

The Importance Of *Character Building* In Physics Teaching And Learning Strategies

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Abstract

This study aims to examine the benefits of integrating character building into physics teaching and learning strategies. It adopts a descriptive qualitative approach, using survey research methods through both a literature review and field observations. The literature review was carried out by consulting books and reputable online sources. The field study involved observing the significance of character building in the teaching and learning methods of fifth-semester physics students during the 2025/2026 academic year, with a group of four students. Key aspects of character building identified in the study included honesty, discipline, self-confidence, empathy, creativity, teamwork, and responsibility. The process of character development can be more effective when supported by moral education in various subjects, helping to nurture better character in students. One way this is reflected in physics lessons is by providing students with opportunities to apply character-building principles in their daily lives. The findings revealed that students experienced positive outcomes from the integration of character building into the physics teaching and learning strategies.

Keywords: *Character building, physics teaching and learning strategies*

INTRODUCTION

Education is the process of shaping a person's character to become a better person and to develop intelligent individuals who are skilled in carrying out tasks in accordance with their duties and responsibilities. Education aims to enhance skills, build the character of a respectable nation, and enrich the lives of both the people and the country (Sabir et al., 2022). Through education, we can produce individuals with values and morals that can protect them from bad

character traits in their behavior. Therefore, education is not merely about transferring knowledge, but also transferring moral and humanitarian values. This is to avoid being influenced by the negative impacts of globalization that can damage the morals of the nation's generation and the existence of culture in Indonesia (Sabir & Putra, 2021). As a result, every child in Indonesia is required to receive an education that incorporates 18 character values outlined by the Ministry of Education. These values

include religious integrity, tolerance, discipline, perseverance, creativity, independence, democracy, curiosity, nationalism, patriotism, appreciation for achievement, friendship, love for peace, a passion for reading, environmental care, social awareness, and responsibility. These character values must be balanced with a sense of awareness in students. With the implementation of these character values, it is necessary to build character in education. Character education is a process of guiding students to transform their behavior, attitudes, and culture, ultimately leading to the development of a civilized society (Aushop, 2014). When students develop their character in school, it can be said that the nation's educational objectives have been fulfilled. This aligns with the goals outlined by the state in the fourth paragraph of the Preamble to the 1945 Constitution of the Republic of Indonesia.

According to Sirait Azyana Alda (2021), education is a key process for transforming individuals, enabling them to develop and improve competencies related to personal qualities, intellectual knowledge, integrity, and useful skills in their environment. This means that schools play an important role as educational institutions for developing human qualities.

According to Ki Hajar Dewantara in 1930 at a student park event, education in a general sense is an effort to develop a child's personality (character and soul), intellect, and individuality. Indonesia is in dire need of people with character. Therefore, in

order for this program to run, character education is also needed to support the achievement of national goals (Sahroni, 2017). According to Suwardani (2021), character education is a way to instill understanding in adolescents so that they are able to understand their relationship with the creator, fellow creatures, and themselves, which is applied in behavior, speech, and thoughts in accordance with applicable regulations.

Based on the 2021 National Assessment (AN) policy, there are three important components that are expected to encourage learning development in schools, namely: Minimum Competency Assessment (AKM) in Numeracy Literacy, learning environment survey, and character survey. Improvements in character surveys are considered to bring about positive changes to the education evaluation system. These character surveys can provide information about the attitudes, traits, and behaviors that are common among adolescents. The aspects that are considered important for adolescent character development include cognitive, spiritual, and affective aspects (Ministry of Education and Culture, 2021).

During adolescence, there will be a sense of *self-esteem*. This self-esteem can lead to changes in oneself to do things that one enjoys without caring about the consequences. Psychological changes in adolescence will also affect changes in character, causing uncontrolled emotions, attitudes, and mental pressure.

Thus, existing rules or norms are increasingly ignored, requiring

more specific guidance and attention for adolescents (Munjiat, 2018). There are five important values that must be instilled in adolescents, namely religion, independence, nationalism, and social service (Suwardani, 2021). In education, if character building and instilling values are neglected, it can lead to social gaps such as cheating on exams, disobeying school rules, frequent truancy, and other problems that can have fatal consequences (Irfan et al., 2020).

