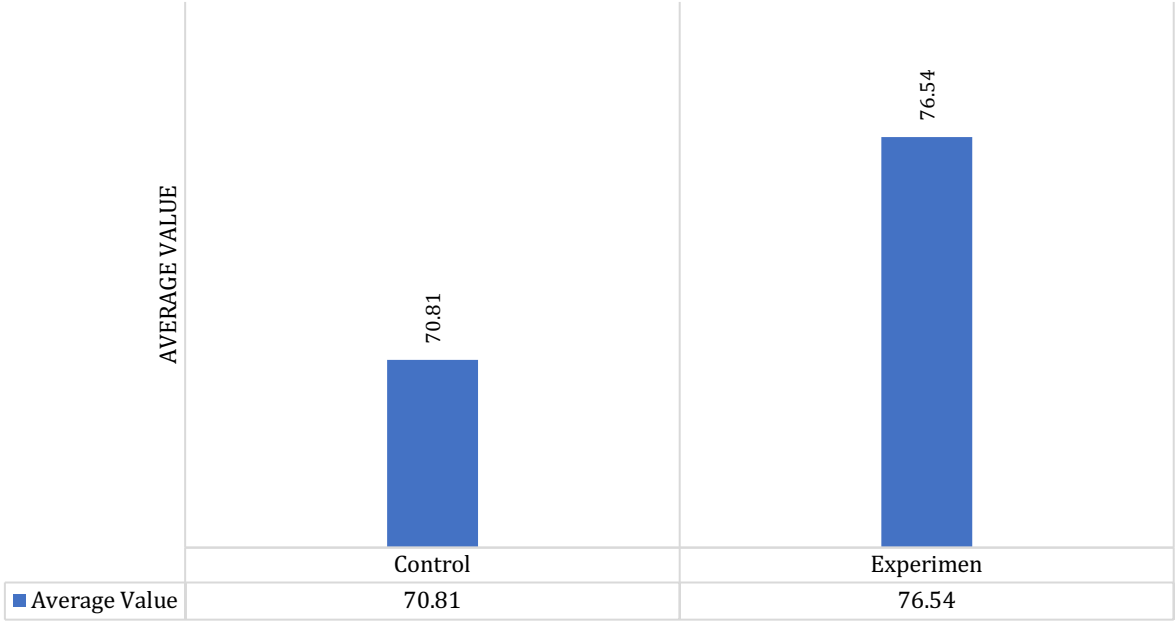
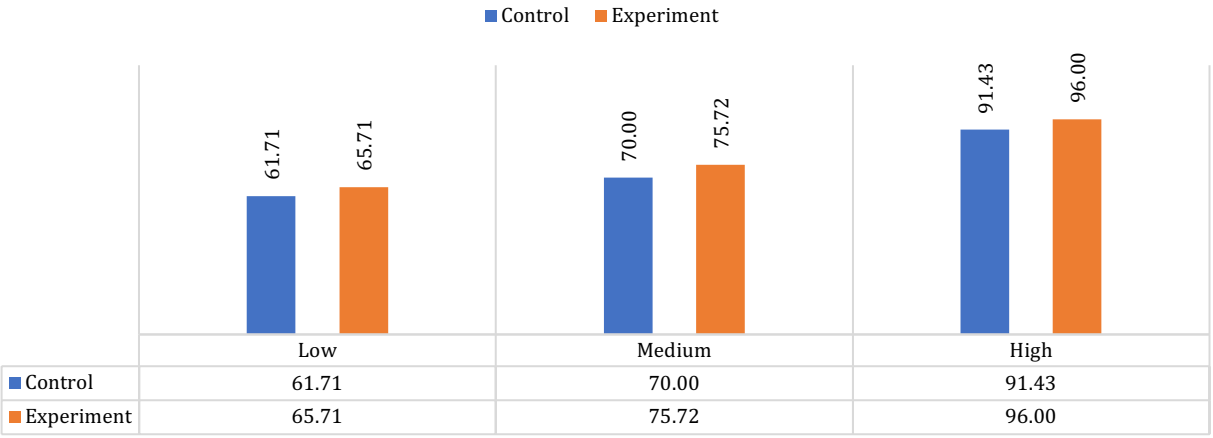


Figure 2. Average Communication Ability of Control and Experiment Class Students

Figure 2 shows that the mean score was higher in the experimental class. The observed increase can be attributed to the integration of role-playing as a learning method. The value of communication skills also shows differences. The differences in the range of communication skills scores between the control and experimental classes can be seen in Figure 3.



