



## Exploring Character Dynamics: Unveiling Dominant Values in Physics Education

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### ABSTRACT

**Purpose of the study:** This research aims to determine the character values that are more dominant among teachers in students, with a focus on eliminating values such as integrity, honesty, discipline, caring and responsibility in the context of learning at school.

**Methodology:** This research uses mixed methods with quantitative and qualitative descriptive approaches. The population is all physics teachers at Darul Ulum Private Madrasah Aliyah, with a sample of three teachers selected purposively. Research instruments include questionnaires and interviews, with data analysis using partial analysis for quantitative and the Miles and Huberman model for qualitative.

**Main Findings:** The results of the research show that of the three character values studied, the one that appears more dominant in students is the discipline character value of 88.89%, where students always follow and carry out the rules set by the school, then the responsibility character value is 86%, In students there is still a high value of responsibility for what is a burden and looking after goods or whatever is their responsibility. Finally, the honest character value was 84.75%, a character value that was lower than the character value studied.

**Novelty/Originality of this study:** This research highlights the determination of dominant character values in students, especially in discipline, responsibility and honesty in learning physics. With a sample of three physics teachers, this research uses quantitative descriptive methods and partial data analysis to reveal a new understanding of student character in the context of learning at school.

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## 1. INTRODUCTION

The crucial problem of the Indonesian nation in the era of globalization related to preparing human resources that are ready to compete today is the crisis of national character values which is characterized by moral deviations such as: free sex, brawls between students, speeding on the road, drug users, violence and alcohol [1], [2], [3]. Due to the large number of deviations that occur, they do not represent the values of the nation's character [4], [5], [6]. Taking into account the worrying situation and condition of the nation's character, the government took the initiative to prioritize building the nation's character [7], [8], [9]. This is reflected in the national development mission which positions educational character as the first of eight missions to realize the national

development vision, as stated in the 2005-2025 National Long Term Development Plan (Law of the Republic of Indonesia Number 17 of 2007), namely the realization of character. nation. who is tough, competitive, has noble character and morals.

Awareness and enthusiasm for reviving national character through education initiated by the government actually stems from the approval and concern of our government and society for the failure of education which glorifies mere left-brain intelligence [10], [11], [12]. As a result, many students are very intelligent in answering questions but weak mentally and morally [13], [14], [15]. With cooperation between the government and society, it will prioritize the value of national character in the world of education [16], [17], [18]. Character development has long been a hotly discussed aspect in the world of education [19], [20], [21]. However, the learning that has been implemented in schools is considered to pay less attention to character development in students and is more dominant in providing students with knowledge alone.

In line with the demands and developments of the times, in 2013 there was a change in the education curriculum from the education unit level curriculum to the 2013 curriculum (C13) [22], [23], [24]. The presence of C13 certainly raises pros and cons in society. In C13 character cultivation is given more priority [25], [26], [27]. However, it does not explicitly state the overall value of the character. Schools are required to play their role and responsibility to develop and develop good values and help students shape and build their character with good values. Character education is directed at placing emphasis on certain values, such as: respect, responsibility, honesty, caring, and fairness [28], [29]. Helping students understand, pay attention to, and implement these values in their own lives. To realize character formation, there is no need to create new subjects, but simply integrate learning in each existing subject.

Integrating character values is not only the responsibility of religious education and citizenship education, but all fields of study have the same responsibility for integration, including physics learning [30], [31]. Based on the results of observations made at one of the Islamic boarding school-based schools in Banda Aceh, there were students who deviated from the three student character values, namely honesty, discipline and responsibility, which was characterized by not complying with existing character values, such as not students are disciplined in doing assignments, they are late for class and there are still students who cheat.

Based on research conducted by several researchers, including Hamid [32] stated that, there are 5 character values that are developed through learning by economics teachers, namely, honesty, discipline, curiosity, social care, and responsibility. The students' honest character shows an average score of 3.7 which is included in the high category. The students' discipline character shows an average score of 3.7 which is included in the high category. The student's curious character shows an average score of 4.0 which is included in the high category. The students' social care character shows an average score of 3.6 which is included in the high category. The student's character of responsibility shows an average score of 3.6 which is included in the high category. Furthermore, research conducted by Baroroh stated that efforts to increase students' character values through the application of the role playing method resulted in the greatest increase in the creative value of 19.6. %, communication skills increased by 18.9%, discipline scores showed an increase of 10.9%, and hard work scores only showed an increase of 7.4%.10.

