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Problem-based learning containing local potential to increase junior high school students' interest in biodiversity topic

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Abstract: One of the criteria for good learning is learning that can give rise to positive student responses. The purpose of this study is to assess whether adopting problem-based learning with local potential in biodiversity materials increases students' motivation to learn. The research approach employed was a pre-experimental design with one group pretest-posttest. The population in this research was seventh-grade students, with a research sample of one class and a total of 33 students determined based on convenience sampling. The data collection instrument used the ARCS system learning interest questionnaire (Attention, Relevance, Confidence, Satisfaction) developed by Keller (2000). The test result data was processed using the N-gain test and the Wilcoxon test. The results of the research show that students' overall interest in learning has increased by 0.34 in the medium category. The Wilcoxon test yielded a significance value of 0.00 <0.05, rejecting H_0 and accepting H_a. Based on these findings, we may infer that the problem-based learning model with local potential is beneficial in enhancing students' interest in learning about biodiversity.

Keywords: Problem based learning, local potential, biodiversity, interest in learning

Abstrak: Salah satu kriteria pembelajaran yang baik adalah pembelajaran yang dapat menimbulkan respon siswa yang positif. Tujuan penelitian ini adalah untuk menilai apakah penerapan pembelajaran berbasis masalah potensi lokal pada materi keanekaragaman hayati meningkatkan motivasi belajar siswa. Pendekatan penelitian yang digunakan adalah pre-experimental design dengan *one group pretest-posttest*. Populasi dalam penelitian ini adalah siswa kelas VII, dengan sampel penelitian satu kelas dan berjumlah 33 siswa yang ditentukan berdasarkan *convenience sampling*. Instrumen pengumpulan data menggunakan angket minat belajar sistem ARCS (*Attention, Relevance, Confidence, Satisfaction*) yang dikembangkan oleh Keller (2000). Data hasil pengujian diolah menggunakan uji N-gain dan uji Wilcoxon. Hasil penelitian menunjukkan minat belajar siswa secara keseluruhan mengalami peningkatan sebesar 0,34 dengan kategori sedang. Uji Wilcoxon menghasilkan nilai signifikansi 0,00 < 0,05, menolak H_0 dan menerima H_a. Berdasarkan temuan tersebut, dapat disimpulkan bahwa model pembelajaran berbasis masalah bermuatan potensi lokal bermanfaat dalam meningkatkan minat siswa dalam mempelajari keanekaragaman hayati.

Kata kunci: Pembelajaran berbasis masalah, potensi lokal, keanekaragaman hayati, minat belajar

INTRODUCTION

The current learning process often does not involve students directly in learning activities and tends to be teacher-centered (Sanjaya, 2007). Solikhatuna et al (2015) stated

that most students consider science learning to be rote learning, so in the learning process, they only listen to the teacher's explanation and note what they hear. Nwagbo & Uzoamaka (2011) also stated that teacher-centered learning where students are only passive recipients of knowledge, makes learning less meaningful, and students do not have a positive view of learning. Negative views and learning processes that students consider less enjoyable cause students to become less active and have less interest in learning (Wood & Gentile, 2003), so students often only memorize the information the teacher conveys without understanding what exactly they are memorizing.

Interest in learning is also an intrinsic factor influencing student learning outcomes (Slameto, 2013). If learning does not suit students' interests, they will not study seriously because they are not attracted. Learning that attracts students' interest is easier to learn and retain, because interest can foster activities that ultimately influence students' learning outcomes (Korompot et al., 2020). Students' interest in science learning can be influenced by the teaching methods used by teachers (Ho & Devi, 2020). Teachers who present science learning interactively and innovatively attract students' interest in learning. The way teachers present material, the use of varied methods, and the use of appropriate media supports students' interest in learning science. The more interesting the teacher's presentation in the lesson, the more interested the students will be in participating in the lesson.

Natural science is a science that contains objects of natural phenomena obtained on the basis of research (inquiry) using scientific methods. Most science concepts are still considered abstract by students, in fact most of them only know and memorize the science concepts taught, but do not understand the concepts. According to (Purwantoko et al., 2010), science education aims to enable students to master concepts and their relationships to solve problems in everyday life. So, teachers as educators have a very important role in developing science education. Teachers must be able to facilitate students according to their needs so that the learning provided will be more interesting and increase student interest and learning outcomes.

Through observations and interviews of science teachers during practical field experiences, researchers found that the learning strategies used by teachers in science subjects at SMP Negeri 44 Bandung were still one-way, where the teacher had full control of the class and the students were only listeners. As a result, learning becomes monotonous and boring, so students become less active and their interest in learning decreases. Students' low interest in learning impacts learning outcomes because when students do not have a good interest in learning, they will be lazy and have difficulty understanding science learning. Many students have no interest in learning. They don't like science subjects because they are considered difficult and uninteresting. Therefore, new strategies are needed to make science learning more interesting so that it can arouse students' interest in learning. As a result, new tactics are required to make science education more entertaining in order to pique students' interest

in studying. One approach is to use a problem-based learning model that incorporates local potential.

