Perception of Physics Education Student on Mechanical Learning Based on Local Potential

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Abstract. Mechanics learning based on local potential has been applied in physics education study program, but perception is needed for further improvement of local potential based mechanics learning. This research is included in qualitative descriptive research. The research data was obtained from a questionnaire/questionnaire sheet. Descriptive data analysis. The results showed that the perception of physics education students towards local potential-based mechanics learning on the work and energy materials was in the high category. That is, the perception of physics education students towards learning Mechanics based on local potential in business and energy materials needs to be developed further, student enthusiasm for learning is very good, so student perceptions are needed to improve learning Mechanics based on local potential in the future. It can be concluded that the perception of physics education students towards learning Mechanics based on local potential in the business and energy material is in the high category, the perception is needed for the improvement of future learning.

Keywords: Perception · Effort and Energy · Local Potential Based Learning

1 Introduction

Learning Mechanics based on local potential is an alternative learning process, which combines theory with the natural potential that exists in the environment, including utilizing waterfalls in our environment. With the hope that students feel happy, feel interested, motivated, and can improve their creative thinking skills. The purpose of this study was to analyze the perception of UNPARI Physics education students towards work and energy learning based on local potential in Muratara district.

It is important to study student perceptions because students as academics must be able to provide benefits to the surrounding environment. Perception is a series of processes so that a person can select, organize and interpret received stimuli into a meaningful picture [1]. Perception is a person's perspective that begins with the process of receiving, organizing to interpreting or translating, perception is a state when a stimulus can capture and pay attention to an object so that it affects different behavior

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between individuals depending on the knowledge and experience they have [1]. Perception is influenced by several factors, namely internal factors and external factors. Internal factors that affect perception in the form of physiological conditions, attention and experience possessed, memories and conditions or moods, while external factors that affect perception are stimuli and the environment. Several stages of perception include selection, organization, and interpretation [1].

Learning programs whose content and delivery media are related to the natural environment, social environment and cultural environment as well as regional development needs are local content learning [2]. This needs to be taught to students, so that they understand the environment and local culture well. This program, if managed and packaged properly, will produce local advantages that are only owned by the region. Local advantages will characterize an area that has important meaning for regional development in the future [3]. The application of local potential-based environmental education is carried out in learning by integrating curriculum content into environmental education materials. Environmental education based on local potential is very good so that environmental education based on local potential can be used as an alternative effort to increase students' environmental knowledge [4].

North Musi Rawas Regency (Muratara) is one of the westernmost districts in South Sumatra province, bordering Bengkulu province in the west, Jambi province in the north, Musi Rawas district in the south and Musi Banyuasin district in the east [5]. Local potentials in Muratara district include waterfalls and rivers, several existing waterfalls and rivers can be used as a source of learning Mechanics, especially on business and energy materials. Waterfalls are a source of energy. Water is energy that is easily obtained, water also includes energy that can be renewed or not consumed by time [6]. Water energy can be utilized and converted into electricity and hydroelectric power without leaving greenhouse gas emissions as produced by power plants that use fossil energy (https://coaction.id/air-as-source-energi-terbarukan). Unlike other renewable energy sources, water will continue to produce power non-stop and its availability will continue to be generated by the hydrological cycle.

Water wheel technology is used by the community to raise river water to rice fields by utilizing the rotation of the wheel, besides that the water wheel can be used for micro and pico power plants. It is known that cross flow turbines from waterwheels can produce energy by working the rotation and torque of the wheel, this appropriate technology has not been widely used as a hydroelectric power plant [7]. Hydroelectric power (PLTA) is a source of electrical energy that works by changing potential energy (from dams or waterfalls) into mechanical energy (with the help of a water turbine) and from mechanical energy into electrical energy (with the help of a generator) [8]. Among hydroelectric power generation technologies, micro-hydro and mini-hydro are promising hydropower technologies [9].

