



Harmonization of Science and Ethics in Creating Learning Oriented Towards the Improvement of Student Character

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ABSTRACT

This research aims to explore how the harmonization between science and ethics can be applied in the learning process to enhance students' character, with a focus on the challenges faced in integrating both aspects. Through a qualitative approach using the literature review method, this research identifies effective practices that support character-oriented learning. The findings show that the integrative application of science and ethics in learning not only enhances students' academic mastery but also strengthens their moral and social values. The significance of these findings for the development of holistic education, which not only pursues cognitive intelligence but also the formation of strong character, thereby creating a more responsible and ethical generation. Furthermore, the implications of this study emphasize the need for reforms in the education system that integrate ethical and scientific aspects, which are expected to improve the quality of education and prepare students to face global challenges.

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INTRODUCTION

Character education has become a central theme in the world of education in Indonesia, especially at the elementary and secondary levels, as an effort to shape a generation that is not only intellectually smart but also possesses good moral qualities. Therefore, the harmonization between knowledge and ethics becomes very important. As the foundation of students' character, character education not only includes cognitive teaching but also moral values that guide their daily behavior (Aini & Ramadhan, 2024). Science is something that cannot be separated from ethical principles, because science without ethics is prone to misuse. Thus, the character formed from ethics and morals is a form of recognition of the values underlying human actions, which serves as a filter for behaviors that can harm society. (Silfia et al., 2024). Ethics and morals are the main pillars in character formation, which are reflected in the

attitudes, behaviors, and decisions of students in their daily lives. Therefore, it is important to establish a close relationship between the two in the learning process.

Character education not only aims to improve students' academic quality but also to integrate ethical values into their lives. Thus, a learning approach that emphasizes ethical and moral principles can help students understand the importance of behaving well and correctly, as well as having a high sense of social responsibility. This makes the harmonization of knowledge and ethics in learning important for creating good character in each student (Tutorop, 2023). Therefore, effective character education must involve various aspects, such as teaching religious values, honesty, discipline, and respect. Through a curriculum integrated with ethical values, it is hoped that students can understand and practice the positive characters that underpin community life (Darmawan, 2024; Safitri, 2020).

The application of ethics in education also plays an important role in strengthening the moral foundation of students, which is not only focused on academic achievement but also on the formation of a noble character. Learning activities aimed at enhancing students' character require active involvement from educators to serve as role models in demonstrating good ethical values. The role of the teacher as a model or example is very important to demonstrate how the knowledge being taught should be applied in an ethical and responsible manner. In this context, teachers not only function as educators but also as facilitators in instilling moral values that will shape students' personalities (Romlah & Rusdi, 2023; Silfia et al., 2024). Thus, the integration of science and ethics in character education is a very strategic step to create individuals who are not only excellent in academics but also possess high moral integrity. Learning that focuses on enhancing students' character by combining knowledge with ethical values will help shape students who are not only intelligent but also highly moral and capable of making positive contributions to society (Arif, 2017; Pebriani et al., 2023; Sultoni et al., 2018).

One of the solutions in character education is through a holistic approach in education, which combines various disciplines with ethical values. With this approach, students are expected to see the relationship between science and ethics in the context of their daily lives (Pebriani et al., 2023; Sunhaji, 2018). Thus, this research focuses on the integration of science and ethics in learning, which is an effort to delve into and understand the mutually supportive relationship between these two aspects. The issue that arises is how to harmonize these two components so that there is no separation between the knowledge taught in schools and the moral values that students need to apply in their daily behavior. Thus, the aim of this research is to identify methods and practices that educators can apply to create a learning environment that supports the character development of students through an integrated and holistic approach, as well as to explore the challenges that often arise in the implementation of character education at various levels.

METHODS

The approach used in this research is a qualitative approach with the literature review method or library study. A literature review is a search and examination of library resources by reading and analyzing various journals, books, and other published manuscripts related to the research topic to produce a written work concerning a specific topic or issue. This literature review is conducted through various stages, starting with determining the research object related to the topic to be studied. Then using various journal provider websites to search for the necessary data. Next, the obtained articles will be processed and filtered according to the exclusion and inclusion criteria based on the research needs, and then the data will be collected and analyzed.

The object of focus is the harmonization of science and ethics in learning. Thus, the research examines how the relationship between science and ethics in learning to improve student character.

The data collection technique in this research uses a literature review study using articles sourced from Google Scholar, Semantic Scholar and Elsevier. The author compares literature studies related to improving student character from various literature sources. This research method will make it easier to find theories about the problems studied by taking varied references. Data taken from reference sources are recorded and managed so that the right conclusions can be drawn.

