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Pancasila Student Profile Dimensions of Critical Reasoning through Differentiation Learning in the Context of Independent Learning

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Abstract

This research aims to describe a study of the profile of Pancasila students who reason critically through differentiated learning on circle material in class VIII of SMP Negeri 9 Simpang Hilir. The method used is qualitative research in descriptive form, involving class VIII A students. Data was collected through observation, questionnaires and tests. The results of the research show that the results of the learning style test of class VIII A students before differentiated learning show a diversity of students' learning style preferences: 10 people are kinesthetic, 3 people are auditory, and 7 people have a combination of two learning styles, namely 1 visual kinesthetic, 3 visual kinesthetic, 2 visual auditory, and 1 auditory visual. Preliminary test results show that the average critical reasoning ability score of class VIII A students is 57.6, which is in the "low" category. Of the 26 students, 6 had scores in the "medium" category, and 10 others were in the "low" category. There is a relationship between learning styles and critical reasoning abilities in assessing students' initial knowledge. The average score of students' LKPD at the second meeting was lower because the questions emphasized applications with high critical reasoning indicators. Differentiated learning has been proven to be effective in improving critical reasoning abilities, both in the medium and low groups. From the self-assessment questionnaire, 7 students were in the "Very Good" category and 13 students were "Good", in differentiated mathematics learning in circle material. There is a positive relationship between the results of students' critical reasoning self-assessment questionnaires and the results of the final learning assessment. Thus, differentiated learning has proven to be effective in implementing the Pancasila student profile of critical reasoning and improving student learning outcomes in circle material in class VIII.

Keywords
Students; critical reasoning; differentiation learning; independent learning

I. Introduction

The importance of character education in education today is reflected in the attitudes shown by students (Lestari et al., 2021; Nuryadi et al., 2023). In the era of globalization and technological development, character education is a strong foundation for the formation of superior and quality individuals (Irawati et al., 2022). In line with the implementation of the Merdeka Curriculum, student attitude assessment evolved into the Pancasila student profile, which provides a comprehensive view of students' abilities and growth (Irawati et al., 2022; Mery et al., 2022).

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The Pancasila student profile is the character and abilities that are built in everyday life and brought to life in each individual student through educational unit culture, intracurricular learning, projects to strengthen the Pancasila student profile, and extracurricular activities (Kemdikbudristek, 2021). However, the implementation of the Pancasila student profile in schools is still less than optimal and has strong implications for the formation of students' character (Kahfi, 2022). Obstacles in strengthening the Pancasila student profile, such as an insufficient understanding of "freedom to learn," hinder the optimization of the cultivation of this profile (Utami, 2022).

The Pancasila student profile consists of six dimensions: faith, devotion to God Almighty, and noble character; global diversity; worked together; independent; critical reasoning; and creative (Kemdikbudristek, 2021). The critical reasoning dimension is very important to face challenges in the digital era, where information can be obtained easily from various sources (Laili Rahmawati, 2023). Critical thinking skills help individuals process information effectively, develop solutions to complex problems, and make logical decisions in an ever-evolving digital environment (Laili Rahmawati, 2023; Li seena et al., 2023).

Strategies for implementing the Pancasila student profile, such as differentiated learning, learning with projects, and habituation, are able to help students achieve optimal learning outcomes (Lubaba, 2022). In a class with diverse student characters and potential, it is important to accommodate the uniqueness of each individual, including specific talents, interests and learning styles (Corno, 2008; Lesseig et al., 2016; Tomlinson, 2017). Learning readiness, interest, and learning profile are three important factors that influence students' learning needs (Tomlinson, 2017).

Differentiated learning refers to the strategy of differentiating the processes that students must undergo, allowing them to practice and understand the material according to their individual needs (Tomlinson, 2017). There are three types of differentiated learning: differentiated content, process, and product (Faiz et al., 2022; Rock et al., 2008; Subban, 2006). Diagnostic tests are used to identify students' competencies, strengths and weaknesses, so that learning can be designed according to their needs (Kurniati, 2023; Leighton, 2007; Tatsuoka, 2009).