2 Methods

This research is included in qualitative descriptive research. The research data was obtained from a questionnaire/questionnaire sheet. Descriptive data analysis. This research was carried out in October 2022 at the Physics Education Study Program at

PGRI Silampari University (UNPARI) Lubuklnggau. The sample (respondents) in this study were students of the physics education study program class 2020/2021 UNPARI Lubuklinggau, totalling 18 students (respondents). Local potential-based learning is held once on October 11, 2022, after completing the learning process a student perception questionnaire is given.

The questionnaire used in this study aims to obtain data on student perceptions of local-based Mechanics learning at UNPARI Lubuklinggau physics education students consisting of 16 questions. The questionnaire score was determined based on the answers to the questionnaire statements consisting of five (5) alternative answers consisting of: strongly disagree, disagree, quite agree, agree, and strongly agree. The weight of each alternative positive statement answer is given a score (1, 2, 3, 4, 5).

3 Results and Discussion

The results of this study only describe or construct the results of the questionnaire on the research subject so that it can provide a clear picture of the perceptions of physics education students towards local potential-based mechanics learning. The answers to the college KIP questionnaire can be seen in Table 1.

Analysis of the item calculation, starting with calculating the score for each item with a recapitulation of questionnaire data collection from the data of 18 respondents,

Table 1. Student Perception Questionnaire Answers

No	M1	M2	M3	M4	M5	M6	M7	M8	M9	M 10	M 11	M 12	M 13	M 14	M 15	M 16	M 17	M 18
1	4	3	4	4	4	4	4	5	4	4	4	4	4	4	4	4	3	4
2	3	4	3	3	3	3	4	4	3	4	3	3	3	3	3	3	4	4
3	5	4	5	5	5	5	5	4	4	4	5	5	4	4	5	4	4	4
4	4	4	4	4	4	4	4	4	3	5	4	4	4	4	4	4	4	5
5	4	3	4	4	4	4	3	4	4	4	4	5	4	4	4	4	3	4
6	4	4	5	5	5	5	4	5	4	4	5	4	4	4	5	4	4	5
7	3	4	4	4	4	4	3	4	3	4	4	4	4	4	4	4	4	5
8	4	4	4	4	4	4	5	5	4	4	4	4	4	4	4	4	4	4
9	4	4	5	5	5	5	4	5	5	4	5	4	4	4	5	4	4	5
10	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4
11	3	4	4	4	4	4	3	4	3	4	4	5	4	4	4	4	4	4
12	4	3	4	4	4	4	3	5	5	4	4	4	4	4	4	4	3	4
13	3	4	4	4	4	4	4	4	3	5	4	4	3	3	4	3	4	4
14	3	4	4	4	4	4	4	3	3	4	4	4	4	4	4	4	4	4
15	4	4	5	5	5	5	3	5	4	4	5	5	4	4	5	4	4	3
16	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5

Table 2. Range of Cumulative Percentage of Respondents' Answer Items

Range Percentage	Scale
81% - 100%	5
61% - 80%	4
41% - 60%	3
21% - 40%	2
1% - 20%	1

(Source: [10].)

then calculating the average score with the number of ideal scores or the highest score for all items 5 x 18 = 90, and the lowest score is 1 x 18 = 18. Table 2 above is the cumulative percentage range of the respondents' answer items. From these benchmarks, the results of the calculation of the scores for each item of the question are as follows:

Based on the data in Table 3, it can be concluded that students feel happy to take part in local potential-based Mechanics learning. This is indicated by the percentage of 70/90x100% = 77.77% with the category agree.

Based on the data in Table 4, it can be concluded that after attending the mechanics lecture based on local potential, students will understand mechanics in more detail, this is indicated by the percentage of 60/90x100% = 66.66% in the agree category.

Based on the data in Table 5, it can be concluded that the variation of learning mechanics makes learning more fun, this is indicated by the percentage of 81/90x100% = 90% with the category strongly agree..