Problem-based learning is a learning model that involves students studying a problem in more depth and with more meaning (Pepper, 2009). The Problem-Based Learning model uses real problems faced by students. Then, students are accustomed to solving these problems through their knowledge and skills, developing inquiry, and getting students used to developing critical thinking and problem-solving skills (Syamsidah & Suryani, 2018). Arends (2010) states that the teacher's role in PBL is to facilitate the discovery of various authentic problems to students and facilitate investigative activities. Apart from that, the advantage of the problem-based learning model is that it can increase the level of students' independent learning abilities, create meaningful and long-lasting learning, generate enthusiasm and motivation, and develop students' skills (Wulandari, 2015). The problem-based learning model is very relevant to be implemented using contextual content, one of which is content that contains local potential.

Learning with local potential is one of the efforts in the education sector to maintain environmental balance. This is in line with curriculum demands, which refer to UUSPN No. 20. (2003), concerning the National Education System states that local potential-based learning is learning that can form students' understanding of the advantages and characteristics of the area where they live, making learning more applicable and meaningful (Permendikbud, 2014, Sirait et al., 2024). This supports the assertion made by Adawiyah et al. (2020) that using local potential as a teaching tool can show students real-world items or instances that are nearby, which can positively affect students' attitudes and level of concern for the environment. According to research by Abidinsyah et al. (2019), students' science content, context, and process abilities can be enhanced through the application of learning by leveraging local advantages and potential.

Fitriyani et al. (2021) found support for science learning based on local potential in their study, which focused on using the mangrove forests of Jambi Province as a local source for biology education. This research concludes that, by tailoring the local potential in each region, the local potential of an area can be used as a source of science learning. The right science learning resources should be combined with local potential, yet many individuals are still ignorant of this fact when it comes to science education at the moment. Students will learn more easily if local resources are used in the classroom. According to Aisa et al. (2023), local potential is crucial to use in the learning process because it makes it simple for students to connect the concepts they are learning to real-world scenarios. This encourages students to draw connections between their prior knowledge and how it will be applied in the real world. As also explained in research by Alifiyah et al. (2024), the use of local potential content can support teachers to deliver contextual learning on ecology and biodiversity material so that students can increase their understanding. Exploring local potential as a learning resource can also clarify the delivery of material because it can present phenomena

realistically and create a meaningful learning process. It is factual and natural, and its truth can be accounted for.

One of the essential materials in science learning is biodiversity. Learning about biodiversity can help students understand the importance of the environment, gain knowledge about the biodiversity in Indonesia, and learn environmentally friendly practices that the community can carry out (Agnafia et al., 2017, Silahooy, et al., 2024). Biodiversity material is included in the main material that must be taught to junior high school students in the independent curriculum. According to the Ministry of Education and Culture, the learning outcomes in biodiversity material are as follows: At the end of phase D, students can identify interactions between living things and their environment and design efforts to prevent and overcome pollution and climate change. Biodiversity raises challenges that require critical thinking, creative and collaborative skills in overcoming problems and achieving sustainability goals.

Through problem-based learning with local content, students will also be presented with contextual problems related to threats to biodiversity in Indonesia (Damopolii, et al., 2024) and the influence of humans on the environment, so it is hoped that this will improve student learning. Apart from that, the use of local potential content in biodiversity material is considered very relevant because West Java Province is one of the provinces in Indonesia with a diverse diversity of flora and fauna. Conservation areas in West Java, such as the Leuwung Sancang Nature Reserve, Mount Parangrango National Park, and many more, need to be introduced to students to familiarize them with the many endemic flora and fauna protected through these conservation areas. The South Garut region's Sancang Forest, home to numerous fabled mysteries that shape the mindsets of the local populace, has a great deal of promise. Potentials include the preservation of natural ecosystems with air and water availability, as well as flora and fauna (Hernawati et al., 2019). Based on this description, an urgency must be resolved through science learning on Biodiversity material.