Research shows that differentiated learning can improve student learning outcomes (Gusteti, 2022; Kamal, 2021). Circle material in class VIII has great potential to develop students' critical thinking skills. Circles are important material in junior high school which are related to daily life and other advanced materials (Jannah, 2022; Putri et al., 2022). However, students' mathematical problem solving abilities in circle material are still relatively low (Nuraeni, 2020; Anwar, 2020).

The learning outcomes of class VIII B students at SMP Negeri 9 Simpang Hilir on circle material show a low average, namely 58.30, below the KKM set at 70. The causes include a lack of understanding of the concept by students, material that does not involve participants students, and students' inability to reason critically in solving contextual problems (Table 1.1).

Therefore, process differentiated learning is considered an effective solution to improve students' critical reasoning abilities in circle material. Differentiated processes allow students to learn according to their style and abilities, so that they can better understand the material being taught (Bayumi et al., 2021). This research aims to examine the profile of Pancasila students in the critical reasoning dimension through differentiated learning processes in circle material in class VIII of SMP Negeri 9 Simpang Hilir, providing an overview of meaningful critical reasoning skills for students.

II. Research Methods

This research aims to examine the profile of Pancasila students in the critical reasoning dimension through differentiated learning in the Circle material process in the context of Freedom of Learning for class VIII students at SMP Negeri 9 Simpang Hilir. Qualitative methods are used to understand natural situations without manipulation, with data obtained through triangulation techniques until saturation is reached, and presented in narrative form. This qualitative descriptive research focuses on strengthening the profile of Pancasila students through differentiated learning without looking for or explaining relationships between variables or testing hypotheses.

The research location at SMP Negeri 9 Simpang Hilir was chosen based on the real actions of driving teacher education, implementation of the Independent Curriculum, and practical considerations because the researcher works as a mathematics teacher at the school. The research subjects were 20 students in class VIII A for the 2023/2024 academic year. Data were collected using self-assessment questionnaires, formative assessment tests on LKPD, and final learning assessment tests, with the validity of the instrument content guaranteed by Mathematics Education lecturers at FKIP Tanjungpura University.

III. Result and Discussion

3.1 Learning Styles of Class VIII A Students Before Process Differentiated Learning

To answer the first problem formulation, namely knowing the learning styles of class VIII A students before the differentiated learning process was carried out, a learning style test was carried out on February 27 2024. Based on Table 1, the results of the learning style test grouped students according to the learning styles described in Table 1 below:

Table 1. Student Groups Based on Learning Style

No	Learning Style	The initial of Student Name	Number of people)
1	Kinesthetic	AT	10
		IM	
		IK	
		JY	
		KY	
		RY	
		RT	
		RR	
		ST	
		WI	
2	Auditory	FB	3
		FT	
		JS	
3	Visual Kinesthetic	MW	1
4	Kinesthetic Visual	AN	3
		HW	
		R.I	
5	Visual Auditory	HO	2
		SL	

No	Learning Style	The initial of Student Name	Number of people)
6	Visual Auditory	RM	1

Based on Table 1 above, it is known that from the 20 students, the results of the learning style test showed that the majority of students had a kinesthetic learning style, 10 people, 2 people auditory, and 8 people had a combination of 2 learning styles, namely visual kinesthetic, 1 person, 3 visual kinesthetic people, 2 visual auditory people and 1 visual auditory person. However, the dominant percentage of the combination of learning styles that emerges is that the first learning style is more dominant than the second learning style, as can be seen from the percentage of learning style results shown in the application.

Based on the results of the learning style test carried out on class VIII A students, it is known that the majority of students have a kinesthetic learning style which is followed by other learning styles. According to Kolb in Nur Ghufron (2014) that the differences in learning styles chosen by individuals indicate the fastest and best way for each individual to absorb information from outside themselves. Then Cholifah came in Risa Zakiatul Hasanah (2021)reveals that a person's learning style is formed naturally according to their intelligence and potential.

