

## Research Article

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## Character Quality Development in Future-Oriented Education: A Case Study of Indonesian Nature-Based Schools

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### Abstract

**Background/purpose.** Nature-based schools merge environmental learning with character education, cultivating future-ready students through holistic, nature-driven growth. This study aims to examine students' character profiles in nature-based schools.

**Materials/methods.** This study employed a qualitative case study method. The participants were selected from two elementary schools using a purposive snowball sampling technique. Data were collected through observations, interviews, questionnaires, and documentation analysis. Data gathered from various sources were analyzed using content analysis by coding and categorizing information to identify themes. Results were organized and presented based on the emergent themes, and conclusions were drawn based on findings interpreted to answer research questions.

**Results.** The results showed that the character of students in nature-based school were as follows: (1) students' curiosity were evident from their ability to explore, discover, engage in adventure, and question; (2) students' initiatives were evident from their ability to come up with new ideas, to be positive in learning, to be courageous to try without fear, to have high enthusiasm, to have broad insight, and desire for continuous experience; (3) students' persistence could be seen through their optimistic attitude, toughness, tenacity and endless practice; (4) students' adaptability were evident from their ability to create changes in their surroundings, their focus, and their interpersonal skills; (5) students' leadership was manifested through their honesty, sense of responsibility and ability to organize; and (6) students' social and cultural awareness were evident from their attitude of helping each other, caring, showing empathy, tolerance, charity, cultural awareness, knowledge and love of culture.

**Conclusion.** This study concludes that students' character in nature-based schools involves several good qualities. This research highlights the potential of nature-based education in fostering character development and has implications for educational practices, policies, and future research on character education.



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## 1. Introduction

Character education is one of the most important aspects of educating children because it can determine whether one can take responsibility for their actions and respect the rights of others (Tabroni et al., 2021; Winarni et al., 2022). Therefore, integrating character education into basic education should be taken significantly. This is also essential because one's character can also determine one's success. In addition, character education can encourage children to grow confidently, and it is hoped that children can develop and explore their abilities and skills without ignoring positive and good values (Hastuti & Marsigit, 2020; Serasi et al., 2022). Besides, character education can be considered a conscious and planned human endeavor in educating and empowering students (Chairunnisa & Istaryatiningtias, 2022; Hafina et al., 2022). Principally, character education aims to instill moral values or messages in students' character with the ultimate goal of building a moral, tolerant, and cooperative nation.

In Indonesia, character education is implemented in the 2013 Curriculum. This means that the government is also trying to contribute to students' character development (Hastuti & Marsigit, 2020; Ratih, 2017). Therefore, in the 2013 Curriculum, this learning approach is integrated into all subjects (Serasi et al., 2022). The 2013 Curriculum explicitly states that all subjects must contribute to forming attitudes, skills, and knowledge. In addition, Indonesia cannot be separated from curriculum policy innovation that is integrated into government ideas. Both are then wrapped in a movement labeled "mental revolution" within the framework of the "strengthening character education" program (Hastuti & Marsigit, 2020; Ratih, 2017).

Character education is important in supporting children's development, so it should begin with students' early childhood (Chumdari et al., 2018; Tri et al., 2018) when children are in their golden age, to form their individual characters (Nida, 2019). A successful character education can enable children to grow as independent and confident individuals. Besides, character education should start in children's families, then schools, and other surroundings. Thus, character education can be carried out systematically and consistently, which eventually develops children's emotional intelligence (Hafina et al., 2022; Syapal et al., 2022). The importance of starting character education from an early age is not in line with the actual conditions. Nowadays, Indonesia is experiencing moral degradation, which is marked by the emergence of various problems. These immoral acts are largely influenced by a character crisis (Chumdari et al., 2018; Hidayat et al., 2022; Maskun et al., 2019; Wibawa & Awaliah, 2023). According to data from the Program for International Students Assessment (PISA), children and adolescents in Indonesia experience some bad treatment. The report shows that 15 percent of them are bullied, 19 percent are ostracized, 22 percent are insulted, 14 percent are threatened, 18 percent are being pushed or beaten by friends, and 20 percent are gossiped (Serasi et al., 2022; Tabroni et al., 2021; Winarni et al., 2022). In 2021, KPAI recorded that there were 53 cases of child victims of bullying in the school environment and 168 cases of bullying in cyberspace. Meanwhile, from January to October 2022, cases of bullying at schools increased to 81 cases. The report of the survey stated that 2 out of 3 children had experienced at least one type of violence during their lifetime, while 3 out of 4 children who had experienced this violence reported that the perpetrators of violence were their peers (Chairunnisa & Istaryatiningtias, 2022; Chumdari et al., 2018; Fitriyah et al., 2022; Hidayat et al., 2022).