Several studies show that the use of problem based learning models can improve student learning achievement in physics, energy metabolism and optical instruments (Fidan & Tuncel, 2019; Günter, 2020; Ismail et al., 2023); able to improve critical thinking skills on health, biodiversity and colloid material (Gholami et al., 2016; Isvida et al., 2024; Suradika et al., 2023; Mustofa et al., 2021); able to improve science process skills in science material and environmental safety (Pozuelo-Muñoz et al., 2023; Kasuga et al., 2022); able to improve creative thinking skills in science and colloid material (Suciati et al., 2023; Suradika et al., 2023); able to increase scientific literacy in science material, the human excretory system, and global warming (Hestiana & Rosana, 2020; Juleha et al., 2019; Alatas & Fauziah, 2020); able to improve problem solving abilities in biotechnology and environmental pollution material (Aisa et al., 2023; Ionita & Simatupang, 2020); able to improve representation abilities (Muhayaroh & Pertiwi, 2023); able to increase environmental care attitudes in environmental science and biodiversity material (Kuvac & Koc, 2019; Sueb & Damayanti, 2021); able to

increase learning satisfaction in clinical practice material (Zhao et al., 2020); able to increase self-efficacy and self-regulation in medicine material (Demirören et al., 2016).

Several studies show that the use of learning based on potential or local wisdom is also able to improve the conservation character of ethnoscience material (Khusniati et al., 2017); able to improve generic skills in ecological material (Dewi et al., 2020); able to improve problem-solving and self-directed learning abilities on biotechnology material (Aisa et al., 2023); able to improve critical thinking skills on biodiversity (Isvida et al., 2024); able to improve science process skills and attitudes towards science in science material (Cahyaningtyas et al., 2017; Dwianto et al., 2017).

In particular, based on previous research, there has been no research on implementing problem-based learning containing local potential in biodiversity material to increase students' interest in learning. Therefore, researchers have implemented problem-based learning by integrating West Java's local potential content into biodiversity material. Problem-based learning containing local potential is an innovation that is increasing the learning interest of junior high school students.

After providing the aforementioned explanation, a study was carried out to find out whether using a problem-based learning approach with local potential on biodiversity material may make students more interested in studying science. By implementing problem-based learning containing local potential, it is expected that teachers can deliver biodiversity material more interestingly and easily understood compared to traditional teaching and learning activities so that it can increase students' interest in learning science in learning.

METHOD

Research design

The research was conducted using a pre-experimental research design, one group pretest-posttest. The research design was a pre and posttest design, a method often chosen to examine differences between pretest and posttest results originating from special treatment. The pre-experimental one group pretest-posttest research design is depicted in Table 1.

Table 1. One group pretest-posttest design

Pretest	Treatment	Posttest
O_1	X	O_2

(Creswell, 2014)

Based on Table 1, variables O_1 and O_2 show measurements. Class A is given the pretest O1 and the posttest O2, and X is the therapy that makes use of a problem-based learning model with local potential.

Population and sample

This study included all Indonesian seventh-grade students studying ecology and biodiversity. This study used convenience sampling. According to Creswell (2015),

convenience sampling is a non-probability sampling strategy in which units are chosen for inclusion in the sample based on their ease of access for the researcher. In this study, the sample size was one class of 33 students. This study was carried out at a State Junior High School in Bandung that followed the Merdeka Curriculum and had not previously studied biodiversity. The sample distribution was characterized by gender, as can be seen in the details provided in Table 2.

Table 2. Sample details based on gender

Gender	Frequency	Percentage (%)
Male	15	45,45
Female	18	54,54

Based on table 2, there are 15 male students and 18 female students. Their average age range is 12-13 years. These students are the sample that will be researched.

Research instrument

In this study, researchers used an interest questionnaire to measure students' interest in learning before and after studying biodiversity material. The student interest questionnaire in this research was adapted from the ARCS (Attention, Relevance, Confidence, Satisfaction) system interest questionnaire developed by Keller (2000). It has been tested in many countries and produces accurate calculations. This questionnaire consists of 22 statements with alternative answer choices modified into strongly disagree (STS), disagree (TS), agree (S), and strongly agree (SS) with an answer value range of 1-4. In this questionnaire instrument there are four criteria seen by researchers: Attention, Relevance, Confidence, Satisfaction. The student interest in learning questionnaire grid can be seen in Table 3.

Table 3. Student learning interest questionnaire grid

Indicator	Statement Number	Amount
Attention	1, 2, 3, 4, 5	5
Relevance	6, 7, 8, 9, 10, 11	6
Confidence	12, 13, 14, 15	4
Satisfication	16, 17, 18, 19, 20	5

(Adapted from Keller, 2000)

Data analysis

Analysis of learning interest data was carried out using the ARCS model of learning interest scale. The first thing to do in analyzing this learning interest data is to summarize the statements written by students in the ARCS questionnaire. Scoring for positive statements is 4 points for SS (strongly agree), 3 points for S (agree), 2 points for TS (disagree), and 1 point for STS (strongly disagree). Meanwhile, scoring for negative statements is the opposite, namely 1 point for SS (strongly agree), 2 points for S (agree), 3 points for TS (disagree), and 4 points for STS (strongly disagree). The overall questionnaire value is taken from the average

score value and then interpreted in the form of sentences developed by Riduwan (2012), as shown in Table 4.

