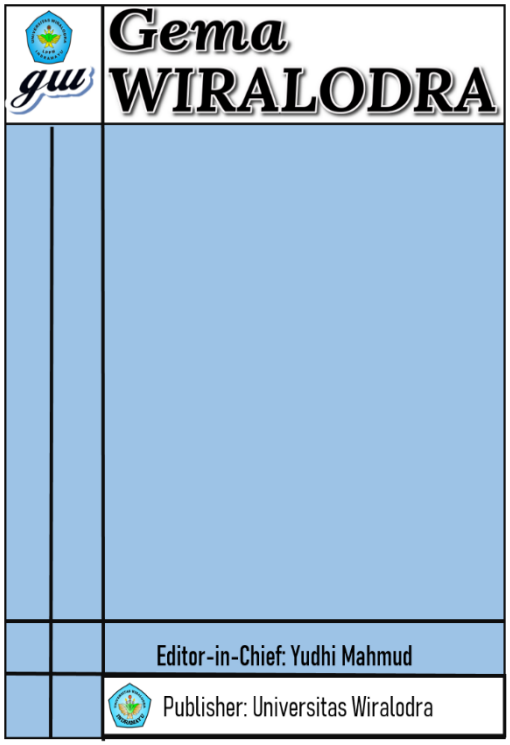
Gema Wiralodra

Publication details, including instructions for authors and subscription information:
https://gemawiralodra.unwir.ac.id



Improving Student Learning Outcomes Of Class X MAN 1 Indramayu Through The Application Of Differentiated PjBL Learning Model

Idah Hamidah[a*], Nur Subkhi[b], Jesicha Nais[c], Anilia Ratnasari[d]

[a,*]Universitas Wiralodra, Jawa Barat, Indonesia, idah.hamidah@unwir.ac.id
[b] Universitas Wiralodra, Jawa Barat, Indonesia, nursubkhi@unwir.ac.id
[c] Universitas Wiralodra, Jawa Barat, Indonesia, Jesichanais12@gmail.com
[d] Universitas Wiralodra, Jawa Barat, Indonesia, anilia@unwir.ac.id

To cite this article:
Hamidah, I., Subkhi, N.,Nais, J., Ratnasari, A. (2025) Improving Student Learning Outcomes Of Class X MAN 1 Indramayu Through The Application Of Differentiated PjBL Learning Model. *Gema Wiralodra*, *16*(1), 133 – 138.
To link to this article:
https://gemawiralodra.unwir.ac.id/index.php/gemawiralodra/issue/view/34
Published by:
Universitas Wiralodra
Jln. Ir. H. Juanda Km 3 Indramayu, West Java, Indonesia

Gema Wiralodra, 16(1), 133 – 138
https://gemawiralodra.unwir.ac.id/index.php/gemawiralodra
p – ISSN: **1693 – 7945**
e – ISSN: **2622 – 1969**

Orginal Article

Improving Student Learning Outcomes Of Class X MAN 1 Indramayu Through The Application Of Differentiated PjBL Learning Model

Idah Hamidah[a*], Nur Subkhi[b] , Jesicha Nais[c], Anilia Ratnasari[d]
[a,*]Universitas Wiralodra, Jawa Barat, Indonesia, idah.hamidah@unwir.ac.id
[b] Universitas Wiralodra, Jawa Barat, Indonesia, nursubkhi@unwir.ac.id
[c] Universitas Wiralodra, Jawa Barat, Indonesia, Jesichanais12@gmail.com
[d] Universitas Wiralodra, Jawa Barat, Indonesia, anilia@unwir.ac.id

***Correspondence: idah.hamidah@unwir.ac.id**

Abstract
The differentiated Project Based Learning model offers an interesting solution. The PJBL model itself is a model that exposes X-2 MAN 1 Indramayu students to relevant learning, which positively influences the development of student's creative thinking, allowing students to actively explore knowledge, ask questions, find problems, design, and implement projects. This study aims to improve the learning outcomes of X-2 MAN 1 Indramayu students by applying the differentiated PJBL learning model. Using a quantitative percentage method. The subjects in this study were 26 students of class X-2 MAN 1 Indramayu in the 2024/2025 academic year. Based on the study's results, the differentiated PJBL learning model was successfully applied to see student learning outcomes. As many as 55.6% of students got high learning outcomes, 30.8% of students were in the middle, and 13,6% of students were in the middle criteria. Overall, it can be concluded that the average student learning outcomes achieve high criteria in the visual learning style (45.6%), meaning that student learning outcomes are considered good after learning using the differentiated PJBL model.
Keywords: Learning Outcomes, Learning Models, Project Based Learning, Differentiated, High School Students.