Based on the data in Table 6, it can be concluded that the ability that I gained from learning Mechanics based on local potential made me more enthusiastic about learning, this was indicated by the percentage of 73/90x100% = 81.11% with the category of strongly agree.

Based on Table 7 data, it can be concluded that students are interested in local potential about work and energy materials, this is indicated by the percentage of 70/90x100% = 77.78% with the category agreeing.

Table 3. Distribution of Respondents' Answers Happy to Take Part in Local Potential-Based Mechanics Learning (No. 1)

Score	F	Total Score	Percentage
Strongly agree (5)	1	5	7,14%
Agree (4)	14	56	80%
Just Agree (3)	3	9	12,86%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	70	100%

Table 4. Distribution of Respondents' Answers After Attending a Local Potential-Based Mechanics Course, I will Understand Mechanics in More Detail (No. 2)

Score	F	Total Score	Percentage
Strongly agree (5)	0	0	0
Agree (4)	6	24	40%
Just Agree (3)	12	36	60%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	60	100%

Table 5. Distribution of Respondents' Answers There Are Variations in Learning Mechanics to Make Learning More Fun (No 3)

Score	F	Total Score	Percentage
Strongly Agree (5)	9	45	55,56%
Agree (4)	9	36	44,44%
Just Agree (3)	0	0	0
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**81**	**100%**

Table 6. Distribution of Respondents' Answers the Abilities I Got from Learning Mechanics Based on Local Potential Made Me More Enthusiastic about Learning (No 4)

Score	F	Total Score	Percentage
Strongly agree (5)	2	10	13,7%
Agree (4)	15	60	82,19%
Just Agree (3)	1	3	4,11%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**73**	**100%**

Based on Table 8 data, it can be concluded that students are interested in learning mechanics based on local potential because they have complete freedom and there are no binding rules, this is indicated by the percentage 80/90x100% = 88.89% with the category strongly agree.

Table 7. Distribution of Respondents' Answers I am Interested in Local Potential about Work and Energy materials (no 5)

Score	F	Total Score	Percentage
Strongly agree (5)	1	5	7,14%
Agree (4)	14	56	80%
Just Agree (3)	3	9	12,86%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**70**	**100%**

Table 8. Distribution of Respondents' Answers I Am Interested in Learning Mechanics Based on Local Potential Because It Has Complete Freedom and There Are No Binding Rules (No 6)

Score	F	Total Score	Percentage
Strongly agree (5)	8	40	50%
Agree (4)	10	40	50%
Just Agree (3)	0	0	0
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**80**	**100%**

Table 9. Distribution of Respondents' Answers After Participating in Local Potential-Based Mechanics Learning, I am Interested in Learning More Actively (No. 7)

Score	F	Total Score	Percentage
Strongly agree (5)	8	40	50%
Agree (4)	10	40	50%
Just Agree (3)	0	0	0
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**80**	**100%**

Based on Table 9 data, it can be concluded that after participating in local potential-based Mechanics learning, students are interested in learning more actively, this is indicated by the percentage 80/90x100% = 88.89% with the category strongly agree.

Based on the data in Table 10, it can be concluded that after participating in local potential- based Mechanics learning can make information clearer through pictures and

Table 10. Distribution of Respondents' Answers After Participating in Local Potential-Based Mechanics Learning Can Make Information Clearer Through Pictures and Videos (No. 8)

Score	F	Total Score	Percentage
Strongly agree (5)	2	10	13,51%
Agree (4)	16	64	86,49%
Just Agree (3)	0	0	0
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**74**	**100%**

videos, this is indicated by the percentage of 74/90x100% = 82.22% with the category strongly agree.

Based on Table 11 data, it can be concluded that learning is an encouragement from within the students themselves, this is indicated by the percentage of 81/90x100% = 90% with the category strongly agree.