Table 4. Category range average score interest in learning

Average Score	Category
0 - 20	Very Not Good
21 – 40	Not Good
41 – 60	Enough Good
61 – 80	Good
81 - 100	Very Good

(Riduwan & Sunarto, 2012)

The learning interest data was also evaluated with N-Gain to understand how the improvement was achieved. The N-Gain score is calculated using the specified formula. Next, the N-Gain value is interpreted using an interpretation table tailored to the research goals. Table 5 provides a detailed interpretation of the N-Gain score, as per Meltzer (2002).

Table 5. N-gain value interpretation

N-Gain Value	Interpretation
$g < 0.3$	Low
$0.3 \leq g \leq 0.7$	Medium
$g > 0.7$	High

(Meltzer, 2002)

The data on interest in learning that was obtained was also carried out statistical tests using SPSS statistics 25.0. The statistical tests carried out are prerequisite tests (normality test and homogeneity test) and hypothesis testing.

Normality test

The normality test is used to assess whether data is regularly distributed or not. This is the most extensively used test for parametric statistical analysis. The data were analyzed using SPSS 25 and distributed regularly.

Homogeneity test

The homogeneity test aims to determine whether the measured score variances in the two samples have similar variations or not. A population with the same variance is called a population with homogeneous variance, while a population with unequal variance is called a population with heterogeneous variance.

Research procedure

In this research, 3 research stages will be carried out: the research preparation stage, the research implementation stage, and the post-research stage.

Research preparation stage

Preparations carried out in the research include: 1) Carrying out a preliminary study which includes a study of learning about biodiversity, problem-based learning containing local potential, and interest in learning; 2) Develop learning tools and research instruments.

Research implementation stage

The learning process was carried out offline, involving 1 class of grade 7 students. The research was carried out in 4 meetings, each lasting 80 minutes. The researcher plays the role of educator and facilitator during teaching and learning sessions. Detailed details of each instructional session are thoroughly documented and provided in Table 6, which serves as a comprehensive reference for the entire process.

Table 6. Implementation activities

No	Problem Based Learning Stage Contains Local Potential	Activity
1	Student orientation to the problem	At this stage, students observe and understand problems related to the topic presented by the teacher. The problems raised are general problems, then specific problems that exist in West Java, so it is hoped that students will be more enthusiastic in learning. An example of the problem raised is the threat of extinction of West Java's wildlife: Owa Jawa
2	Organizing students to learn	Students discuss and divide tasks to look for task data, media, sources needed to identify the causes of problems and provide ideas for solving problems. At this stage, the teacher also provides direction to students to look for forms of government support that have been carried out to protect the environment and biodiversity in West Java.
3	Guiding individual and group investigations	Students conduct research (looking for data, references, and sources) for group discussion topics.
4	Develop and present problem solving ideas	Students in groups hold discussions and present ideas for solving problems
5	Analyze and evaluate problem solving ideas -ide penyelesaian masalah	Students in each group give presentations, while the other groups show admiration. The activity continued by summarizing and drawing conclusions based on input from other groups.

RESULTS AND DISCUSSION

The results of integrating the problem-based learning (PBL) model with local potential to raise students' interest in learning can be seen by administering an interest questionnaire before and after learning. A questionnaire sheet filled out with positive words is used to assess enthusiasm in learning. Figure 1 depicts the average score of students' learning interest based on the combined pretest and posttest scores.

Figure 1 illustrates the considerable rise in learning interest scores before (pretest) and after (posttest). The learning interest data was then evaluated for requirements, including normality and homogeneity, before hypothesis testing was conducted. The Normality Test

determines whether data is regularly distributed or not. Normality tests are processed using the IMB SPSS Statistics Version 22 application. This study's normalcy test is Kolmogrov-Smirnov. This computation reveals that the degree of significance of the data acquired for the pre-test value is 0.028, while the post-test value is 0.043. The results demonstrate that the pretest and posttest values are less than 0.05, indicating that the data is not normally distributed.

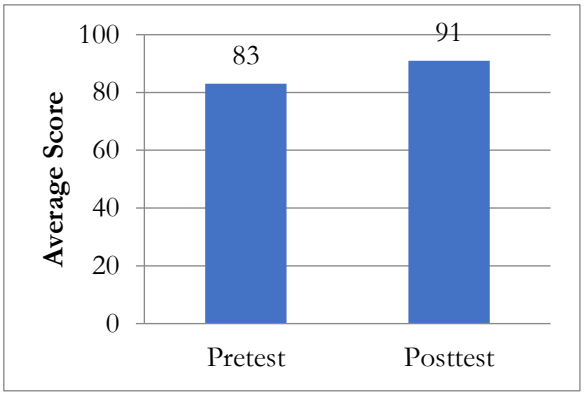

Figure 1. Comparison of average scores for interest in learning between pretest and posttest

Normality tests reveal that the pre-test and post-test data are not normally distributed, hence hypothesis testing is performed with non-parametric tests, namely the Wilcoxon test. The Wilcoxon test results are presented in Table 6.