Sustainability in education refers to efforts to teach students the importance of environmental and social sustainability in their lives (Suryani et al., 2019). One of the global sustainable educational movements that supports character education is outdoor learning. Outdoor learning encourages students to engage directly with their environment, strengthening their understanding of responsibility, cooperation, and respect for nature (Figueiredo et al., 2013; Suryani et al., 2019). As part of the outdoor learning movement, nature-based schools provide direct experiences that connect students with nature (Bal & Kaya, 2020; Burke et al., 2021). Nature schools allow students

not only to learn about nature but also to practice character values such as environmental responsibility, teamwork, and respect for diversity (Salimi et al., 2021). School is one of the pillars of education, which has a strategic role, especially in providing educational experiences to individuals both physically, spiritually, and intellectually (Heriyanto et al., 2019; Muhtar & Dallyono, 2020). Nature-based schools are inclusive schools with learning activities that are carried out by integrating certain desired characteristics based on the goals of educational institutions (Austin et al., 2016; Bal & Kaya, 2020). Nature-based schools aim to restore essential human values that blend with nature (Austin et al., 2016; Miller et al., 2022). Learning in an open space provides several opportunities that cannot be conveyed in a classroom (Kuo et al., 2019; Schilhab, 2021). A learning approach that uses direct interaction between educators and students creates a positive impact in character building (Kuo et al., 2019; Miller et al., 2022).

Several studies have examined the character of elementary school students (Demirel et al., 2016; Salimi et al., 2021; Sarwanto et al., 2021; Syahrial et al., 2022; Temiz, 2019). However, not much research examines the character of elementary school students, especially in nature-based schools. Nature-based schools involved in the current research have been selected as pilot schools in several cities, so they are highly reputable with their quality of education. In addition, the current study addresses a significant void in the literature by making the first attempt to investigate the indicators of character quality in 21st-century education that were put forward by the World Economic Forum (2015), including (1) curiosity, (2) initiatives, (3) persistence, (4) adaptability, (5) leadership, and (6) social and cultural awareness. In-depth and comprehensive research is needed regarding character education, which is important for students' future, especially elementary school students. Based on the aforementioned background, this study aims to examine the character profile of students in nature-based schools through an in-depth and comprehensive analysis.

## 2. Literature Review

### 2.1. Character

Character is defined as a set of values, attitudes, and behaviors that shape an individual's personality in ethically and responsibly responding to various life situations (Demirel et al., 2016; Hermino & Arifin, 2020). Conceptually, character encompasses morality, performance, and citizenship dimensions, making it a multidisciplinary and complex concept within education, psychology, and human development (Heriyanto et al., 2019). Character is not merely a static value but an outcome of a learning process shaped by experiences, environment, and technology. A comprehensive definition of character includes cognitive, affective, and behavioral perspectives, as well as how the interaction between individuals and their environment influences the internalization of these values (Hastuti & Marsigit, 2020; Ratih, 2017). Lickona (1997) identified three key components of character: moral knowing, moral feeling, and moral action.