Character building through education is carried out so that everyone can have a better perspective and broader knowledge, enabling them to distinguish between praiseworthy and despicable morals (Zubaedi, 2011). The process of character education should begin at an early age so that it can be effectively applied during adolescence. According to (Miftah Nurul Annisa, 2020), the potential that meets expectations must be possessed from birth, and to achieve further development, continuous guidance is needed in the family, social, and school environments.

In practice, the process of character building in schools faces many obstacles due to teachers' lack of understanding of character education, so that its implementation in the classroom does not run smoothly (Asdarina & Arwinda, 2020). The way to overcome this is by striving to build character in various subjects at school, such as physics. Physics is a theory that studies various things or conditions that occur in nature. Physics is not only about formulas, but it can also develop teenagers' mindsets in a broad way that can be directly applied in their surroundings. Teachers must be more

responsible for fostering good character in their students.

According to (Severinus, 2013), there are three references that can be used to develop character in teenagers in physics lessons. First, physics lessons must cover several important points, namely knowledge, abilities and values. Second, Students are expected to be capable to reconstruct their knowledge by learning actively. Third, to shape the character of adolescents in physics learning, teachers with good character are needed to implement character education for their students.

As the following generation, adolescents must be prepared with superior qualities so that they will strive to do better in the future. Character building is important in order to improve adolescents as the future generation who are not only responsible for themselves but also for their surroundings (Mannan, 2017). According to (Sahroni, 2017), the learning that is needed today must be able to combine character with learning that can improve children's personalities, spiritually, morally, and intellectually. The qualities needed to shape outstanding young people are not only cognitive but also require good character in every subject, so that young people can confront all the challenges in their lives with complete responsibility. With this education, they will be able to form a more active character in facing various problems so that the quality of human resources will be exceptional.

Character education has been implemented in Indonesia for a long time. In the 2013 curriculum, character education is integrated into the teaching and learning process. There

are various perspectives on the strategies for applying character education in the educational process in Indonesian schools. To develop character values, role modeling, positive habits, intervention, and reinforcement programs are applied (Taylor, Fadel, Kim, & Care, 2020). This serves as a reference for teachers in implementing science learning in Indonesian schools, which begins with setting an example for students because role modeling is the main method employed by teachers to cultivate character in students (Thornberg & Oguz, 2013). In physics learning, intervention activities are implemented using various learning approaches (the approaches used are contextual approaches (authentic learning, problem-based learning, inquiry learning, services, and projects) (Khusniati, 2014; Diani, 2015; Hidayat, Sahidu, & Gunada, 2022). Meanwhile, to instill character values in physics learning, various teaching techniques are used, including educational visits, interviews, discussions, simulations, group work, debates, projects, and brainstorming. Positive habits can be cultivated by consistently enforcing school rules and reinforcing various self-development activities and national and religious holidays.

Building on this explanation, this study was carried out to examine the character-building process of adolescents in high school. Given the importance of character education in each subject, especially physics, this study was conducted to observe the level of character- s among adolescents and whether they are appropriate or

not. The results are anticipated to be considered in addressing issues in schools, ensuring that character education through physics lessons can be further developed.

RESEARCH METHOD

The research method used is qualitative with a descriptive approach, where data is gathered based on the facts obtained. Descriptive qualitative data analysis is a method that assists in describing, illustrating, or summarizing data in a meaningful way, focusing on statistical descriptions that help interpret the data by condensing and identifying patterns within a specific sample. According to Hamdi and Bahruddin (2014), Descriptive research is a research method intended to describe current phenomena without altering or manipulating the situation. The analysis process in descriptive research involves presenting, analyzing, and interpreting. From the explanation above, it can be concluded that descriptive research is a method that provides a detailed description of research data, focusing on natural and social events occurring in society. Descriptive research aims to collect information to address the researcher's questions by examining aspects derived from a large volume of data, enabling the description of a condition, event, or phenomenon in a clear and organized manner. The goal of this study is to analyze the benefits of implementing character building in physics teaching and learning strategies.