It can be concluded that learning styles can be influenced by the environment and culture of students which plays an important role in forming a diversity of learning styles. It is known that students at SMP Negeri 9 Simpang Hilir where this research was conducted in the Penjalaan Village area, who are accustomed to agricultural and plantation activities, generally prefer learning that is actively involved and uses the sense of touch or kinesthetic. This is in line with opinion Karunia,(2016) Students who come from environments and cultures that encourage learning with physical activity and direct experience tend to develop a stronger kinesthetic learning style preference. This statement supports that more students in class VIII A have a kinesthetic learning style than other learning styles.

Another factor that can cause diversity in learning styles among early adolescent students is the characteristics of their age development. At junior high school age, students tend to be active and like to move. They have high energy and enjoy learning that involves physical activity more than just sitting quietly listening. The tendency to be actively involved in the teaching and learning process can encourage early adolescent students to further develop a kinesthetic learning style or learning through movement and direct experience.(Woolfolk, 2021). Further research by(Shi & Feng, 2022)shows that the development of motor skills in adolescents helps improve cognition, which supports the formation of a kinesthetic learning style.

3.2 Initial Knowledge of Class VIII A Students Regarding Critical Reasoning Ability Before Being Given Differentiated Learning

To answer the second problem formulation, knowing students' initial knowledge regarding critical reasoning abilities before being given differentiated learning, an assessment of students' initial knowledge was carried out on March 1 2024, where students were given five circle questions that could determine their critical reasoning abilities regarding circle material and find out their understanding. students' beginning on circle material.

There were 20 students whose initial knowledge assessment results had an average score of 51, namely 6 students were in the "medium" category and 14 students were in the "low" category.

3.3 The Relationship between Learning Styles and Students' Initial Ability of Critical Reasoning on Circle Material Before Being Given Differentiated Learning

To answer the third problem formulation, namely knowing the relationship between learning styles and students' initial abilities to reason critically on Circle material before being given differentiated learning based on the results of students' initial knowledge tests.

1. Kinesthetic Learning Style:

   The group of students with a kinesthetic learning style consisted of 10 people. Students with a kinesthetic learning style have initial knowledge in the low category, with an average score of 41.7. It was concluded that this group had a lower average score compared to other learning style groups.
2. Kinesthetic-Visual and Visual-Auditory Learning Styles:

   The group of students with kinesthetic-visual and visual-auditory learning styles had an average initial knowledge score of 53, which is included in the low category.
3. Visual-Auditory, Auditory, and Auditory-Visual Learning Styles:

   The group of students with visual-auditory, auditory, and auditory-visual learning styles has a higher average initial knowledge score, namely 66, and is included in the medium category.

Based on these results, several important points were found, namely the relationship between learning styles and critical reasoning abilities in assessing initial knowledge. The results of the initial learning assessment showed that there were significant differences in initial knowledge between the kinesthetic learning style group and other learning style groups. This is caused by the characteristics and preferences of each learning style, which can influence the acquisition and use of previous knowledge.

This is in accordance with the statementSupit et al. (2023) in his research regarding the relationship between learning styles and academic achievement that students with different learning styles show significant differences in their academic achievement. FurthermoreYazıcı, (2017)revealed that students with visual, auditory and kinesthetic learning styles have different achievement tendencies.

Based on several studies, the kinesthetic learning style does not always tend to have low learning achievement compared to other learning styles. However, there are several factors that can cause students with a kinesthetic learning style to experience difficulties in certain academic achievements.

According to Neil Fleming in Risa (2021), students with a kinesthetic learning style tend to experience challenges in the traditional education system which places more emphasis on visual and auditory learning. He stated that kinesthetic students are often ignored in school systems that are dominated by lecture and reading methods. They need more opportunities to be physically involved in the learning process(Risa, 2021).

Next Dunn and Dunn inGhufron (2014)revealed that the main factor that can cause students with a kinesthetic learning style to have lower academic achievement is because the learning system is less accommodating to their learning style which relies more on physical activity and direct practice. This is a consideration for researchers to consider the diversity of students' learning styles and provide appropriate treatment to improve learning outcomes. Teaching strategies that are more varied and adapt to the needs of each learning style can help optimize learning. Adapting learning methods is an important key to maximizing the potential of students with a kinesthetic learning style.