And also research conducted by Widyaningsih [33] can be seen from the results of his research that the character values that the school strives to internalize in students at Bantul 2 junior high school are religious values, honesty, responsibility, politeness, mutual respect, care for the environment, love of the land. air, and nation. Research regarding the analysis of student character values in physics learning in boarding-based schools is very important considering the broad impact of character formation on students. Including in boarding-based schools, character values such as integrity, honesty, responsibility and cooperation greatly influence students' personal and academic development. In the context of physics learning, this aspect of character not only influences the quality of students' interactions with the material, but also how they understand the role of ethics and values in science. This research can provide in-depth insight into these dynamics, help develop a more holistic and sustainable curriculum, and provide guidance for educators to build learning environments that support positive character development in students.

This research has great urgency for the development of physics education in the future. By understanding students' character values in the context of physics learning in boarding-based schools, we can develop more holistic and effective learning strategies. It's not just about teaching physics concepts, but also about forming individuals who have integrity, responsibility and strong collaboration skills. As technology evolves and global challenges become increasingly complex, students need to be equipped with solid character skills to be successful in their scientific careers and everyday lives. Thus, this research is not important in directing physics learning towards a future that is more efficient and oriented towards positive character formation. From several studies, it can be concluded that several character values have different methods for increasing students' character values and each character has a different percentage. In this research, what differs from previous research is that in this research there are 3 character values studied in students, namely honesty, discipline and responsibility.

## 2. RESEARCH METHOD

### 2.1 Type of Research

This research uses mixed methods with an explanatory type that combines quantitative and qualitative descriptive approaches. The quantitative descriptive approach aims to describe existing phenomena by measuring data on a numerical scale [34], while the qualitative approach is used to dig deeper into teachers' perspectives and experiences through interviews. This research aims to look at the characteristics that emerge in students through questionnaires filled out by teachers with the aim of understanding more deeply about students. As indicated by its name, research this aim for see mark character that appears in oneself participant educate through questionnaire filled out by the teacher with the aim for participant educate.

### 2.2 Population and Sample

Population is whole subject study [35]. If somebody want to research all existing elements in the research area, then his research is study population. All data becomes attention We in something room scope and time that we determine. Population in study this is all physics teachers at Darul Ulum Private Madrasah Aliyah. Samples are part or representative of the population studied. Research on samples only is approach to the population [36]. Samples used is three physics teachers.

This research uses a purposive sampling technique to select samples based on certain characteristics that are relevant to the research topic. Of all the physics teachers at Darul Ulum Private Madrasah Aliyah, three physics teachers were selected who had relevant teaching experience and were willing to participate. This selection aims to obtain in-depth and specific data about their teaching perspectives and experiences.

### 2.3 Research Instruments

Instruments used in study this is questionnaires and interviews. Questionnaire is a number question written is used For obtain information from respondents in the sense of report about personally, or the things he know interview is a dialogue conducted by the interviewer for obtain information from interviewed. Berikut kisi-kisi kuesioner instrument penelitian ini:

Table 1. Instrument grid of perspectives and experiences of physics teachers

Questionnaire	Interview
Teaching Methods and Strategies	Teaching experience
Challenges and Support	Teaching Methods and Effectiveness
Professional Development	Challenges Faced
	Professional Support and Development

### 2.4 Data analysis Techiques

The data analysis technique from the questionnaire in this research is partial analysis for quantitative data and qualitative data using the Miles and Huberman model. Analysis this intended calculate each sub variable separately separated. Analisis data So that obtained category evaluation questionnaire mark character as in Table 2 below :

Table 2. Questionnaire Assessment Categories

Value Range	Evaluation
$81.25 < x \leq 100$	Always
$62.50 < x \leq 81.25$	Often
$43.75 < x \leq 62.50$	Seldom
$25.00 < x \leq 43.75$	Never

## 3. RESULTS AND DISCUSSION

In this study, the researcher aims to determine the character values that are more dominant in students. The data obtained during the research was in the form of a questionnaire, in the form of a statement. The data obtained is then analyzed to determine which character values are more dominant. The results of the assessment were analyzed by looking at the questionnaires filled out by the three physics teachers. The following is data from research on the character values of students towards teachers.