This study uses survey research procedures through literature studies and field studies. Literature studies are the process of conducting a general review of previously published works related to various topics. The literature reviewed or studied can refer to non-fiction scientific papers, theses, dissertations, or writings outside of scientific works but are still non-fiction, such as books or articles. A literature study can provide an overview of the knowledge, content of the work being reviewed, and also answer basic questions from a theory that forms the background of the literature study for its readers. There are four steps that people need to take in conducting a literature study, including 1) searching for literature relevant to the topic; researchers can start with the broadest topic first, then gradually narrow it down to find the desired topic. 2) Reviewing the validity of the literature; the next important process is to review the validity of the literature so that the information obtained is valid. 3) Adjusting the content to the topic of the paper. Before actually writing a scientific paper based on the literature found, it would be better to double-check the suitability of the literature content with the topic of the scientific paper that should be written. 4) Creating an outline and writing a scientific paper. Researchers can then write a scientific paper based on the literature found. Researchers can try to create an outline first before writing the entire scientific paper. Types of literature studies include: 1) based on the source, namely: a) books, it is advisable to analyze books written by authors who are capable of writing on the topic of the book, b) journals or

papers, it must be ensured that what is written in these journals or papers is true and in line with the realities observed in the field, c) Theses, dissertations, or dissertations, which are better sources for conducting literature studies because they should contain knowledge that has been validated for accuracy. 2) Based on content, including: a) the author's thoughts, which may be the most common activity in a literature study, b) the content of the book as a whole, which is more like reviewing or critiquing a piece of literature, c) history, which can also be important to include in scientific work.

The method employed in this study is descriptive qualitative. Descriptive qualitative is a process that utilizes data in the form of words, which carry meaning and provide insight with real understanding and details a broader and deeper description of sentences (Nugrahani, 2014). The data collection method used in this study was a questionnaire. The aspects evaluated to determine the character of adolescents were honesty, discipline, mutual cooperation, caring, and a sense of responsibility. The instrument used was a questionnaire or survey. A questionnaire or survey is an effort to obtain data indirectly by having respondents answer statements or questions. The questionnaire was compiled in the form of statements and distributed via a *Google Form* link to be filled out by fifth-semester physics students. The statements consisted of three answer choices: 1. Yes, 2. Sometimes, 3. No. The questionnaire was taken by 4 respondents as a sample of students majoring in physics education. The data obtained from the

respondents was then processed to determine the extent of character development among teenagers in physics learning. The average percentage was processed using *Microsoft Office Excel* to clearly show the character development data of the respondents.

DISCUSSION

The term character refers to the distinctive traits, behaviors of a person or group, moral strength, or reputation. Thus, character is an evaluation of an individual's moral qualities or various attributes, including the existence or lack of virtues such as integrity, courage, perseverance, honesty, loyalty, or positive behaviors and habits (Wood in Yaumi, 2009).

The process of character building is shaped by specific factors inherent in the individual, which often referred to as nature and nurture, which are the environment in which the person grows and develops. However, it should be noted that nature is beyond the control of society, which influences us as individuals and as part of society. Therefore, environmental factors in *character building* at the individual and community levels also greatly influence character formation. The educational environment plays a crucial, even central, role because character fundamentally refers to an individual's personal qualities, which are shaped through both formal and informal learning processes (Astuti, 2009).

The character building of students in A school can be considered successful if the behaviors of its

members are rationally consistent and well-integrated. Sociology has recognized many positive aspects of the classroom environment. For instance, cleanliness is a value commonly emphasized in schools. This concept, however, has limited ties to specific social classes. Maintaining personal hygiene, staying healthy, and dressing appropriately can be particularly challenging for children from disadvantaged backgrounds. Sociologists should direct their attention to this area, particularly regarding government efforts to improve the living standards of the working class. They have also, as they should, highlighted the link between resources and character development, understanding that poor health, inadequate housing, subpar education, and general poverty hinder progress and development (Arthur, 2003).