Researchers mapped students according to the initial knowledge assessment, namely uniting students into the same learning group according to learning styles and initial knowledge test results as presented in Table 2 below:

Table 2. List of Groups Based on Initial Assessment Results

Group B1	Group C1	Group C3
FB	AT	HW
JS	WI	RT
HO	ST	IM
	MW	
Group B2	Group C2	Group C4
RM	RT	AN
SL	R.I	RY
FT	KY	IM
	JY	

From Table 2 it is known that group B is students who have initial knowledge in the "medium" category, so that there are 2 groups, namely group B1 and group B2. Group C are students who have initial knowledge in the "low" category. Thus, 4 groups were obtained, namely group C1, group C2, group C3, and group C4. Next, prepare a learning plan by creating teaching modules, LKPD according to study groups, and creating and providing media according to students' learning styles.

3.4 Students' Critical Reasoning Ability in the Medium and Low Groups after Process Differentiation Learning

Based on Table 2, it is known that students are mapped into low and medium groups based on the results of their initial knowledge tests and learning styles. For this reason, in this study only the medium and low groups were discussed. Answering the fourth problem formulation, namely knowing the critical reasoning abilities of students in each group, namely the medium group and the low group, after differentiated learning using LKPD, a differentiated learning process was carried out. Each group has a different LKPD that adapts the content and learning media that have been designed in the teaching module.

Researchers carry out learning according to the differentiated learning steps that have been previously designed in the teaching module. The learning mechanism is completely based on the results of an initial assessment or diagnostic test to determine differentiated learning steps. In the differentiated learning process, students are divided into 6 groups, namely 2 medium groups and 4 low groups. Researchers have carried out differentiated learning processes by applying the Pancasila student profile of critical reasoning dimensions in problem solving on circular material. This can be seen from the results of the observer's observations in appendix B page 190 carried out by the head of SMP Negeri 9 Simpang Hilir, who observed the researcher while carrying out the differentiated learning process. For more details, it will be described as follows:

a. The First Meeting

The first learning meeting was held on March 6 2024. At this stage the researcher took the following actions:

The initial activity begins with the teacher greeting and inviting students to read a prayer before starting learning, then checking the students' attendance. Followed by apperception by asking students to recall the circle material they had studied in elementary school. Next, provide information regarding the material, learning objectives and an overview of the process of activities that will be carried out. Providing trigger questions by

showing a picture of circle O, then students are asked questions about what elements they know in the picture, how they determine the size of the radius, diameter and arc of the circle AC, as well as mentioning examples of the application of the elements of a circle. what they know in everyday life.

When giving this trigger question, several students answered correctly and it seemed that the students were starting to try to think about finding the right answer, but most of the students were still wrong and confused about the answer to the trigger question. After that, the researcher provided motivation to students that in this learning activity students would gain learning experience so that they would be able to think and get answers to trigger questions.

To prepare for concentration, students are invited to do an ice breaker, namely "Focus Clapping". The students looked enthusiastic and happy in following the focus pat command.

The next activity is the core stage. At this stage, students sit in groups according to group divisions based on the results of the initial assessment (diagnostic test). Students are distributed LKPD according to their groups. This stage is called process differentiation. then they discuss, solve problems and conclude the material according to the LKPD.

Next, a video will be shown for group B via the link:https://youtu.be/lnf5bfiKYYQand for group C the Key Card game was given. This activity is a Content Differentiation process. This step will stimulate students' critical reasoning attitudes, namely element 1: Obtaining and processing information and ideas. Namely, students ask questions to both the teacher and their friends, then students are seen identifying and processing information from the media provided.

The teacher directs students to discuss and complete the LKPD that has been given. In this activity several students asked: group B, about their mistakes in solving problems in filling out the LKPD; in group C, they were confused about playing the key card game so the teacher always went around to ensure that students followed the steps in the key card game. Students appear serious in seeking information from their respective media and filling in LKPD.