	Low	Medium	High
Control	61.71	70.00	91.43
Experiment	65.71	75.72	96.00

Figure 3. Range of Communication Skill Scores for Control and Experiment Classes

Incorporating role-playing is a significant factor in enhancing students' communication skills. Role-playing offers a distinctive approach to learning, as it is an engaging and enjoyable activity for students. Students can assume various roles based on the characters taught in the lessons, as guided by the instructor (Kertia, 2019). Furthermore, role-playing can help to eliminate fear and embarrassment, as students are required to appear in front of the class and work together with their group members (Hartati et al., 2021). Communication is required to express ideas both in written and oral form (Goos & O'Sullivan, 2023). This result is consistent with the findings presented in Figure 2. Data demonstrate that the average score of students' communication skills in the experimental class is higher than in the control class. This result supports the assertion that the role-playing learning method can have a positive impact on learners' communication skills.

The role-playing learning method has the potential to enhance interaction between students. The role-playing activities allow students to engage in collaborative work with their group members by assuming a role that is communicated to other groups. This method offers several advantages, including the promoting students' initiative in the practice and comprehension of roles to be played. Additionally, it fosters cooperation and the sharing of responsibilities among students. It can also foster students' participation in a learning experience (Rizkia et al., 2019).

The impact of discovery learning combined with role-playing on the students' creativity

The independent t-test also revealed a striking difference in students' creativity scores. The sig. Value is 0.00 <0.05. The research findings indicate that there are significant differences the students' creativity between the control and experimental classes. The results indicate that the average value of creativity in the experimental class is higher than that of the control class, with a mean difference of 5.17. The difference in mean scores between classes can be observed in Figure 4.

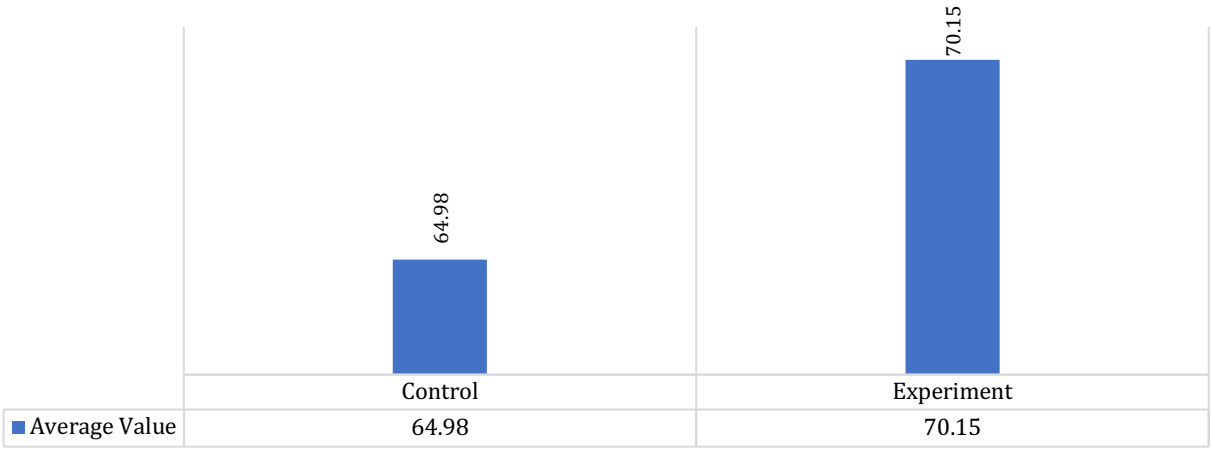


Figure 4. Average Scores of Students' Creativity in Each Class

The mean score of students' creativity in the experimental class is higher (70.15) than the control class (64,98). The gain in the experimental class is attributed to the integration of role-playing during learning. It can be posited that role-playing learning can enhance students' creativity. The scores can be categorized into the lowest, medium, and high scores. The distribution of student creativity scores is illustrated in Figure 5.

