Perceptions of pre-service elementary school teachers toward education for sustainable development through character education

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Abstract. This study aims to explore the perceptions of pre-service elementary school teachers towards the concept of education for sustainable development through character education. This study is a descriptive research in which the object of research is 142 pre-service elementary school teachers at one of the universities in Surabaya, Indonesia. Data were collected through a questionnaire consisting of 6 structured questions and 1 open-ended question that was distributed through Google form. The data obtained were analyzed by descriptive statistics. Based on the results of data analysis, most of the respondents agreed that education for sustainable development through character education is very important in primary schools. Introduction. In addition, aspects that need to be considered in implementing education for sustainable development through character education are the formation of attitudes and values, environmental awareness, social skills development, and holistic learning experiences.

1. Introduction

Education for sustainable development has become a major focus in discussions about the future of education around the world [1,2]. In the midst of increasingly complex global challenges, it is important to prepare future generations who are not only academically intelligent, but also have an awareness of the importance of protecting the environment, social justice and human values. In this context, character education has been recognized as one of the key approaches to building individuals who contribute positively to society and the environment [3,4]. Character education is not only seen as a complement to academic education, but also as a strong foundation to prepare a generation that can face global challenges wisely and responsibly. With character education, students not only learn to acquire knowledge and skills but also develop attitudes, values and behaviors that support sustainability and shared prosperity.

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Character education is expected to help students understand the importance of respecting and caring for the environment, fighting for social justice, and upholding human values such as empathy, tolerance and cooperation. Thus, students are expected to become active agents of change in creating a more just, sustainable and inclusive society. Through the integration of character education into the formal education curriculum, schools can be an effective vehicle to shape character and guide students towards becoming morally and socially responsible individuals [5]. Thus, character education is not only about what is taught in the classroom, but also about how students apply those values in their daily lives. In an era where global challenges such as climate change, inequality, and social conflicts are increasingly troubling, character education has become increasingly relevant and urgent [6,7]. With a better understanding of the perceptions of pre-service primary school teachers, it will be easier to identify effective strategies and approaches to integrate character education into the education system to holistically achieve sustainable development goals in primary schools.

Primary school is one of the strategic places to implement character education because, at this stage, character and basic values can be instilled more effectively in children's mindsets and behavior [8]. Children at primary school age are in a pivotal developmental period, where they begin to form their own identity and absorb the values taught to them. Therefore, the primary school environment provides an excellent opportunity to form a strong foundation of character and empower students to become responsible and caring individuals for their surrounding environment. However, to achieve the goal of education for sustainable development through character education, a strong involvement of educators is required, especially pre-service teachers who will become agents of change in the educational environment [9,10]. Pre-service elementary school teachers have a key role in guiding and shaping students' character. They are not only responsible for delivering the subject matter but also for being good role models in their daily behaviors and attitudes.

In this context, the perspectives and readiness of pre-service primary school teachers to face the challenges of sustainable learning through character education become very important. Their perception of the importance of character education, their understanding of the concepts involved, as well as their readiness to apply innovative approaches to integrate character education into their curriculum and teaching practices will have a significant impact on the successful implementation of education for sustainable development in primary schools. By understanding pre-service primary school teachers' perceptions of the role and importance of character education in the context of sustainable development, we can identify effective strategies to support them in preparing students to become responsible, ethical and environmentally concerned citizens. Therefore, this study aims to explore the perceptions of pre-service primary school teachers towards the concept of education for sustainable development through character education. Through a deeper understanding of their perceptions, we can identify challenges, opportunities and needs in integrating character education into the curriculum and teaching practices in primary schools.

2. Methods

This research is a descriptive study to investigate the perceptions of pre-service primary school teachers towards education for sustainable development through character education so that expected that the results of this study can provide valuable insights for the development of more effective character education programs and policies in realizing sustainable education. The research stage begins with a literature study of previous research results and designing an instrument in the form of a questionnaire to collect data on the responses of pre-service elementary school teachers related to education for sustainable development through character education as shown in Figure 1. The questionnaire contains
8 items where 7 are statements related to education for sustainable development in elementary schools and 1 item is an open question related to the challenges and ideas of pre-service teachers to achieve education for sustainable development through character education in elementary schools. Furthermore, the questionnaire was distributed online via Google form to pre-service elementary school teachers in the final semester at a University in East Java. The number of samples used was 142 pre-service teachers.

Before starting to analyze the data, data cleaning was conducted to identify and correct potential errors or discrepancies, such as missing or invalid data. Furthermore, structured question data was analyzed using descriptive statistics to provide an overview of the collected data in the form of calculating frequencies, percentages, and other descriptive statistics for each variable as well as creating tables and graphs to illustrate data distribution while open-ended question data was analyzed qualitatively descriptively. The analyzed data were interpreted in depth by considering the tendency of the data generated and consistency with the literature used. The reference in summarizing the findings in this study is based on the scoring criteria contained in Table 1.