In this activity it was also found that group B quickly completed filling in the LKPD first. Next, in groups, students present the results of their discussion in front of the class. These two steps will stimulate students' critical reasoning attitudes, namely element 2: Analyzing and evaluating reasoning and Element 3: Reflecting and evaluating their own thinking. Namely, students in discussions appear to express opinions in solving problems in the LKPD so that they can decide together to draw conclusions in determining solutions to problems in the LKPD.

In the closing activity, students and the teacher conclude about the important points that emerged in the learning activities that have just been carried out. The teacher controls the process of drawing conclusions so that there are no misconceptions among students so that they can ensure that students really understand the material being studied. Students are asked to complete the assignment at the end of the LKPD to see students' critical reasoning abilities in solving Circle problems. Followed by the teacher providing feedback to students regarding the process and discussing learning outcomes, learning activities have been carried out well and there is still a need to increase seriousness in completing LKPD on time.

Because time was almost up, the teacher initially asked students to reflect on the learning activities that had been carried out by writing down their feelings and opinions regarding learning on Sticky Notes. So at this meeting, students were only asked to express

their opinions and feelings verbally. Then the teacher informs the learning topic at the next meeting and closes the meeting by saying hamdallah and greetings.

Based on the results of observations of teacher activities in the differentiated learning process above, it shows that the activities carried out by teachers in the implementation of differentiated learning that have been carried out have received good assessments from observers.

Then each student works on the questions at the end of the LKPD. In this first meeting, students were given a two-question formative test to determine their critical reasoning abilities in solving Circle problems. The results of the assessment at the first meeting of the LKPD are as shown in Table 3 below:

Table 3. List of Student LKPD Values Medium and Low Groups at the First Meeting

No	Group	Name	Mark
1	Group B1	FB	100
2		JS	100
3		HO	83.33
4	Group B2	RM	83.33
5		SL	100
6		FT	100
7	Group C1	AT	100
8		WI	83.33
9		ST	83.33
10		MW	83.33
11	Group C2	RT	100
12		R.I	100
13		KY	100
14		JY	83.33
15	Group C3	HW	83.33
16		RT	100
17		IM	83.33
18	Group C4	AN	83.33
19		RY	100
20		IM	83.33
Average			91.67

b. Second meeting

The first learning meeting was held on March 7 2024. At this stage the researcher took the following actions:

The initial activity begins with the teacher greeting and inviting students to read a prayer before starting learning, then checking the students' attendance. Followed by apperception by asking students to recall the circle elements material that had been studied at the previous meeting. Next, provide information regarding the material, learning objectives and an overview of the process of activities that will be carried out.

Provide trigger questions by asking students to search for the meaning of QS Al-Hajj Verse 29 on an internet search. Next, show a video of Tawaf activities (https://www.youtube.com/watch?v=kAnBPjd-Rgs). Then the students are asked questions about what they know about the pillars of tawaf, explain the relationship between the

activities in the video and the circumference of the circle, and conclude what the circumference of the circle means based on what they observe.

When giving this trigger question, several students used their cellphones to look for the pillars of Tawaf, then it appeared that the students were able to think and find the relationship between Tawaf activities and the circumference of a circle. After that, the researcher provided motivation to students that in this learning activity students would gain learning experience so that they would be able to think and get answers to trigger questions.

To prepare for concentration, students are invited to do an ice breaker, namely "Focus Clapping". Students are increasingly enthusiastic about maintaining their focus in following the focus pat command. The next activity is the core stage. At this stage, students sit in groups according to group divisions based on the results of the initial assessment (diagnostic test). Students are distributed LKPD according to their groups. This stage is called process differentiation. then they discuss, solve problems and conclude the material according to the LKPD.

Next, a video will be shown for group B via the link:https://www.youtube.com/watch?v=p8BWoIALq8Mand for group C, they were given the practice of measuring circles using visual aids. This activity was a Content Differentiation process. This step will stimulate students' critical reasoning attitudes, namely element 1: Obtaining and processing information and ideas. Namely, students ask questions to both the teacher and their friends, then students are seen identifying and processing information from the media provided.

The teacher directs students to discuss and complete the LKPD that has been given. In this activity several students asked: in group B, they were seen independently discussing and working together in filling in the LKPD; In group C, there were 2 groups who asked how to measure correctly, then all group C were very active in discussing with their group friends in solving problems on the LKPD.