Value education in schools needs to be based on fundamental principles that are simple to grasp and comprehend by students and every individual working in the field of education itself. Koesoma (2010) argues that there are several principles that can be used as guidelines for Promoting value education in schools means that value education is defined by what we say or believe: a) This principle seeks to provide concrete verification of an individual's character by prioritizing psychomotor elements that motivate a person to act. An individual's understanding, comprehension, and belief in values objectively will help guide that individual to a decision in the form of action. However, the real verification of character behavior can

only be seen from external phenomena in the form of actions and conduct. Therefore, character is shaped by one's deeds, not by a person's words. b) Every decision we make determines what kind of person we will become. Individuals reinforce their personal character through every decision they make; it is only through these decisions that an individual defines their own character. Therefore, a person's character is dynamic. It is not a crystallization of past experiences, but rather the willingness of each individual to be open and exercise their freedom in shaping what kind of person they want to be. This is done through the decisions they make in their lives. For this reason, every decision becomes a kind of framework that shapes the kind of person they want to be. c) Good character means that good things are done in good ways, even if we have to pay for them. In moral ways, because they involve risks. Individuals who are in the process of shaping themselves into good people will also choose good ways to shape themselves. d) Never take the bad behavior of others as a benchmark for yourself; choose a better benchmark than them. Social pressure and peer groups are a busy arena for character education struggles in schools. A non-educational culture that continues to exist in an educational institution, if not immediately addressed, can become a behavioral standard for students. Likewise, peer pressure greatly influences students in developing character education that is useful for themselves. Therefore, teachers and educators should be able to make children aware that bad behavior is not a standard of behavior

that should be emulated, even if it is practiced by many other students. They must be able to convince them that good values are values that are inherently good. Values are not good because people practice them, but because they are inherently good, even if only a few people practice them. This principle can help students realize their inner strength in relation to their moral fortitude. e) What you think is meaningful and transformative; an individual can change the world. Students need to be made aware that every characterful or valuable action, and every moral behavior they perform, is meaningful and transformative. If that change has not yet occurred and spread throughout society, at least that change has occurred within the learners themselves. The change of an individual, if internalized as part of their calling in life, will have a major impact on changing the world. Many examples have shown that the behavior and decisions of an individual can change the world. f) The reward for those who have good character is that they will become better people, and this will make the world a better place to live in. Every action and decision that has character shapes an individual into a better person. Every time we make moral decisions and act consistently on those moral decisions, we affirm ourselves as good people. We take a step forward in the process of perfecting and educating ourselves. If everyone strives to have this basic attitude, our presence can be a blessing to others and the world will become a better place for humans to live in.

As stated by Education and Cultural Affairs Ministry (2018),

strengthening character Education highlights five key character values, which are: a) Religious character values that reflect faith in God Almighty, demonstrated through the practice of religious teachings and beliefs, respect for religious differences, promoting tolerance toward the practices of other religions and beliefs, and fostering peaceful coexistence with followers of different faiths. The application of religious character values is shown through an attitude of peace, tolerance, respect for diversity in religion and beliefs, strong conviction, self-confidence, cooperation among adherents of various faiths, opposition to bullying and violence, friendship, sincerity, not forcing one's will, caring for the environment, and protecting the vulnerable and marginalized. b) Nationalist character values are ways of thinking, acting, and behaving that show loyalty, care, and deep respect for the nation's language, physical, social, cultural, economic, and political environments, prioritizing the interests of the nation and state over personal or group interests. A nationalistic attitude is reflected in an appreciation of one's own culture, the preservation of the nation's cultural heritage, a willingness to make sacrifices, striving for excellence and achievement, love for the country, environmental stewardship, adherence to the law, discipline, and respect for cultural, ethnic, and religious diversity. c) Integrity is a value that forms the foundation of behavior, rooted in the effort to become someone who can always be trusted in words, actions, and work, demonstrating commitment

and loyalty to human and moral values. Integrity encompasses a sense of responsibility as a citizen, active participation in social life, and consistency between words and actions grounded in truth. A person with integrity also respects the dignity of others (especially people with disabilities) and sets a positive example.

The value of independence refers to an attitude and behavior of not relying on others, using one's energy, thoughts, and time to achieve personal goals, dreams, and ideals. Independent students possess a strong work ethic, are resilient, determined, professional, creative, courageous, and committed to lifelong learning.