<table>
<thead>
<tr>
<th>Score</th>
<th>Score Interval</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>$X &gt; x_i + 1.80 Sbi$</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>4</td>
<td>$x_i + 0.60 Sbi &lt; X \leq + 1.80 Sbi$</td>
<td>Agree</td>
</tr>
<tr>
<td>3</td>
<td>$x_i - 0.60 Sbi &lt; X \leq + 0.60 Sbi$</td>
<td>Undecided</td>
</tr>
<tr>
<td>2</td>
<td>$x_i - 1.80 Sbi &lt; X \leq + 0.60 Sbi$</td>
<td>Disagree</td>
</tr>
<tr>
<td>1</td>
<td>$X \leq x_i - 1.80 Sbi$</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

3. Results and Discussion

Education for sustainable development in primary schools is not only about teaching academic materials, but also about shaping character, skills and attitudes that will help students become more developed individuals and contribute positively to society. This is a consideration that pre-service elementary school teachers must have an in-depth understanding of education for sustainable development. Based on the research data, most respondents agreed that education for sustainable development through character education is very important in elementary schools as shown by the data in Table 2.
Table 2. Data on the perceptions of pre-service elementary school teachers related to education for sustainable development through character education in elementary schools

<table>
<thead>
<tr>
<th>Statements/Questions</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character education can help students become more concerned about the environment.</td>
<td>51.16%</td>
<td>37.21%</td>
<td>4.65%</td>
<td>0.00%</td>
<td>2.33%</td>
</tr>
<tr>
<td>The integration of character education in the curriculum can help create a more sustainable society.</td>
<td>55.81%</td>
<td>32.56%</td>
<td>4.65%</td>
<td>0.00%</td>
<td>2.33%</td>
</tr>
<tr>
<td>I believe that character education can help students understand the importance of social justice.</td>
<td>39.53%</td>
<td>41.86%</td>
<td>11.63%</td>
<td>0.00%</td>
<td>6.98%</td>
</tr>
<tr>
<td>I feel ready to integrate character education into my teaching practice at primary school.</td>
<td>51.16%</td>
<td>39.53%</td>
<td>2.33%</td>
<td>2.33%</td>
<td>4.65%</td>
</tr>
<tr>
<td>I believe that I have sufficient knowledge and skills to teach character education effectively.</td>
<td>44.19%</td>
<td>41.86%</td>
<td>6.98%</td>
<td>4.65%</td>
<td>2.33%</td>
</tr>
<tr>
<td>Do you feel that there is adequate support and resources to support the implementation of character education in primary schools?</td>
<td>39.53%</td>
<td>32.56%</td>
<td>20.93%</td>
<td>2.33%</td>
<td>4.65%</td>
</tr>
</tbody>
</table>

Based on the data in Table 2, more than half of the respondents (88.37%) agreed or strongly agreed that character education has an important role in helping students care for the environment. This indicates that the majority of respondents believe that character education can play a role in building environmental awareness among students. In addition, the majority of respondents (88.37%) also agreed or strongly agreed that the integration of character education in the curriculum can contribute to creating a more sustainable society. This shows that many respondents see a link between character education and sustainable social development [12,13]. In contrast, character education can help students understand the importance of social justice where, although the majority of respondents (81.39%) agreed or strongly agreed with this statement, a small proportion of respondents (6.98%) strongly disagreed or disagreed. This shows that there are different views among respondents regarding the role of character education in understanding social justice [14].

Other data shown in Table 2 is that more than half of the respondents (90.69%) felt ready to integrate character education into their teaching practices in primary schools. This shows the high motivation and readiness of respondents to implement character education in the context of teaching in primary schools. In addition, the majority of respondents (85.05%) believe they have sufficient knowledge and skills to teach character education effectively. However, a small proportion of respondents (6.98%) disagreed or strongly disagreed with this statement. Furthermore, it appears that about two-thirds of respondents (72.09%) feel that there is adequate support and resources to support the implementation of character education in primary schools. However, a small proportion of respondents (7.56%) disagreed
or strongly disagreed with this statement, indicating an uncertainty or unmet need in terms of support and resources for character education [15-17].

Other data obtained from the open-ended questions were related to what needs to be focused on in education for sustainable development where the results of the data analysis were classified into five major points, namely leading:

1) Formation of attitudes and values
   In the aspect of attitude and value formation, character education aims to teach moral values such as honesty, cooperation, empathy, and responsibility. These values are also the foundation of sustainable education, where individuals are invited to understand and respect the environment, social, and economy [8,12]. By reinforcing values such as justice, equality and caring, character education provides a strong foundation for individuals to participate in sustainable development efforts. Engagement in character education can help students develop positive attitudes towards the environment and society, making them more likely to take proactive action to sustain nature and fight for social justice. Through an understanding of the importance of individual responsibility in preserving the environment and addressing social inequalities, students can become active agents of change in realizing sustainable development goals [5,8]. Character education also strengthens the connection between individuals and their natural and social environment, by teaching them to appreciate cultural diversity, traditional values and natural diversity. Thus, character education not only shapes strong personal character, but also promotes inclusiveness and sustainability in an increasingly connected and complex global context.