1. Introduction

The National Education System Law No. 20 of 2003 states that education is a vehicle for developing individual abilities to take responsibility for their own lives, to be creative, critical, and reason well, and to develop their moral potential. Education is a humanism-based process, sometimes known as humanizing humans. As a result, we should be able to respect each individual's fundamental rights. In other words, students are not machine humans who can be controlled at will, but they are a generation that we need to aid and care about in every step of change toward maturity so that they can form human. Students, in other words, are not machine humans who can be controlled at will; rather, they are a generation that we must assist and care for in every phase of maturation so that they can develop into human beings who are independent (free) to think critically and have good moral attitudes. As a result, education does more than only make people different from other people who can eat, drink, dress, and have a place to live; this is known as "humanizing humans." Thinking skills are one of the life skills that must be cultivated during the education process. A person's ability to achieve in life is dictated by his or her thinking skills, particularly in problem solving (Juliyantika & Batubara, 2022).

Learning styles are related to the way children learn, as well as their preferred learning styles. Each student has different learning styles, interests, and abilities. This requires teachers to be able to adjust learning methods to accommodate the needs of each student at the beginning of the learning experience; one of the first steps is to recognize the modality of the learning style they have, whether visual, auditory or kinesthetic. This categorization is only a guideline that individuals only have one of the most prominent characteristics, so if the individual gets the appropriate stimulation in learning, it will be easier to absorb the lesson. (Supit et al., 2023).

This study was conducted to obtain an overview of three learning styles (visual, auditory, and kinesthetic) and the academic achievement of respondents. Furthermore, the study

p – ISSN: **1693 – 7945**
e – ISSN: **2622 – 1969**

aims to determine whether there is a significant relationship between learning styles and the academic achievement of X-2 MAN 1 Indramayu students. This study's objectives were to answer the following questions: Which student learning style is dominant among visual, auditory, and kinesthetic? How high is the level of student academic achievement, and is there a relationship between students' visual, auditory, and kinesthetic learning styles and the level of student academic achievement (Supit et al., 2023). To overcome these challenges, the differentiated project-based learning (PJBL) learning model offers an interesting solution. The PJBL model confronts students with relevant learning, which positively influences the development of students' creative thinking. It allows students to actively explore knowledge, ask questions, find problems, design, and implement projects. (Fadiyah Andirasdini & Fuadiyah, 2024).

Differentiated learning is when all students succeed according to their capacity. It is important to note that some students must have good knowledge about a particular learning topic. In contrast, other students do not because the student has completely new knowledge about the topic. In addition, some students also have better and faster understanding abilities if they listen to their teacher's explanation directly or via audio. In contrast, some other students can learn effectively if they actively participate in the learning process, and others must spend time reading on their own to get complete and more complete knowledge. In addition, we may also have children who enjoy learning and collaborating in a small group, while some other children prefer to learn independently. Differentiated learning is also defined as a way of recognizing and teaching according to different students' talents and learning styles. Teachers facilitate students according to their needs because each student has different characteristics, so they cannot be treated equally. Differentiated learning is not individualized learning (Ayu Sri Wahyuni, 2022).

Student learning outcomes are achievements achieved academically through exams and assignments, actively asking and answering questions that support the achievement of these learning outcomes. The idea often arises in academic circles that educational success is not determined by the student's grades listed on the report card or diploma. However, the measure of cognitive success can be seen through a student's learning outcomes. It can be seen from "student absorption and behaviour that is seen in students to find out the indicators of learning success. Teachers have also used question-and-answer methods accompanied by the provision of concrete examples in everyday life that are related to the subject matter. However, students tend to only answer these questions by paying attention to the teacher's explanation without doing other activities such as discussing (Somayana, 2020)