FINDINGS AND DISCUSSION

This research focuses on the integration of science and ethics in the learning process, aiming to explore how this approach can enhance students' character while also promoting academic achievement. The results obtained indicate that the application of integrating science and ethics in teaching not only enriches students' learning experiences but also significantly enhances their ability to make ethical decisions in various situations. These findings also indicate that students involved in activities that combine ethics with project-based learning show significant improvements in critical and reflective thinking skills (Prihatmojo et al., 2019). Therefore, good character education can help students not only understand social norms but also internalize those values in their daily behavior (Sunhaji, 2018).

By creating an inclusive and participatory learning atmosphere, educators can not only incorporate ethical perspectives that benefit students but also help them apply those values in real life (Hart, 2022). This discovery is academically significant because it provides new insights into the development of a curriculum oriented towards holistic learning that integrates scientific and ethical aspects (Koehler et al., 2020). In practice, these results provide a foundation for educational reform that focuses on the development of students' character and morals, creating a better generation to face social challenges in the modern era. In other words, the integration of knowledge and ethics is an important step to improve the quality of education and build responsible individuals in society. Creating a learning environment that effectively integrates knowledge and ethics is crucial for encouraging character development in students (Qomari & Nikmah, 2023). Thus, education that emphasizes ethical values not only helps students understand academic material but also shapes positive attitudes and behaviors that they will carry into their daily lives.

The importance of this approach is proven in nurturing a generation that is not only academically intelligent but also possesses high integrity and empathy towards others. With this, teaching that prioritizes the harmony between knowledge and ethics can produce individuals who are capable of critical thinking and acting with social responsibility in various aspects of their lives. This approach also encourages collaboration among students, teaching them to work together and appreciate diverse perspectives, thereby creating a more inclusive and supportive learning community. Additionally, the implementation of interactive and project-based learning methods can enhance student engagement, help them understand concepts more deeply, and stimulate creativity in problem-solving (Habibullah, 2023; Nainggolan, 2022).

In this way, education transcends mere knowledge transfer; it becomes a platform for character building and instilling positive values essential for facing challenges in the modern world. Thus, this holistic approach to education not only enhances students' academic abilities but also equips them with the social and emotional skills essential for future success. This encourages collaboration among students, allowing them to learn from each other and develop effective communication skills within teams (Pebriani et al., 2023). Therefore, students who are engaged in this dynamic learning process tend to be more motivated to explore new ideas and develop their creativity, which is crucial in adapting to changing times. Education that aligns with the needs of the era not only prepares students for their

careers but also shapes their character and life skills, which are essential in a constantly evolving society.

This research successfully presents a solution by suggesting a project-based and collaborative learning model as an effective approach to integrating ethical values in education. The implications of these findings, both academically and practically, highlight the importance of character education that not only focuses on academic achievement but also on the holistic development of students' character. Practical recommendations in this research include the need for educational institutions to develop and implement a curriculum that not only emphasizes scientific mastery but also integrates ethics education throughout the teaching and learning process. Additionally, training and professional development for educators are necessary to equip them with the knowledge and skills to effectively teach ethics, as well as to prepare them to create a learning environment that supports positive interactions among students. Therefore, it is important to build partnerships between schools, parents, and the community to support character education comprehensively. Community engagement programs that create awareness of ethical and social values are expected to strengthen the foundation of students' character outside the school environment.

CONCLUSION

Through a qualitative approach, this study found that the application of ethical values in science education is not yet optimal, although most educators recognize the importance of this aspect. This research addresses the research problem related to the ways in which science and ethics can be harmonized in the curriculum to enhance students' character. The research findings indicate that the presence of character education integrated with scientific values not only reduces the gap between moral concepts and teaching but also shapes students who are more aware of social and ethical responsibilities, stimulating positive behavioral changes among students. The implications of this research provide concrete guidance for educators in designing curricula that not only focus on academic outcomes but also holistically build students' character, preparing them to face future moral challenges. Therefore, it is important for policymakers to support training program initiatives for educators so that they can understand and implement integrated teaching more effectively. For future research, it is recommended to further explore more substantive teaching methods in harmonizing ethics and science at various levels of education, both in formal and non-formal schools. Further research could also evaluate the long-term impact of character education integrated with ethics on students' behavior and personality in various cultural and social contexts. By gaining a deeper understanding of the impact of this approach, we will not only be able to create individuals with character but also a more ethical and responsible society in the future.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose, and there are no financial relationships or affiliations that could influence the results of this research.

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