Table 7. Wilcoxon test results

		N	Mean Rank	Z	Sig.
Postest-Pretest	Negative Ranks	0	0.00	-4.942	0.000
	Positive Ranks	32	16.50		
	Ties	1			
	Total	33			

The Wilcoxon test findings for overall student data revealed a significance value (Sig.) of 0.00, which is less than 0.05. This suggests that there is a difference in students' learning interests before and after implementing the PBL model with local potential, or that employing the PBL model with local potential has an effect on students' learning interests. This demonstrates that implementing the PBL paradigm with local possibilities can boost students' enthusiasm in learning. So, this is consistent with research that demonstrated that using the PBL approach in science lesson content can boost students' interest in learning by presenting information in an intriguing and fun way.

The table shows that the negative rank, or the difference in interest in learning between the pre-test and post-test, is zero in both the N mean rank and sum rank values. A result of 0 shows that there is no reduction between the pre-test and post-test values. The mean rank or average rise for positive rank, or the difference between pre-test and post-test

interest in learning, is 16.50, with a total of 528.00 ranks. Meanwhile, ties are the similarity of pre-test and post-test scores. It can be seen that the Ties value from the results above is 1, which means there is one value that is the same between the pre-test and post-test. The increase in students' learning interest as measured before and after learning is also supported by the N-Gain value as seen in Figure 2.

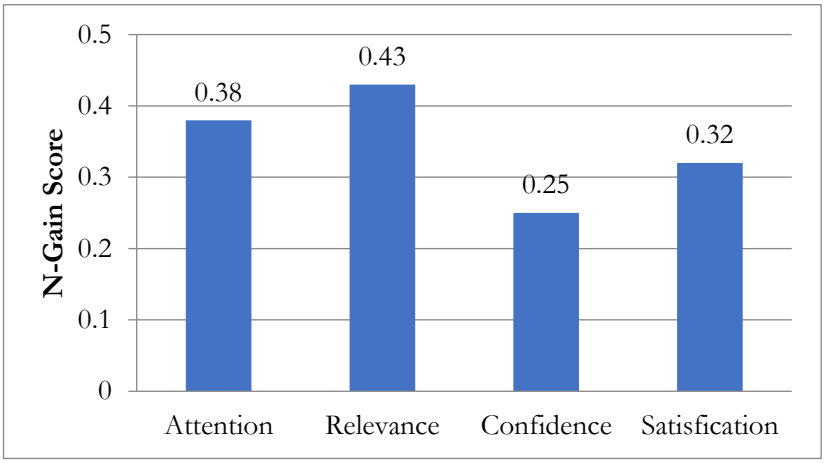

Figure 2. N-gain score of students' learning interest for each indicator

Based on Figure 2, you can see the N-Gain score of students' learning interest for each indicator. Specifically, the N-Gain score on the attention aspect has a score of 0.38 (medium), the relevance aspect has a score of 0.43 (medium), the confidence indicator has a score of 0.25 (low), and the satisfaction aspect has a score of 0 .32 (medium). From these data, it can be seen that the increase in students' interest in learning for the 3 indicators is in the medium criteria. This shows that the implementation of a PBL model containing local potential has a positive impact on students' interest in learning about biodiversity topic. This is in line with research by Lestari (2023) that the use of the problem based learning model can increase students' interest in learning about evolutionary material, as evidenced by changes in students' interest and behavior in participating in learning activities, becoming more active, enthusiastic and interested in the tasks. For the confidence indicator, the N-Gain score is in the low category, this shows that students' self-confidence has only slightly increased, so this becomes material for reflection on the learning carried out.

One learning approach that can be utilized to cultivate 21st century abilities is the PBL paradigm. PBL develops competences and abilities by emphasizing learning via problem solving, knowledge integration, and application in real-world settings (Bell, 2010). Students are prompted by problems to collaborate, discuss opposing viewpoints, look for information, and develop arguments in favor of preset solutions (Sawyer, 2014). The syntax of Arends' (2010) PBL learning model can be used to apply PBL to science education, particularly when teaching about biodiversity. It starts with a) problem orientation; b) student organization for study; c) guidance for independent and group investigations; d) development and presentation of problem-solving results; and e) analysis and evaluation of the problem-

solving process (Arends, 2010). Throughout instructional activities, the instructor presents issues, probes, and encourages research and discussion.