The value of mutual cooperation is reflected in actions that emphasize teamwork and collaboration to solve problems, foster communication and friendship, and offer help to those in need. Students are encouraged to demonstrate respect for others, be cooperative, inclusive, and committed to collective decisions through deliberative consensus, helping each other, showing empathy and solidarity, and adopting anti-discrimination, anti-violence, and volunteerism principles.

Strengthening these five character values will encourage students to acquire the 21st-century skills needed in life, such as critical thinking and problem-solving, collaboration, creativity, and communication skills. Thus, education does not only focus on cognitive assessment but also on how students develop positive attitudes so that the

knowledge they acquire can be optimally implemented, both in the school setting and in the community. The 2013 curriculum is the basis for the education system implemented at every level.

In physics learning, there are several models that can be applied, one of which is problem-based learning. Problem-based learning is an approach designed to help students acquire essential knowledge, enhance their problem-solving abilities, and develop their own learning strategies, while also fostering teamwork skills. The learning process follows a systematic approach to tackle problems or challenges, equipping students with practical skills for everyday life.

Character refers to the qualities, traits, morals, or personality that set one individual apart from another. According to Rosidatun (2018), "Character is a motivating force that plays a vital role in determining the best in life." Character is a trait, attribute, or unique quality of a person shaped by the influences they receive from their environment. In other words, character reflects the true nature of an individual's inner self, setting them apart from others.

The value of the Indonesian nation is rooted in the Pancasila philosophy, which includes five core principles. Based on this foundation, a master plan for the development of national character has been created: 1) Character that comes from the heart, including faith and piety, gratitude, honesty, trustworthiness, fairness, orderliness, patience, discipline, obedience to rules, responsibility, empathy, compassion, courage to take risks, perseverance, respect for the

environment, willingness to sacrifice, and patriotism. 2) Character traits derived from intellectual development include intelligence, critical thinking, creativity, innovation, analytical skills, curiosity, productivity, science and technology orientation, and reflection. 3) Character traits derived from physical development include cleanliness and health, sportsmanship, resilience, reliability, endurance, friendliness, cooperation, determination, cheerfulness, persistence, and tenacity. 4) Character traits derived from emotional and creative development include humanity, mutual respect, mutual love, mutual assistance, togetherness, friendliness, caring, respect, tolerance, nationalism, cosmopolitanism, prioritizing the public interest, love for the homeland, pride in using the Indonesian language and products, dynamism, hard work, and work ethic.

Character education is a system designed to instill character values in an individual, encompassing knowledge, awareness, willingness, and actions to apply these values towards God Almighty, oneself, others, the environment, and the nation. It is an educational process aimed at shaping an individual's personality to become a better person.

The following is the incorporation of character education in physics learning, which refers to religious, nationalistic, integrity, independence, and mutual cooperation. Furthermore, the attitude indicators summarized in the 5 character values are cooperation, politeness, tolerance, responsiveness, proactivity, discipline, responsibility, thoroughness, and caring.

A literature study conducted through books and websites, as well as questionnaire results, explains that students still prioritize their attitudes towards others, meaning that the instillation of character education values is still going well without any external technological influences. This is evidenced by the fact that 75% of students have well-formed characters and 25% of students are still in the early stages of forming better characters. This means that the character formation of physics education students is predominantly positive.

Character building is important in education because, in essence, education not only seeks to produce knowledgeable individuals, but also good people. Based on current media coverage and events occurring in the surrounding environment, it is evident that the moral standards of students are still low, with many cases referring to the lack of good character, such as fighting, bullying, and theft (Taulabi and Mustofa, 2019). Other problems that are prevalent today include group cheating during national exams, rampant corruption, and acts of violence among children and adolescents (Yuliharti, 2019).

Character building efforts are a major part of education, so they are continuously conveyed and instilled in various settings, especially in schools (Taulabi and Mustofa, 2019). In addition, the process of understanding concepts is also very important, such as in terms of reinforcing material and fostering motivation. The ability of educators to prepare, create, and manage the learning process is

essential. One important element in learning is learning resources in the form of learning materials. Media plays a crucial role in the learning process as an effort to make learning more lively and enjoyable (Priyambodo, 2010).