Table 11. Distribution of Respondents' Answers Learning Is an Encouragement from Within Myself (No 9)

Score	F	Total Score	Percentage
Strongly agree (5)	9	45	50%
Agree (4)	9	36	50%
Just Agree (3)	0	0	0
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**81**	**100%**

Table 12. Distribution of Respondents' Answers I Have a High Enthusiasm for Learning After Attending a Local Potential-Based Mechanics Course (No 10)

Score	F	Total Score	Percentage
Strongly agree (5)	0	0	0
Agree (4)	16	64	91,43%
Just Agree (3)	2	6	8,57
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**70**	**100%**

Based on the data in Table 12, it can be concluded that students have a high enthusiasm for learning after attending mechanics lectures based on local potential, this is indicated by the percentage of 70/90x100% = 77.78% in the agree category.

Based on the data in Table 13, it can be concluded that students are motivated to study harder after participating in local potential-based Mechanics learning, this is indicated by the percentage of 70/90x100% = 77.78% in the agree category.

Based on the data in Table 14, it can be concluded that students are always looking for learning alternatives that encourage themselves to be motivated, this is indicated by the percentage of 70/90x100% = 77.78% in the agree category.

Based on the data in Table 15, it can be concluded that students have a high curiosity when learning mechanics based on local potential, this is indicated by the percentage of 68/90x100% = 75.56% in the agree category.

Based on the data in Table 16, it can be concluded that students have a strong imagination after participating in local potential-based Mechanics learning, this is indicated by the percentage of 69/90x100% = 76.67% in the agree category.

Based on the data in Table 17, it can be concluded that learning mechanics based on local potential trains students to think creatively and innovatively, this is indicated by the percentage of 79/90x100% = 87.78% with the category strongly agree..

Table 13. Distribution of Respondents' Answers I Am Motivated to Study Harder After Taking Part in Local Potential-Based Mechanics Learning (No 11)

Score	F	Total Score	Percentage
Strongly agree(5)	1	5	7,14%
Agree(4)	14	56	80%
Just Agree (3)	3	9	12,86%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**70**	**100%**

Table 14. Distribution of Respondents' Answers I Always Look for Learning Alternatives That Encourage Myself to Be Motivated (No 12)

Score	F	Total Score	Percentage
Strongly agree (5)	1	5	7,14%
Agree (4)	14	56	80%
Just Agree (3)	3	9	12,86%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**70**	**100%**

Table 15. Distribution of Respondents' Answers I Have a High Curiosity When Learning Mechanics Based on Local Potential (No 13)

Score	F	Total Score	Percentage
Strongly agree (5)	1	5	7,35%
Agree (4)	12	48	70,59%
Just Agree (3)	5	15	22,06%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**68**	**100%**

Table 16. Distribution of Respondents' Answers I Have a Strong Imagination After Participating in Local Potential-Based Mechanics Learning (No 14)

Score	F	Total Score	Percentage
Strongly agree (5)	0	0	0
Agree (4)	15	60	86,96%
Just Agree (3)	3	9	13,04%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**69**	**100%**

Table 17. Distribution of Respondents' Answers Learning Mechanics Based on Local Potential Trained Me to Think Creatively and Innovatively (No 15)

Score	F	Total Score	Percentage
Strongly agree (5)	8	40	50,63%
Agree (4)	9	36	45,57%
Just Agree (3)	1	3	3,8%
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**79**	**100%**

Based on Table 18 data, it can be concluded that students always think of creative and innovative ideas in the learning process, this is indicated by the percentage of 73/90x100% = 81.11% with the category strongly agree.

Recapitulation of respondents' answers about students' perceptions of local potential- based learning Mechanics can be seen in Table 19.