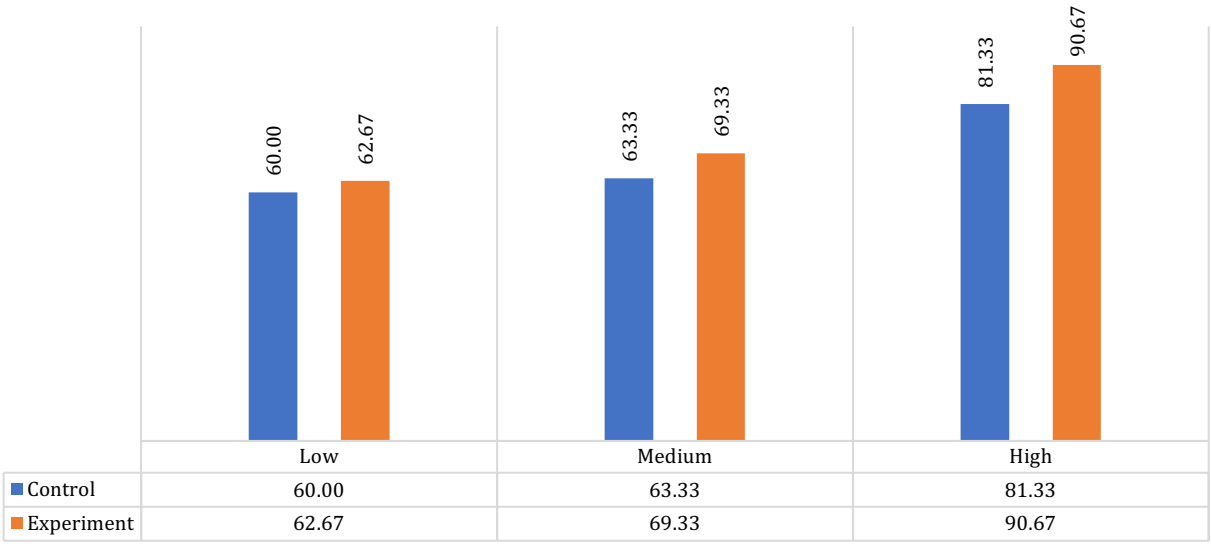


Figure 5. Creativity Score Ranges of Control and Experiment Classes

Creativity is a cognitive process that enables the generation of novel ideas and the identification of potential solutions to challenges, ultimately leading to the achievement of a learning objective. While creativity cannot emerge spontaneously, it can be cultivated through a structured process such as education. Role-playing techniques have been demonstrated to effectively enhance creativity, as they necessitate active engagement within a group setting (Yasin & Baresi, 2024). Role-playing can facilitate a more positive learning environment, encouraging students to become more engaged with the activities. This, in turn, improves students' creativity.

The present study examines the role of role-playing in fostering communication skills and creativity among learners

The discovery of learning syntax combined with the role-playing method resulted in a higher level of communication skills and creativity. This result has been supported by the results of the Two-Way MANOVA test. The test resulted in the sig value of 0.000 <0.05. The results indicate that there are differences in communication skills and creativity between the two groups. The difference in mean scores between the control and the experimental class can be seen in Figure 6.

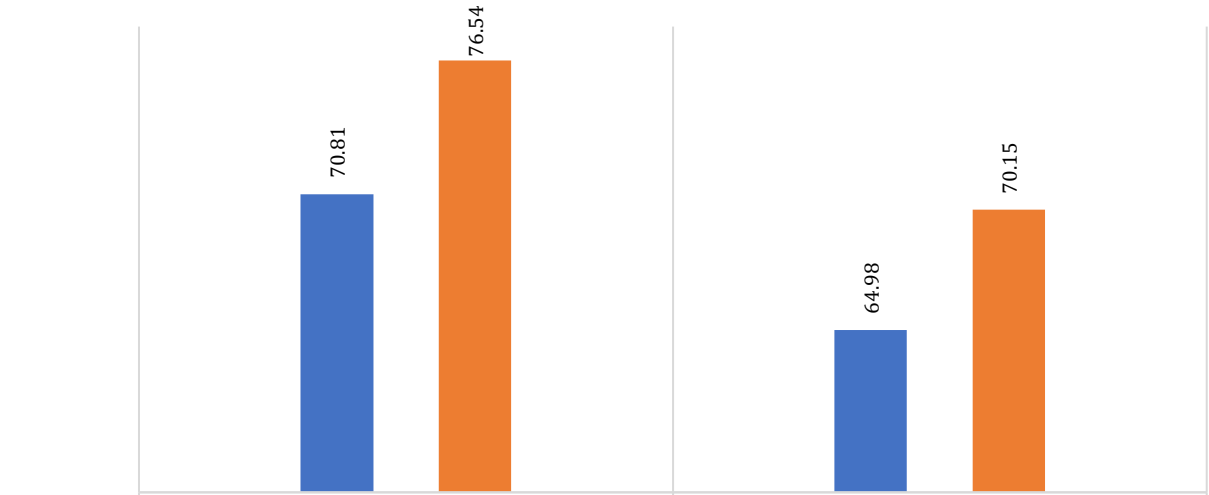


Figure 6. Average Communication Ability and Creativity of Control and Experiment Class Students