The character-building process can be more effective when it is coupled with the instillation of moral values in various subjects to nurture better character development in students. One example of this can be seen in physics lessons, where students are given opportunities to apply character values in real-world situations. Students are encouraged to be more creative and open-minded when confronting challenges they often face. Character building is not limited to a single subject but is a collaborative effort across different subjects, fostering a supportive and interconnected learning environment. The steps to build student character are: providing information to all students to raise awareness of the importance of *character building*; developing curricular and extracurricular activities; using active learning approaches such as contextual learning; and increasing social and religious activities (Ilyas, 2020).

Based on field studies, the following is a description of students in relation to physics teaching and learning strategies.



Figure 1. Teaching *character building* in physics teaching and learning strategies



Figure 2. Implementation of *character building* in physics teaching and learning strategies through discipline and responsibility when given presentation tasks



Figure 3. Implementation of *character building* in physics teaching and learning

strategies by showing confidence when expressing opinions

Based on Figures 1, 2, and 3, *character building* provides positive benefits in physics teaching and learning strategies. Active learning occurs when students are enthusiastic about completing tasks. This is in line with the research by Parinduri and Sitompul (2022), this study found that there was a significant improvement in students' physics learning outcomes when using the cooperative learning model, and that students' characters were shaped by a spirit of mutual cooperation during group discussions.

This is also consistent with the research that found by Diana et al. (2022), which states that character value indicators, including honesty, discipline, responsibility, caring, confidence, creativity, and mutual cooperation, can be developed well by teenagers after being introduced to *character building*. Through the research by Maryam et al. (2024), it is also mentioned that *character building* in physics learning can make students creative, independent, and also love their country. This research is also supported by research from Widiawati et al. (2023), which states that *character building* has a positive impact on fostering leadership abilities in students.

CONCLUSION

Based on the results of the data analysis and discussion above, it can be concluded that there are positive outcomes of applying *character building* in physics teaching and learning strategies.

Character education is the most important part of shaping good morals and manners. Character education programs for students are used as the main reference for guiding the development of future generations. Character building in physics lessons has been successfully implemented. This has been proven by the results of a questionnaire administered to students via a *Google Form* link. The results show that the majority of students still prioritize positive character towards others. The policies that can be implemented to shape character education in adolescents include holding socialization about character, developing curricular and extracurricular activities, creating active learning, and increasing social and religious activities. Important aspects to consider in character building are honesty, discipline, self-confidence, empathy, creativity, teamwork, and responsibility. If these seven indicators can be achieved, character building will run optimally.

Character building is necessary for students as preparation for facing the world outside of campus, the world of work, the community, peers, and even family. This study attempts to highlight the reasons why courses such as character building are important for students, learning models and implications for students in facing the workforce, and the advantages of character education for students as seen from the responses given by the surrounding environment.

The process of character building, whether conscious or unconscious, will influence how

individuals view themselves and their environment, and this will be reflected in their daily behavior.

Universities as higher education institutions are an important resource. Formal institutions (campuses), informal institutions (families), and non-formal institutions (tutoring centers, religious classes) have an influence and impact on student character, whether intentional or not, such as the role of families.

The family is the primary environment where an individual begins to grow and develop, and it is within the family that the foundational values of a person's character are formed. If parents educate and guide their children properly, the children's morals and character will be positive. On the other hand, if children are not properly guided, their character may suffer. This reality underscores the responsibility of educational institutions, such as universities, to provide moral education and character development.

Furthermore, education experts, especially those in values, morals, or character education, see this not only as a duty and responsibility but also as an effort that must be prioritized (Masrukhan, 2013).

Character education in physics teaching can improve cognitive achievement and creative thinking skills. Research conducted by Titin Priyantini et al. (2015) shows that the development of character-based learning tools can cure social ills that have been rampant and can be a solution for the process of improving public morals in general. It is

recommended that Researchers and educators continue to examine the nation's character, relying on local wisdom that remains "scattered" and needs to be woven back together so that it can be used as a reference in developing the nation's character sourced from Indonesian culture in school education.

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