Table 18. Distribution of Respondents' Answers I Always Think of Creative and Innovative Ideas in the Learning Process (No 16)

Score	F	Total Score	Percentage
Strongly agree (5)	1	5	6,85%
Agree (4)	17	68	93,15%
Just Agree (3)	0	0	0
Don't agree (2)	0	0	0
Strongly disagree (1)	0	0	0
Amount	18	**73**	**100%**

Of the 16 questionnaire questions posed to 18 respondents, the perceptions of physics education students towards learning Mechanics of business and energy materials based on local potential can be described as follows: a). Students said that most of them liked to take part in local potential-based mechanics learning, they said they could learn mechanics in more detail, there were variations in learning, and it made them enthusiastic about learning. b). Most students are very interested in studying Mechanics with work and energy materials based on local potential, and will study harder. c). Most of the students said that they were motivated by the existence of local potential-based Mechanics learning, being an alternative variation of the learning process, and fostering a high enthusiasm for learning. d). Most of the students said that learning Mechanics based on local potential can improve creative thinking including: increasing high curiosity about Mechanics, increasing imagination/ideas about Mechanics, training students to think creatively and innovatively in the learning process.

Student perceptions of this study are relevant to previous research, that local content learning aims to provide knowledge to students to develop competencies in accordance with regional characteristics and potential, including regional advantages [11]. The results of the study show there is an increase in the creative thinking ability of students (students) before and after local potential-based learning is applied [12]. Student perceptions are all concepts used to identify ideas, beliefs, opinions, images, and preferences of students about the context of their education and educational activities [13].

Projects based on the potential of students' areas are effective in increasing their perceptions of motivation, interests, the real world, very useful, learning more lectures and fun so that they learn more actively and provide more time for learning. It also develops students' soft skills, including teamwork, project management, communication, and interpersonal skills [14]. Integrated science learning based on local wisdom to improve student competence is included in the large category for the knowledge domain [15]. Implementation of Local Wisdom-Based Science Learning to provide Cultural Literacy has helped realize cultural literacy with policies, concepts and implementation of local wisdom- based learning that refers to nature awareness programs and care for the environment [16].

Table 19. Recapitulation of Respondents' Answers about Student Perceptions

No.	Question	Category
1.	I enjoy participating in local potential-based Mechanics learning.	Agree
2.	After attending a local potential-based mechanics course, I will understand Mechanics in more detail.	Agree
3.	The existence of variations in learning mechanics makes learning more fun.	Strongly agree
4.	The abilities I gained from learning Mechanics based on local potential made me more enthusiastic about learning.	Strongly agree
5.	I am interested in the local potential of business and energy materials.	Agree
6.	I am interested in learning mechanics based on local potential because it has complete freedom and there are no binding rules.	Strongly agree
7.	After following the local potential-based Mechanics learning, I was interested in learning more actively.	Strongly agree
8.	After following the local potential-based Mechanics learning, you can make information clearer through pictures and videos.	Strongly agree
9.	Learning is an encouragement from within myself.	Strongly agree
10.	I have a high enthusiasm for learning after attending a local potential-based Mechanics course.	Agree
11.	I am motivated to study even harder after participating in local potential-based Mechanics learning.	Agree
12.	I am always looking for learning alternatives that spur me to be motivated.	Agree
13.	I have a high curiosity when learning mechanics based on local potential.	Agree
14.	I have a strong imagination after participating in local potential-based Mechanics learning.	Agree
15.	Learning mechanics based on local potential trained me to think creatively and innovatively.	Strongly agree
16.	I always think of creative and innovative ideas in the learning process.	Strongly agree

The research shows that the perception of physics education students towards local potential-based mechanics learning on work and energy materials is in the high category. That is, the perception of physics education students towards learning Mechanics based on local potential in work and energy materials needs to be developed further, student enthusiasm for learning is very good, so student perceptions are needed to improve learning Mechanics based on local potential in the future.

4 Conclusion

From the results and discussion, it can be concluded that the perception of physics education students towards learning Mechanics of work and energy materials based on local potential, is fun, very interested, highly motivated, and can improve students' creative thinking skills. Students' perceptions are categorized as high, so perceptions are needed to improve future learning.

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