In stage 1, namely problem orientation, students are required to collect information about the problem being studied in the form of a problem formulation. In order to facilitate students' ability to tackle specific difficulties, this seeks to facilitate their ability to analyze the essence of current problems. Students can apply previously taught concepts and hone their critical thinking abilities throughout the problem-orientation stage (McCormick et al., 2015). The teacher presents problems through videos and discourse to students at this stage. Students are asked to define and write down the problems they find on the LKPD provided. The problem presented through video and discourse as seen in figure 3 (*https://amf.or.id/ancaman-punahnya-satwa-jawa-barat-owa-jawa/*) is about the problem of fauna in West Java which is increasingly threatened its existence. For example, regarding the threat of extinction of the Owa Jawa. Raising problems containing local potential in West Java is one way to attract students' attention in learning. Almost all students do not know that West Java has a rare animal called the Owa Jawa. So, by including this content, it is hoped that students will be more interested in learning and concerned for the environment.

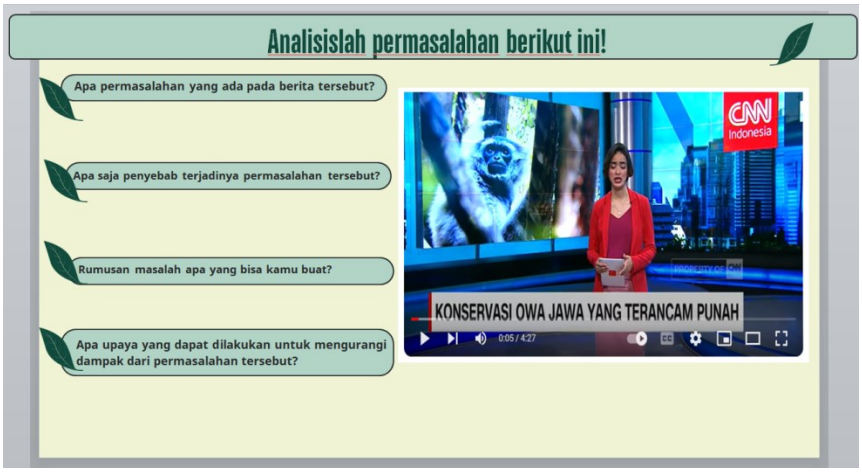

Figure 3. Examples of problems given

The teacher assists students in defining and planning learning assignments that are relevant to the problem during stage 2, which is known as organizing students to learn. To ensure that they have enough time to tackle challenges, students divide the work among themselves and create a calendar for task execution. The PBL approach places a strong emphasis on students' capacity for self-direction as a necessary skill for the Industrial Revolution 4.0 age. A collaborative assignment will make each member aware of their individual obligations in order to accomplish collective objectives. Group creation is a crucial step in collaborative learning since it may be utilized to guarantee better performance (Chen & Kuo, 2019).

The teacher helps each group of students gather data and conduct investigations to find answers for problem-solving in stage 3, which involves supervising both individual and

group investigations. Students conduct research (find information, sources, and references) and brainstorm problem-solving strategies (Arends, 2010). The teacher gives each group the freedom to look for information related to the problems on the worksheet so that they get appropriate explanations and problem solutions. In addition, this activity can help students to create and build their own ideas. This stage is related to the indicator of formulating alternative solutions, where students are asked to write down solution ideas for the problems given.

The teacher assists students with a variety of group assignments in stage 4, which is producing and presenting the outcomes of problem-solving. They plan and create appropriate material, such reports, videos, or even infographics, which they can then present. The development of scientific work's independence can be achieved through planning, discovery, study, and knowledge gathering from many (Parmin et al., 2017). At this point, exercises might support students' communication skill development. This is consistent with the viewpoint of Orade (2013), who claims that activities like debates, problem-solving, multimedia, posters, and oral presentations can help develop communication skills (Spektor-Levy et al., 2009).

Presenting the work's outcomes is one of the tasks at this point. The ability to present well is essential for success in daily life. However, the presentation must include the following four fundamental components (Sajidan et al., 2022): (a) stating ideas clearly; (b) elaborating ideas; (c) substantiate views with evidence from additional sources; and (d) conclude/restate the idea. Students together with their groups present ideas for problem solving that they have found and discussed. Each group presented an infographic regarding forms of biodiversity conservation in the West Java region, including the Leuwung Sancang Nature Reserve, Mount Gede Pangrango National Park, and the Pananjung Pangandaran nature reserve as seen in figure 4. Through the creation and presentation of this infographic, this will increase their knowledge and awareness to help maintain biodiversity in West Java.