Table 3 . Results data evaluation values character participant educate

Assessment Aspects	Assessment criteria	Evaluation	Score	Per Aspect	Average	Percentage
A	1	2 2 2	6	61	3.388889	84.75%
	2	4 3 4	11			
	3	4 3 3	10			
	4	4 3 4	11			

	5	4	4	4	12			
	6	3	4	4	11			
B	1	4	4	4	12	64	3.555556	88.89%
	2	4	4	4	12			
	3	3	3	3	9			
	4	3	3	4	10			
	5	4	4	4	12			
	6	3	3	3	9			
C	1	3	3	4	10	62	3.444444	86%
	2	4	3	3	10			
	3	4	3	4	11			
	4	4	3	4	11			
	5	4	3	3	10			
	6	4	3	3	10			
Total score		65	58	64	187	187	3.462963	85.38%
average number of scores								

Information :

1. Appraiser I : EB
2. Appraiser II : SB
3. Appraiser III : MB
4. A: Character Value Honest
5. B: Character Value Discipline
6. C: Character Value Responsibility

Based on the assessment results of three physics teachers, the honesty aspect received an average score of 84.75% according to Table 2. The first aspect is the honesty character value aspect which discusses honesty in students which consists of six sub-indicators, namely students do not cheat and imitating friends' answers in doing each task, where in interviews the teacher said that there were several or one or two students who still looked at their friends' answers, because not all students had the same abilities.

Students create and do assignments correctly, students speak according to facts, all three teachers answer yes, students speak according to facts they know, some also use feelings, logic, assumptions, folklore, spectacles, or explanations from the teacher. they listen. Students express opinions when conducting discussions according to their conscience, students convey items found inside and outside the classroom, from the results of interviews it was found that students always return/return items they get to the picket teacher, homeroom teacher, security guard and also announce on the wall of the lost item. And finally, students enter extracurricular activities correctly and fairly.

The second aspect, namely the discipline character value aspect, received an average score of 88.89% consisting of six sub-indicators, namely students wear clothes in accordance with applicable regulations. From interviews conducted by teachers, it was stated that students wear clothes in accordance with existing regulations, even though There are some students who do not comply with the rules applied. If there are students who do not follow the rules in wearing clothes, they will be subject to sanctions. Students obey the applicable rules, students complete school assignments/work according to the specified time

From the results of the interview, the teacher stated that there were several students who did not complete their assignments on time due to several reasons such as a lot of dormitory work, especially for boys, some of them were late in completing their assignments and not on time. Students submit assignments on time, students obey the rules of coming and leaving school on time, the teacher says that students come and go home on time because if students are late they will be dismissed at the school gate. And students prepare learning equipment before learning begins. The third aspect, namely the character value aspect of responsibility, received an average score of 86% which consists of six sub-indicators, namely students do assignments and homework well, students do group assignments together, teachers often distribute groups to students when teaching so that students work together in doing work, discussing answers in groups or presenting so that everyone understands what has been done/discussed with their group.

Students carry out picket duties according to the schedule that has been implemented. The teacher says that students carry out picketing by tidying up things, such as folding tablecloths, taking atk and storing them on the homeroom teacher's desk. Students care for and maintain laboratory equipment that has been prepared by the laboratory assistant. After students have done the practicum, the laboratory assistant will return the laboratory equipment to the cupboard. The laboratory assistant will also check if any equipment is damaged while doing the practicum, requiring students to replace it with a new one. After carrying out the practicum, students must clean, tidy up and return laboratory equipment according to the number of tools used.

Character values must start from the educators themselves. However, currently many negative characters are found which actually come from educators themselves [37]. Even though it is not based on accurate research data, cases or incidents have been found that have tarnished the name of educators, such as: (1) educators are dishonest in producing scientific work; (2) educators who are currently studying further are not honest in taking exam questions, namely by copying their friends' answers; (3) educators help students to pass national exams; (4) educators lack discipline; (5) educators cheat in preparing promotion files and portfolio assessments and so on, which are assumptions that need to be proven true.