Figure 6 illustrates the mean scores of communication skills and creativity from both classes. The mean scores in the experimental class were higher than the control class. The improved communication skills and creativity observed in the experimental class were attributed to the integration of the role-playing method within the discovery learning framework.

The acquisition of high communication skills plays a pivotal role in enhancing creativity, particularly in learning environments that employ the discovery learning model. Integrating the discovery learning model with the role-playing method is effective in fostering a conducive learning atmosphere that facilitates the growth of the student's communication skills and creativity. The findings of this study indicate that there is a synergistic relationship between the discovery learning model and role-playing in the development of students' communication skills and creativity.

CONCLUSION

Discovery learning and discovery learning models combined with role-playing have been found to improve students' communication skills and creativity. The discovery learning model and role-playing have a synergistic relationship in developing students' communication skills and creativity.

ACKNOWLEDGMENT

This research was made possible with the support of SMA 3 Sukoharjo, which provided the necessary resources to conduct the study. We would also like to express our gratitude to the 10th-grade students of SMA 3 Sukoharjo, whose contributions ensured the success and efficiency of the research.

REFERENCES

Alfarizi, A. (2022). Literature Review: Implementasi Model Pembelajaran Discovery-Learning Berbasis Sains pada Pembelajaran IPA. *Jurnal Sains Edukatika Indonesia (JSEI)*, *4*(2). https://jurnal.uns.ac.id/jsei/article/view/70945/39329

Doringin, F., Tarigan, N. M., & Prihanto, J. N. (2020). Pendidikan di Era Revolusi Industri 4.0 Education. *Jurnal Teknologi Industri Dan Rekayasa (JTIR)*, *1*(1), 43–48. https://doi.org/10.53091/jtir.v1i1.17

Ekaputra, F. (2023). Efektivitas Penerapan Model Pembelajaran Praktikum Dengan Model Discovery Learning Dalam Meningkatkan Kemampuan Kolaborasi Dan Kreativitas Mahasiswa. *Paedagoria : Jurnal Kajian, Penelitian Dan Pengembangan Kependidikan*, *14*(3), 238–242. http://journal.ummat.ac.id/index.php/paedagoria

Fischhoff, B. (2013). The sciences of science communication. *Proceedings of the National Academy of Sciences of the United States of America*, *110* (SUPPL. 3), 14033–14039. https://doi.org/10.1073/pnas.1213273110

Gamanik, N. M., Sanjaya, Y., & Rusyati, L. (2019). Role-Play Simulation for Assessing Students' Creative