2. Method

This study employs a quantitative percentage research approach. This study was carried out in class X-2 MAN 1 Indramayu during the 2024/2025 academic year. The subjects of this study were 26 students from class X-2 MAN 1 Indramayu during the 2024/2025 academic year, and the goal of the study was to improve learning outcomes. The data was collected using the test procedure by using the control class and the experiment class. The sampling technique uses random sampling. The technique used to evaluate. To determine the increase in student learning outcomes, the N-gain score analysis was carried out according to (Hake, R., 1999). The maximum N-gain score is the highest possible gain score that students can obtain. (Nurhayati & Novianti, 2020).
The Gain Score criteria are listed in Table 1. Meanwhile, the N-gain score can be expressed by the following formula:

$$\text{N-Gain} = \frac{\text{(Posttest Score – Pretest Score)}}{\text{(Ideal Score - Pretest Score)}}$$

p – ISSN: **1693 – 7945**
e – ISSN: **2622 – 1969**
Orginal Article

by:
Sf = skor final/ final Score (post-test)
Si = skor initial / initial Score (pre-test)
Smaks = maximum possible score

The Gain Score criteria can be seen in Table 1 as follows.

Table 1.
Gain Score Criteria

Gain Score	Criteria
$< g > < 0{,}30$	Low
$0{,}70 > < g > \geq 0{,}30$	Avarage
$< g > \geq 0{,}70$	High

3. Results and Discussion

Project-based learning (PjBL) is a learning model that uses projects or activities as a means of learning, thus enabling the active involvement of students in the learning process and problem-solving activities. Under (PBL), students can work together in their groups to produce a product with value. PBL can also significantly improve student learning outcomes because it allows them to learn more flexibly and interestingly so that students recognize their respective learning styles according to their abilities. (Karmila et al., 2024).

Differentiated learning is one strategy teachers can use to meet the needs of each student. Different approaches can be integrated with several learning models, namely project-based learning. Where the teacher creates groups according to the different learning styles of students, such as visual, auditory, kinesthetic. (Karmila et al., 2024). But the learning outcomes of MAN 1 Indramayu students when carrying out daily test activities have less than optimal values, so they carry out learning activities using the differentiated PJBL model, conduct pre-test-post-test, and use Google from. The study shows that implementing this differentiated PJBL can improve student learning outcomes. Student learning outcomes can be seen through the N-Gain Test presented in Table 2.

Tabel 2.
Gain Score Calculation Results

Gain Score Value Range	**Criteria**	**Number of Students**
$< g > < 0{,}30$	Low	0
$0{,}70 > < g > \geq 0{,}30$	Keep	9
$< g > \geq 0{,}70$	High	17
Total		26
Minimum Score		50
Maximum Score		100
Average		76,08

Table 2 presents the results of the evaluation of differentiated learning that has been applied to students with learning styles, namely visual, kinesthetic, and auditory. This data concerns each student's pretest-posttest scores, gain scores, and achievement criteria. In general, there is an increase in student learning outcomes after participating in differentiated learning. The data in this table shows a relatively diverse range of scores, with the lowest score of 50, meaning that there are students who only experience an increase of 50% of their maximum potential increase, and the highest score of 100 means that there are students who achieve maximum increase according to the expected potential, and the overall average score is

p – ISSN: **1693 – 7945**
e – ISSN: **2622 – 1969**

76.0817, indicating that in general, there is an increase in students' abilities or knowledge after participating in the learning program. (Nurhayati & Novianti, 2020). Differentiated learning tailors instruction to meet varied student readiness, interests, and learning profiles, enhancing engagement and outcomes (Muslimin et al., 2022). This is to facilitate students based on different characteristics, the principles of new paradigm learning provide teachers with the opportunity to design learning and assessment activities according to the needs of students(Wulandari, 2022) and differentiated learning provides opportunities for students to engage in learning activities according to their interests and helps them learn efficiently (Herwina, 2021). The diversity of students' learning styles can help teachers in effective learning (Faiz et al., 2022).