Meanwhile, the discipline character obtained a result of 88.89% according to the always criteria. Students who have discipline will achieve more than students who do not have discipline. This is because these students always follow the lessons, which means there is no lesson material that they miss out on learning. The high level of disciplinary character is due to the disciplinary character education carried out by teachers in educating students to always be disciplined in learning activities in the classroom and outside the classroom [38], [39]. If students violate the rules, they will be subject to strict sanctions. Lastly, the character of responsibility with a score of 86% is still included in the assessment criteria always. One of the characteristics of students who have responsibility for learning is that the tasks given by the teacher can be completed by students well. Responsibility for learning is one of the things that is very important for the future of students, therefore it is necessary to instill responsibility for learning in students. 122 with the average obtained from these three characters being 85.38% which is also included in assessment criteria always.

Previous research and current research have similarities in the context of Islamic boarding school-based education and focus on student development [40]. Previous research emphasized the application of STEM to improve students' problem solving abilities, while current research focuses on analyzing character values (honesty, discipline, responsibility) in physics learning. Both highlight the importance of effective and holistic teaching methods. Previous research used pre-experimental design and statistical analysis, while current research uses quantitative descriptive methods. The results of previous research show that STEM significantly increases problem-solving abilities regardless of student or non-student status, but pays attention to academic abilities. Current research finds that the character value of discipline is most dominant, followed by responsibility and honesty. These findings complement each other, with previous research providing a methodological basis and justification for the importance of holistic education, while current research emphasizes the integration of character values in physics learning [41], [42].

Previous research used simulations in economics learning to develop student character, with the results that simulations were effective in improving student character in the very good (42.71%) and good (56.29%) categories [43]. This research uses quantitative methods with pre- and post-test designs. Meanwhile, the current research analyzes student character values (honesty, discipline, responsibility) in physics learning in Islamic boarding school-based schools using quantitative descriptive methods. The results show that the discipline character value is more dominant (88.89%), followed by responsibility (86%) and honesty (84.75%). Previous and current research highlights the importance of character education in the learning context, but differs in the subject context and methods used. Previous research contributed to demonstrating the effectiveness of interactive methods such as simulation, which inspired current research to focus on the integration of character values in other subjects, such as physics. Both support a holistic approach to education, but the current research expands understanding of the application of character values in a variety of learning contexts and provides recommendations for further research on individual variations in character values and learning experiences.

Research on Analysis of Student Character Values in Physics Learning in Boarding-Based Schools has a broad impact. The findings from this research can provide in-depth insight into how character values influence students' understanding and engagement in physics learning. This can be used as a basis for developing more effective and inclusive learning strategies in boarding-based schools, with a focus on developing student integrity, responsibility and cooperation [44]. In addition, this research can also provide a better understanding of how a supportive learning environment can help strengthen student character, strengthen the connection between educational character and academic achievement in the context of physics, and make a positive contribution to the development of better individuals and a better society harmonious.

One of the limitations of this research is its limited focus on a boarding-based school environment, so the generalization of the findings to the broader context of physics education may need to be adjusted to the characteristics of different school environments. In addition, individual variability in students' character values and learning experiences is also a factor that needs to be considered in the interpretation of research results. In addition, aspects of subjectivity in measuring character values and student involvement can influence the validity of the conclusions produced. Likewise, methodological limitations such as sample size, data collection methods, and data analysis may limit the ability of this study to paint a fully comprehensive picture of the relationship between students' character values and physics learning in residential schools. Researchers recommend that future research pay attention to individual variability in character values and learning experiences, as well as the factors that contribute to these differences.

#### 4. CONCLUSION

Based on the researcher's problem formulation, it can be concluded that: Of the 3 character values studied, the one that appears more dominant in students is the discipline character value of 88.89%, where students always follow and carry out the rules set by the school, then the value The character of responsibility is 86%, in students there is still a high value of responsibility for what is a burden and looking after goods or whatever is their responsibility. Finally, the honest character value was 84.75%, a character value that was lower than the character value studied. Researchers recommend that future research pay attention to individual variability in character values and learning experiences, as well as the factors that contribute to these differences.

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