Skill and Concept Mastery. *Journal of Science Learning*, *2*(3), 71–78. https://doi.org/10.17509/jsl.v2i3.14848
Goos, M., & O'Sullivan, K. (2023). The Evolution and Uptake of Numeracy and Mathematical Literacy as Drivers for Curriculum Reform. In *New ICMI Study Series: Vol. Part F776*. https://doi.org/10.1007/978-3-031-13548-4_21
Hartati, T., Nuryani, P., Hartati, T., Studi, P., Guru, P., Dasar, S., Pedagogik, D., Pendidikan, F. I., & Indonesia, U. P. (2021). *Penerapan Metode Role-Playing Untuk*. *1*(I), 1–12.
Heryanti, Y. Y., Tatang Muhtar, & Yusuf Tri Herlambang. (2023). Makna Dan Implementasi Kurikulum Merdeka Belajar dan Relevansinya Bagi Perkembangan Siswa di sekolah Dasar : Telaah Kritis Dalam Tinjauan Pedagogis. *Jurnal Elementaria Edukasia*, *6*(3), 1270–1280. https://doi.org/10.31949/jee.v6i3.6118
Kertia, N. (2019). Penerapan Model Pembelajaran Kooperatif Tipe Role Playing untuk Meningkatkan Hasil Belajar Siswa Kelas X AP1 Pada Pelajaran PPKn. *Jurnal Pedagogi Dan Pembelajaran*, *2*(1), 25. https://doi.org/10.23887/jp2.v2i1.17604
Kusuma, T. S. W., & Mustari, M. (2023). Model Discovery Learning Sebagai Upaya Meningkatkan Kemampuan Menulis Teks Cerita Pada Siswa SD. *Jurnal Ilmiah Pendidik Indonesia*, *2*(1), 46–55. https://doi.org/10.56916/jipi.v2i1.319
Masdul, M. R. (2018). Komunikasi Pembelajaran Learning Communication. *Iqra: Jurnal Ilmu Kependidikan Dan Keislaman*, *13*(2), 1–9. https://www.jurnal.unismuhpalu.ac.id/index.php/IQRA/article/view/259/1335
Munandar, M. (2016). Kreativitas & keberbakatan strategi mewujudkan potensi kreatif & bakat.
Sudjana, N. (2010). Penilaian hasil proses belajar mengajar.
Pranatawijaya, V. H., Widiatry, W., Priskila, R., & Putra, P. B. A. A. (2019). Penerapan Skala Likert dan Skala Dikotomi Pada Kuesioner Online. *Jurnal Sains Dan Informatika*, *5*(2), 128–137. https://doi.org/10.34128/jsi.v5i2.185
Rahmat, A. (2010). Kajian Terhadap Metode Dan Pendekatan Pembelajaran Biologi Di Sma: Kesenjangan Dalam Pembelajaran Di Kelas. *Jurnal Pengajaran MIPA*, *15*(1), 25–34. https://doi.org/10.18269/jpmipa.v15i1.35985
Rahmawati, S. D., Mulyatna, F., & Gusniwati, M. (2022). Pengaruh Kecerdasan Visual Spasial Dan Self Concept Terhadap Kemampuan Berpikir Kreatif. *Jurnal Cartesian (Jurnal Pendidikan Matematika)*, *2*(1), 144–155. https://doi.org/10.33752/cartesian.v2i1.3456
Ramdani, A., Jufri, A. W., Jamaluddin, J., & Azizah, A. (2018, June). PENGEMBANGAN PERANGKAT PEMBELAJARAN BIOLOGI MODEL GUIDED DISCOVERY UNTUK MEMBERDAYAKAN KEMAMPUAN BERPIKIR TINGKAT TINGGI SISWA SMA. In *Prosiding Seminar Nasional Pendidikan Biologi* (pp. 333-339). https://jurnalfkip.unram.ac.id/index.php/SemnasBIO/article/view/594
Rizkia, D., Rohmah, H., & Bahtiar, Y. (2019). The Improvement of English Speaking Skills Using Role-Playing Method. *Journal of Education and Management Studies*, *2*(5), 2654–5209.
Rosa. (2023). *Dedikasi pkm*. *5*(1), 55–61.
Saraswati, P. M. S., & Agustika, G. N. S. (2020). Kemampuan Berpikir Tingkat Tinggi Dalam Menyelesaikan Soal HOTS Mata Pelajaran Matematika. *Jurnal Ilmiah Sekolah Dasar*, *4*(2), 257. https://doi.org/10.23887/jisd.v4i2.25336
Setiadewi, F., Suryawati, E., & Mahadi, I. (n.d.). The Development of Discovery Learning-Oriented Student Worksheets To Improve Students Creative Thinking Skills in Biotechnology Topic for Berorientasi Model Pembelajaran Discovery Learning (Dl) Untuk Meningkatkan Kemampuan. *2015*, *43*, 1–13. https://www.neliti.com/publications/201926/pengembangan-lembar-kerja-siswa-lks-berorientasi-model-pembelajaran-discovery-le
Syahrizal, H., & Jailani, M. S. (2023). Jenis-Jenis Penelitian Dalam Penelitian Kuantitatif dan Kualitatif. 1, 13–23. https://doi.org/10.61104/jq.v1i1.49
Waruwu, M. (2023). Pendekatan Penelitian Pendidikan: Metode Penelitian Kualitatif, Metode Penelitian Kuantitatif dan Metode Penelitian Kombinasi (Mixed Method). *Jurnal Pendidikan Tambusai*, *7*(1), 2896–2910. https://doi.org/10.31004/jptam.v7i1.6187
Yasin, M., & Baresi, I. S. (2024). Menumbuhkan Minat Belajar Siswa Melalui Metode Pembelajaran Kreatif. https://doi.org/10.62504/JIMR75xf4w76