Figure 1.
Graph of Student Learning Outcomes based on Differentiated Learning

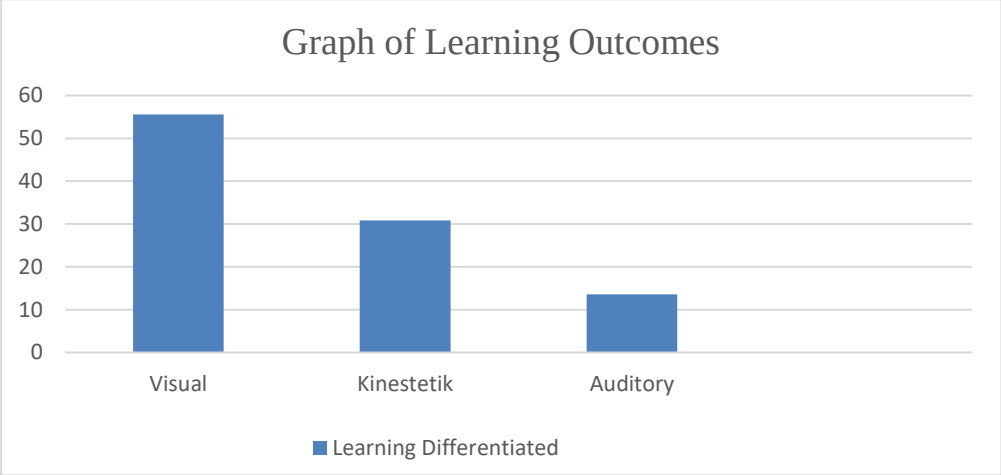


Figure 1 shows that the results of the study indicate that the application of differentiated PJBL learning based on learning styles (visual, auditory, and kinesthetic) positively impacts student learning outcomes. Namely, nine students with a visual learning style tend to achieve higher achievement of around 55.6% compared to 9 students with a kinesthetic learning style of around 30,8% and eight students with an auditory learning style of around 13,6%. However, the three learning style groups showed increased learning outcomes after participating in differentiated learning. This finding indicates that a learning approach that is adjusted to individual students' characteristics can improve the learning process results. In line with Iskandar (2021) that a person's learning style influences the achievement of learning outcomes. The intended learning outcomes are the achievement of learning achievements achieved by students with criteria or values that have been set (Somayana, 2020). Grouping based on learning styles gives every student the opportunity to get the same opportunity in the best way (Rahayu et al., 2023).

Students with a visual learning style find it easier to receive information in written form, read in detail and use image media, or information that is visualized through diagrams, posters, infographics (Suhaeri & Daud, 2022). Kinesthetic learning styles are more receptive to information through direct practical activities (Naibaho, 2023). Students with a kinesthetic learning style prioritize the sense of touch through direct physical movement, so that in learning activities they can learn by exploring the environment (Chania et al., 2017).

p – ISSN: **1693 – 7945**
e – ISSN: **2622 – 1969**

Orginal Article

4. Conclusion

Based on the explanation above, student learning outcomes have increased after implementing the PJBL differentiated learning model. The study's results indicate that implementing it improves student achievement at MAN 1 Indramayu. The average N-Gain from pre-test to post-test is 76.08%, indicating student learning progress..

Acknowledgments

Thank you to all parties who have supported the implementation of this research, to MAN 1 Indramayu and the Biology Study Program, and to those who have provided permission and facilities convenient to me during PPL. Of course, in making this article, the author realizes that there are still shortcomings. Hopefully, this article can be helpful, especially for the author and readers in general.

5. References

Ayu Sri Wahyuni. (2022). Literature Review: Pendekatan Berdiferensiasi Dalam Pembelajaran IPA. *Jurnal Pendidikan Mipa*, *12*(2), 118–126. https://doi.org/10.37630/jpm.v12i2.562

Chania, Y., Haviz, M., & Sasmita, D. (2017). Hubungan Gaya Belajar Dengan Hasil Belajar Siswa Pada Pembelajaran Biologi Kelas X Sman 2 Sungai Tarab Kabupaten Tanah Datar. *Sainstek : Jurnal Sains Dan Teknologi*, *8*(1), 77. https://doi.org/10.31958/js.v8i1.443

Fadiyah Andirasdini, I., & Fuadiyah, S. (2024). Pengaruh Model Pembelajaran Problem Baseed Learning Terhadap Keterampilan Berpikir Kreatif Peserta Didik Pada Pembelajaran Biologi : Literature Review. *Biodik*, *10*(2), 156–161. https://doi.org/10.22437/biodik.v10i2.33827

Faiz, A., Pratama, A., & Kurniawaty, I. (2022). Pembelajaran Berdiferensiasi dalam Program Guru Penggerak pada Modul 2.1. *Jurnal Basicedu*, *6*(2), 2846–2853. https://doi.org/10.31004/basicedu.v6i2.2504

Herwina, W. (2021). Optimalisasi Kebutuhan Murid Dan Hasil Belajar Dengan Pembelajaran Berdiferensiasi. *Perspektif Ilmu Pendidikan*, *35*(2), 175–182. https://doi.org/10.21009/pip.352.10