Figure 4. Presentation of problem solving work results

Finally, the teacher offers a reflection or evaluation of the students' problem-solving process at step 5, which involves assessing and evaluating the problem-solving outcomes.

Students, on the other hand, finish their reports by including comments, advice, or answers from peers or teachers. The impact this activity will have on team performance makes it extremely significant. This supports the idea that when people have high levels of self-reflection, the impact of their individual knowledge articulation on team performance will be maximal (Ractham & Srisamran, 2018). In order to participate in a competitive setting, students must be taught to critically analyze their own presentations, particularly when it comes to communication abilities (Shauki & Benzie, 2017).

The impact of local potential problem-based learning on interest in learning for every indicator

In this research, the learning interest questionnaire was adapted from the ARCS (Attention, Relevance, Confidence, Satisfaction) system interest questionnaire developed by (Keller, 2000). Therefore, the results of learning interest will be discussed in more depth for each ARCS indicator. The increase in students' interest in learning is observed from each indicator in Figure 5.

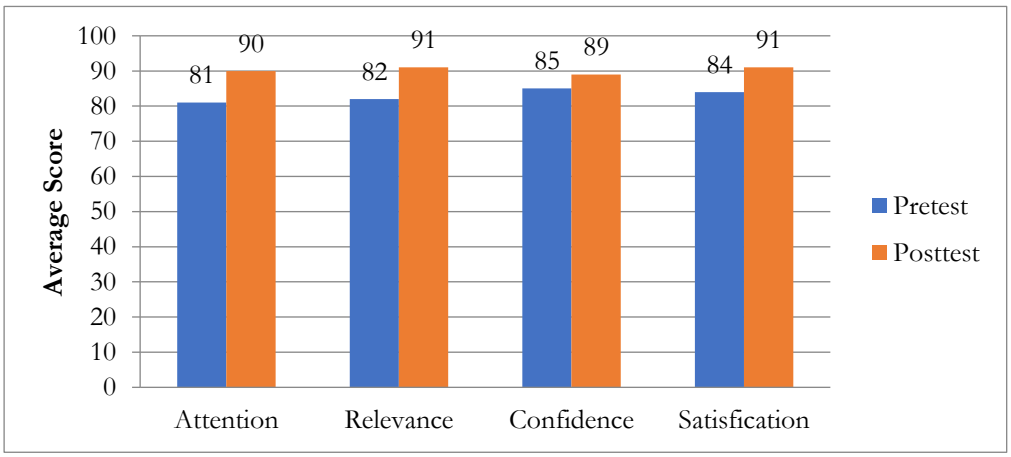

Figure 5. Comparison of pretest and posttest scores for interest in learning for each indicator

It was determined that the students fell into the very good category based on the computation of their learning interest questionnaire scores. The posttest scores for all the indicators—attention (90), relevance (91), confidence (89), and satisfaction (91); are similarly categorized as very good. This demonstrates how students' motivation in learning is impacted when a problem-based learning approach with local potential is used. The findings of this study are consistent with those of Lestari (2023), who found that after applying the problem-based learning model to evolutionary material, students' average scores for all measures of learning interest fell into the very good category. Additional research by Puspaningrum et al. (2023) revealed that after applying the problem-based learning model for class VIII students, the average score of students' learning interest for each indicator was also in the very good category.

The research results show that good interest in learning does not just appear naturally; efforts need to be made in the learning process. Increasing interest in learning

through innovative learning is one of the right processes. The research results show that the implemented problem-based learning model containing local potential positively affects students' interest in learning about biodiversity material. Next, students' learning interests are analyzed separately based on each indicator.

Indicator 1 is attention, students must pay attention to the material being taught. This attention can be stimulated by presenting something that can arouse students' curiosity. Then, to maintain students' attention, variation in learning is needed, so that students do not feel bored. Research data shows students' attention scores increased by 9 poin after learning. This demonstrates how teaching students about local potential in a problem-based learning style might help them pay more attention to the content on biodiversity. The soul's focus or activity on observation and comprehension, at the expense of all else, is known as attention. Students who are interested in particular items will inevitably focus on them. Differences in students' attention levels before and after learning is carried out are possible because students have more attention to the material being taught. Students become more interested when learning begins by presenting local problems in the West Java region through video shows.

Indicator 2 is relevance. Even though students' curiosity has been successfully aroused, their interest in learning will disappear if what they learn has no connection or connection with the students' own important goals. Based on research data, students' relevance scores increased by 9 poin after implementing the PBL model, which contained local potential in biodiversity material. This proves that implementing a PBL model containing local potential can increase students' relevance. Researchers provide lessons that link problems to local potential in West Java. This is also conveyed during learning that as students, they must understand the various problems that exist around them, increasing the relevance of students in learning.