Next, in groups, students present the results of their discussion in front of the class. These two steps will stimulate students' critical reasoning attitudes, namely element 2: Analyzing and evaluating reasoning and Element 3: Reflecting and evaluating their own thinking. Namely, students in discussions appear to express opinions in solving problems in the LKPD so that they can decide together to draw conclusions in determining solutions to problems in the LKPD.

In the closing activity, students and the teacher conclude about the important points that emerged in the learning activities that have just been carried out. The teacher controls the process of drawing conclusions so that there are no misconceptions among students so that they can ensure that students really understand the material being studied. Students are given assignments related to the material of determining the circumference and area of a circle.

Followed by the teacher providing feedback to students regarding the process and discussing the learning outcomes. Learning activities are good and more careful in measuring and calculating. The teacher asks students to reflect on the learning activities that have been carried out by writing down their feelings and opinions regarding learning on Sticky Notes. Then the teacher informs the learning topic at the next meeting and closes the meeting by saying hamdallah and greetings.

Based on the results of observations of teacher activities in the differentiated learning process above, it shows that the activities carried out by teachers in the implementation of differentiated learning that have been carried out have received good assessments from observers (attached observation sheet). Based on the results of observations made during

the differentiated learning process, it appears that students are active in learning and discussions and questions and answers occur in solving the problems given.

At the end of the second meeting, each student was given a two-question formative test on the LKPD to determine their critical reasoning abilities in solving circle questions. The results of the second meeting learning LKPD assessment are as shown in Table 4 below:

Table 4. List of Student LKPD Values Medium and Low Groups Second Meeting

No	Group	Name	Mark
1	Group B1	FB	83.3333
2		JS	100
3		HO	83.33
4	Group B2	RM	83.33
5		SL	100
6		FT	100
7	Group C1	AT	83.33
8		WI	66.67
9		ST	83.33
10		MW	83.33
11	Group C2	RT	83.33
12		R.I	100
13		KY	83.33
14		JY	83.33
15	Group C3	HW	66.67
16		RT	83.33
17		IM	83.33
18	Group C4	AN	83.33
19		RY	83.33
20		IM	66.67
Average			84.17

In Tables 3 and 4 it is known that at the first meeting the average LKPD score of the students was 91.67 and at the second meeting the average student LKPD score was 84.17. There is a difference in the average LKPD scores of students, it appears that the average score at the second meeting is lower than at the first meeting. This is because at the first meeting the type of LKPD question was comprehension with critical reasoning indicators, namelyidentify relevant information, while in the second meeting the types of questions on the LKPD were applications and applications with higher indicators of critical reasoning, namelyReasoning with various arguments in coming to a conclusion or decision and Analyzing various arguments in coming to a conclusion or decision. It was concluded that students tend to have difficulty in solving application and application types of questions with a higher level of critical reasoning.

Strengthened by research fromIsmail & Noor (2019)which revealed that junior high school students had difficulty solving mathematics application problems. The results show that students have difficulty understanding the problem, transforming the problem into a mathematical model, and carrying out correct calculation procedures. Other researchers

also discussed various types of mathematics learning difficulties experienced by junior high school students, including difficulties in solving implementation and application problems(Aini et al., 2019; Bell, 1978).

3.5 Final Differentiated Learning Assessment Results Regarding Critical Reasoning Ability for Students in Each Group

After carrying out process differentiated learning activities, class VIII A students were given a learning outcomes assessment or summative test of 5 questions consisting of 2 easy questions, 2 medium questions and 1 high circle meter question to determine the students' critical reasoning abilities. The categorization of the assessment results into three levels, namely low, medium and high. The following is data on student learning outcomes according to the student learning groups in Table 5 below:

Table 5. Final Assessment Results of Process Differentiated Learning

No	Group	Name	Mark	Category
1	Group B1	FB	86.67	Tall
2		JS	100	Tall
3		HO	80	Tall
4	Group B2	RM	73.33	Currently
5		SL	93.33	Tall
6		FT	100	Tall
7	Group C1	AT	73.33	Currently
8		WI	66.67	Currently
9		ST	80	Tall
10		MW	66.67	Currently
11	Group C2	RT	73.33	Currently
12		R.I	86.67	Tall
13		KY	80	Tall
14		JY	73.33	Currently
15	Group C3	HW	73.33	Currently
16		RT	73.33	Currently
17		IM	73.33	Currently
18	Group C4	AN	66.67	Currently
19		RY	73.33	Currently
20		IM	73.33	Currently

In Table 5, it can be seen that six students in the medium group, namely groups B1 and B2, five of them experienced an increase in learning outcomes by obtaining grades in the high category. One person got a score in the medium category, but if we look at the student's score there has been an increase, namely in the initial knowledge test the student got a score of 66, then in the final assessment test he got a score of 73.33. Thus, it can be concluded that students in the medium group (Groups B1 and B2) already have the ability to reason critically on circle material as seen in the increase in scores before and after the differentiated learning process is carried out.

All students in the Low group, namely groups C1, C2, C3 and C4 experienced improvements obtained in the final assessment. Of the fourteen students in the low group, three of them improved their learning outcomes by getting grades in the high category. Then eleven other people also experienced an increase in learning outcomes by getting

grades in the medium category. Thus, it can be concluded that students in the low group (Groups C1, C2, C3 and C4) already have the ability to reason critically on circle material as seen in the increase in scores before and after the differentiated learning process is carried out.

Based on this description, judging from the increase in student learning outcomes from the previous initial assessment, it can be said that students have experienced an increase in the critical thinking process through differentiated learning. This is reinforced by the statementSyamsir Kamal (2021)The application of differentiated learning in mathematics to students can provide significant benefits in improving their learning activities and outcomes. Then support it with a statementSyarifuddin & Nurmi (2022)that with the implementation of differentiated learning processes, students are able to achieve superior learning outcomes in mathematics.

IV. Conclusion

1. The results of the learning style test for class VIII A students before differentiated learning showed a diversity of learning style preferences for class VIII A students, including 10 people with a kinesthetic learning style, 3 with an auditory learning style, and 7 people with a combination of 2 learning styles, namely 1 visual kinesthetic. people, visual kinesthetic 3 people, visual auditory 2 people and visual auditory 1 person.
2. Based on the results of the initial critical reasoning ability test of students, it is known that the average critical reasoning ability score of class VIII A students before treatment was 57.6. Students' critical reasoning ability scores are in the "low" category. 6 of the 26 students had critical reasoning ability scores in the "medium" category, while the other 10 were in the "low" category.
3. The relationship between learning styles and critical reasoning abilities of class VIII A students before being given differentiated learning is as follows: there is a relationship between learning styles and reasoning abilities critical in assessing initial knowledge. The results of the initial learning assessment showed that there were significant differences in initial knowledge between the kinesthetic learning style group and other learning style groups.
4. There is a difference in the average LKPD scores of students at the first and second meetings, where the average score at the second meeting is lower than at the first meeting. This difference was caused by the fact that at the first meeting, the type of LKPD questions was more directed at understanding with lower indicators of critical reasoning, while at the second meeting, the type of questions was more about implementation and application with higher indicators of critical reasoning, indicating that students tended to experience difficulties in solve application and application problem types that require higher critical reasoning abilities.
5. Based on the results of the final learning assessment, it can be concluded that process differentiated learning has proven to be effective in improving students' critical reasoning abilities, both in the medium and low groups. In the medium group, most of the students (5 out of 6 people) achieved high category scores. Meanwhile in the low group, although not as high as the medium group, all students experienced improvement with 3 people achieving high category scores and 11 people achieving medium category scores. Overall, differentiated learning processes can improve students' critical reasoning abilities.

6. From data collection through a student self-assessment questionnaire regarding the profile of Pancasila students with critical reasoning, the results show that there are 7 students in the "Very Good" category and 13 students in the "Good" category. It was concluded that from both the medium and low groups, students' self-assessment of critical reasoning abilities was obtained on average at 74.44%, so that they were included in the "Good" category for learning mathematics through a differentiated learning process in circle material.

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