Iskandar, D. (2021). Peningkatan Hasil Belajar Siswa pada Materi Report Text Melalui Pembelajaran Berdiferensiasi di Kelas IX.A SMP Negeri 1 Sape Tahun Pelajaran 2020/2021. *Jurnal Pendidikan Dan Pembelajaran Indonesia (JPPI)*, *1*(2), 123–140. https://doi.org/10.53299/jppi.v1i2.48

Juliyantika, T., & Batubara, H. H. (2022). Tren Penelitian Keterampilan Berpikir Kritis pada Jurnal Pendidikan Dasar di Indonesia. *Jurnal Basicedu*, *6*(3), 4731–4744. https://doi.org/10.31004/basicedu.v6i3.2869

Karmila, M., Toraja, T., & Selatan, S. (2024). Implementasi Pembelajaran PjBL Berdiferensiasi Berbasis Kearifan Lokal dalam Mengembangkan Keterampilan 4C Peserta Didik. *Jurnal Sang Guru*, *2*, 27–37.

Muslimin, M., Hirza, B., Nery, R., Yuliani, R. E., Heru, H., Supriadi, A., & Khairani, N. (2022). Peningkatan Hasil Belajar Matematika Siswa Melalui Pembelajaran Berdiferensiasi dalam Mewujudkan Merdeka Belajar. *Jurnal Pendidikan Matematika RAFA*, *8*(2), 22–32.

Naibaho, D. P. (2023). Strategi Pembelajaran Berdiferensiasi Mampu Meningkatkan Pemahaman Belajar Peserta Didik. *Journal of Creative Student Research*, *1*(2), 81–91.

Nurhayati, N., & Novianti, N. (2020). Pengaruh Spss Terhadap Hasil Belajar Pada Materi Statistika Deskriptif. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *9*(1),

p – ISSN: **1693 – 7945**
e – ISSN: **2622 – 1969**

101. https://doi.org/10.24127/ajpm.v9i1.2609

Rahayu, F. F., Shafira, I., Avivi, A. A., Saptariana, M., Purnama, A., Profesi, P., Prajabatan, G., Keguruan, F., & Pendidikan, I. (2023). Pembelajaran Berdiferensiasi Pada Mata Pelajaran Biologi Materi Ekosistem Kelas X Sma. *Jurnal Pendidikan Sejarah Dan Riset Sosial Humaniora*, *3*(3), 244–250. https://ejournal.penerbitjurnal.com/index.php/humaniora/article/view/315

Somayana, W. (2020). Peningkatan Hasil Belajar Siswa melalui Metode PAKEM. *Jurnal Pendidikan Indonesia*, *1*(03), 283–294. https://doi.org/10.59141/japendi.v1i03.33

Suhaeri, & Daud, F. (2022). Pengembangan Perangkat Pembelajaran Berbasis Diferensiasi dalam Pembelajaran Biologi Pada Kelas X SMA Negeri 16 Bone. *UNM Journal of Biological Education*, *5*(2), 1–11. https://doi.org/10.1080/00219266.1973.9653810

Supit, D., Melianti, M., Lasut, E. M. M., & Tumbel, N. J. (2023). Gaya Belajar Visual, Auditori, Kinestetik terhadap Hasil Belajar Siswa. *Journal on Education*, *5*(3), 6994–7003. https://doi.org/10.31004/joe.v5i3.1487

Wulandari, A. S. (2022). Literature Review: Pendekatan Berdiferensiasi Solusi Pembelajaran dalam Keberagaman. *Jurnal Pendidikan Mipa*, *12*(3), 682–689. https://doi.org/10.37630/jpm.v12i3.620

Tiwow, D., Wongkar, V., Mangelep, N. O., & Lomban, E. A. (2022). Pengaruh media pembelajaran animasi powtoon terhadap hasil belajar ditinjau dari minat belajar peserta didik. *Journal Focus Action of Research Mathematic (Factor M)*, *4*(2), 107-122.

Purnawanto, A. T. (2023). Pembelajaran berdiferensiasi. *Jurnal Pedagogy*, *16*(1), 34- 54.

Yanti, R. A., & Novaliyosi, N. (2023). Systematic literature review: Model pembelajaran project based learning (PjBL) terhadap skill yang dikembangkan dalam tingkatan satuan pendidikan. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *7*(3), 2191-2207.