2) Environmental awareness
   In the aspect of environmental awareness, character education encourages awareness of the environment and the importance of caring for it. This is in line with the principles of education for sustainable development that emphasize the need to maintain the sustainability of the natural environment for future generations. By strengthening environmental awareness, character education prepares individuals to become responsible citizens of the earth and its resources [18,19]. Character education teaches students to understand the interconnection between humans and nature, as well as the impact of human actions on the environment. Through learning about concepts such as recycling, energy saving and wildlife protection, students are given the opportunity to become agents of change who contribute positively to environmental conservation. By raising environmental awareness, character education also helps address global environmental challenges such as climate change, habitat destruction and pollution. Individuals who have a strong environmental awareness are likely to take action to reduce their ecological footprint, champion sustainable environmental policies, and support environmentally friendly practices.

3) Social Skill Development
   Character education helps in the development of social skills such as cooperation, tolerance, and empathy, which are crucial in building a sustainable society. With these skills, individuals can cooperate effectively in the face of social, economic, and environmental challenges. With these skills, individuals can cooperate effectively in the face of social, economic and environmental challenges [7,20]. Cooperation enables them to work together in finding solutions to complex problems, while tolerance helps them to appreciate and respect differences between individuals and groups. In addition, the ability to feel and understand the feelings of others (empathy) helps strengthen social bonds and build harmonious relationships among community members. When individuals have
these strong social skills, they are more likely to engage in social and environmental initiatives, which in turn can help society to become more inclusive, empowered and sustainable as a whole. Thus, character education in primary schools is not just about academic development, but also about shaping individuals who are resilient, empathetic and ready to contribute to creating a better future for all.

4) Problem Solving and Decision Making
Character education and education for sustainable development both promote critical thinking and the ability to solve complex problems [20]. Through character education, individuals are taught to consider the consequences of their actions on society and the environment, so as to make socially and ecologically responsible decisions. Through character education, individuals are taught to consider the consequences of their actions on society and the environment, so as to make socially and ecologically responsible decisions. They learn to understand values such as honesty, integrity and responsibility, which form the foundation for ethical and sustainable decision-making processes. In addition, education for sustainable development provides the knowledge and skills necessary to identify, analyze and solve the complex problems faced by society and the environment today. By integrating character education and sustainability education, individuals can develop strong critical and analytical abilities, as well as sensitivity to the social and environmental impacts of their actions. This enables them to become open-minded, creative and committed agents of change in solving the increasingly complex global challenges of the 21st century [21].

5) Holistic Learning Experience
Character education and education for sustainable development not only emphasize holistic learning experiences that go beyond academic knowledge. They include aspects such as student empowerment, practical experience, and self-reflection, which allow individuals to grow and develop as a whole [3,9]. Character education encourages students to take an active role in their learning process, fosters courage to act in accordance with the values they believe in, and promotes value-based leadership. On the other hand, education for sustainable development provides opportunities for students to engage in practical learning experiences, such as problem-based projects, field trips, and challenging extracurricular activities. Through these experiences, students can apply the knowledge and skills they learn in a real-world context, thus enhancing their understanding of the various concepts and issues taught. In addition, self-reflection is an important component of character education and education for sustainable development. Students are invited to regularly reflect on their values, attitudes and actions and their impact on themselves, others and the environment [10,19]. This helps them to strengthen their understanding of themselves, correct undesirable behaviors, and develop a more positive and solution-oriented attitude. Thus, character education and education for sustainable development work synergistically to create a holistic learning experience, which prepares students not only for academic success, but also to become empathetic, responsible and positively contributing individuals in society.

Thus, sustainability education and character education complement each other in shaping individuals who have moral awareness, social responsibility and commitment to the sustainability of the environment and society. Collaboration between these two approaches can produce a generation that is better prepared to face the complex challenges of the modern
world and contribute to sustainable development. Through the integration of character education into sustainable education, schools can become institutions that play a role in producing individuals who are not only academically competent, but also have moral awareness and commitment to social and environmental sustainability. Thus, character education is not only a complement to sustainable education, but also an important aspect in achieving sustainable development goals holistically.

4. Conclusion

Based on the results and discussion, it can be concluded that education for sustainable development through character education is very important in introductory primary schools. In addition, aspects that need to be considered in implementing education for sustainable development through character education are the formation of attitudes and values, environmental awareness, social skills development, and holistic learning experiences. The implication of this study is that the results of this study can be used as a consideration in organizing and achieving education for sustainable development through character education at all levels of education. The limitations of this study are that the respondents used are not many and the data analysis used has not yet come to analyze the relationship between education for sustainable development and character education. Recommendations for future research are to develop character education programs to achieve sustainable education.

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