Indicator 3 is confidence. Self-confidence is an indicator needed to foster interest in learning. This can be achieved by building positive expectations from students. Students' self-confidence will increase if they succeed in fulfilling their expectations based on their own efforts. Research data shows students' confidence scores increased by 4 poin after implementing PBL that contained local potential in biodiversity material. In the learning process, students' confidence is trained by asking them to dare to express opinions, ask questions, and make presentations. In line with Jaya et al. (2019) research, learning that provides students with opportunities to speak, respond and give opinions can increase their self-confidence.

Indicator 4 is satisfaction, where to maintain student interest, satisfaction is needed. This satisfaction is a positive feeling that arises from their learning experience. Based on research data, student satisfaction scores increased by 7 poin after learning. This proves that implementing a PBL model containing local potential can increase student satisfaction when learning biodiversity material. When learning takes place, one of the factors that can increase

student satisfaction in learning is that researchers provide a learning context that is close to their daily lives and the learning is something new for them.

It is possible to draw the conclusion that the PBL model with local potential influences students' interest in learning based on the average score computation and hypothesis testing findings. According to Sajidan et al. (2022), students can use the PBL paradigm to remember what they have learned, express what they would like to know, and develop their problem-solving abilities. Ultimately, this increases students' interest in learning, increases self-confidence, encourages group work in a safe environment, improves communication skills, critical thinking, and creates self-awareness. PBL is a cutting-edge learning methodology that produces active learning through its processes (Balim et al., 2014), so this is the trigger for increasing student satisfaction and learning.

One of the creative approaches to learning reform is to incorporate locally relevant content into the PBL model. Since issues are the initial stage in gathering and integrating new knowledge based on students' experiences in real life, the problem-based learning approach is intended to integrate real life, which is not far from students' daily lives (Addiin, 2014). Problem-based learning that contains local potential is very important and very necessary in the world of education. Education that contains local potential provides knowledge, skills and behavior to students. So that they have broad insight into environmental conditions and community needs in accordance with applicable values or regulations (Aisa et al., 2023). Situmorang (2016) argued that the enormous quantity of local potential incorporated in biology learning effects educators' ability to use biology as a tool for delivering biological material relevant to everyday life. The relevance of local potential to the surrounding environment promotes the development of contextual learning. Biological science contributes to the development of local environmental potential in order to teach students about environmental usage and preservation.

Learning by applying PBL with local potential requires several skills such as personal, social, and academic to be carried out well (Retno, 2022). The implementation or application is carried out by students through the knowledge gained from learning, so that students can adapt and behave positively to effectively face various demands and challenges in daily life (Retno, 2022). The independent curriculum expects learning to contain a local context where learning activities must be related to students' potential or local wisdom. The Independent Curriculum explains that learning from elementary school to high school must contain local context, which means study material or subjects in educational units that contain local content and learning processes about local potential and uniqueness that are intended to shape students' understanding.

Integrating local potential into learning will equip students with greater nuance. Learning at school, especially science, will be very enjoyable if it is presented in a fun context such as the local potential of the region (Dewi et al., 2017). The application of PBL by involving local potential can develop various skills that are needed (Nurhikmayati &

Sunendar, 2020). The PBL model in learning can provide various benefits and roles such as improving learning outcomes, training analytical skills, and even student motivation to learn. As research by Novitasari et al. (2015) states that PBL assisted by visual media can increase students' motivation and learning outcomes, this can be shown by achieving indicators of the effectiveness of the PBL model on attitude competency learning outcomes, namely >75% of students have an active attitude, discipline, cooperation, tolerance and appreciation. Thus, the PBL model containing local potential can positively influence students' interest in learning.

CONCLUSION

Based on the research results presented, it can be stated that integrating a problem-based learning model with local potential in biodiversity material can be used to boost students' interest in learning. The achievement of learning interest as measured using the ARCS model questionnaire on the indicators of attention, relevance, confidence and satisfaction after the learning process has progressed adequately, this is because PBL provides students with fresh experiences and employs problem-based situations related to phenomena. actual world to motivate students to participate in the learning process by working together. Incorporating West Java's local potential content into PBL learning increases students' enthusiasm in learning about biodiversity material. They stated that studying material with local potential content and learning new things that they did not know before could attract their interest in studying science.

From the research that has been carried out, implementing A PBL model with local potential is advised for science instructors to incorporate into other science materials. This is due to Indonesia's rich culture and natural resources, which differ by location, therefore harnessing local potential as a learning resource will make learning more inventive and relevant, as well as easier for students to absorb teachings. This learning methodology is also suggested for future researchers to acquire different other abilities, such as critical thinking, problem-solving, and environmental literacy. This is because incorporating local potential content into PBL will allow them to train the skills needed for 21st century learning.

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