The grouping of characters in 21st-century education continues to evolve to meet the demands of an increasingly complex and dynamic world. One of the earliest frameworks, 4C, was introduced by the Partnership for 21st Century Skills (P21) and includes Critical Thinking, Creativity, Communication, and Collaboration (Serasi et al., 2022). These four skills are fundamental for preparing students to adapt and compete in the globalized era. Over time, the 5C framework emerged by adding Character, highlighting moral values, integrity, and a strong work ethic. This evolved further into the 6C, comprising Character, Citizenship, Collaboration, Communication, Creativity, and Critical Thinking. The 7C framework introduced Curiosity as a key component, recognizing that curiosity drives exploration, innovation, and continuous learning, which are essential in today's information-driven world. Finally, the 8C framework expanded the model by including Computational Thinking, a crucial skill in the digital age where data-driven and technology-based problem-solving are critical (Tabroni et al., 2021; Winarni et al., 2022). In this study, the focus will

specifically be on character framed by the World Economic Forum (2015), including (1) curiosity, (2) initiatives, (3) persistence, (4) adaptability, (5) leadership, and (6) social and cultural awareness.

## **2.2. Future Education**

Future education refers to an innovative, flexible, and sustainable vision of education designed to prepare individuals for global challenges in the era of Industry 4.0 and Society 5.0 (World Economic Forum, 2015). This concept emphasizes the integration of cutting-edge technologies, transdisciplinary learning approaches, and strengthening human-centered education to develop essential 21st-century skills (Heriyanto et al., 2019). Future education is closely associated with the use of Artificial Intelligence (AI), Big Data, Virtual Reality (VR), and Augmented Reality (AR) as technology-based learning tools (Hidayat et al., 2022; Maskun et al., 2019).

This educational model prioritizes flexibility in time, space, and learning methods through approaches such as personalized learning, adaptive learning systems, and lifelong learning (Nando, 2023). Moreover, future education must foster key competencies, including cognitive skills, social-emotional skills, and character-building, to equip students for an ever-changing world. Strong character enables students to use technology wisely, innovate responsibly, and collaborate globally to address complex challenges, such as environmental sustainability and social inequality in the future (Tabroni et al., 2021; Winarni et al., 2022).

## **2.3. Nature-based School**

Nature schools are an alternative educational model that uses nature as the primary learning medium. This concept is inspired by various educational approaches, including Waldorf School, Summerhill School, Montessori School, Reggio Emilia, and Forest School. Each approach offers unique contributions: Waldorf School emphasizes holistic education encompassing art, imagination, and a connection to nature; Summerhill School advocates freedom of learning based on students' interests; Montessori School focuses on individualized learning with manipulative tools; Reggio Emilia promotes exploration, collaboration, and creativity; and Forest School, originating in Scandinavia, encourages experiential outdoor learning through forest exploration and survival activities (Austin et al., 2016; Bal & Kaya, 2020).

Activities predominant in nature schools include environmental exploration, farming practices, group play in open nature, survival skills, and nature-based projects (Bal & Kaya, 2020; Burke et al., 2021). Students are engaged in understanding plant cycles through planting and harvesting, studying ecosystems like rivers and forests by observing flora and fauna and developing teamwork skills through group games or challenges (Kuo et al., 2019). Projects such as building shelters from natural materials also provide hands-on experience in problem-solving, creativity, and collaboration. Physical activities in the open environment, such as hiking and survival skills, further enhance physical endurance, mental resilience, and self-confidence (Miller et al., 2022).

## **3. Methodology**

This study employs a qualitative research method, which fundamentally focuses on analyzing and describing phenomena in detail, often exploring individuals' perspectives and experiences in their natural context. In a qualitative research process, subject perspectives are emphasized, and theoretical foundations are used by researchers as guides so that the research process is in line with the facts encountered in the field when conducting research (Korstjens & Moser, 2018; Stahl & King, 2020). This method was selected to investigate complex aspects that may not be fully captured by quantitative methods, such as personal experiences, viewpoints, and interactions within the research context. The research strategy used in this study is a case study because it aims to describe or take a picture of a real phenomenon or social situation, namely the character profile of students in the nature-based school as a whole, broadly and deeply, without intervention from the researcher.

### **3.1. Participants**

The participants of this study were purposefully selected from two elementary schools, including 115 students, 10 teachers, and two school principals. Purposive sampling is a sampling technique that is conducted by providing a self-assessment of the sample among the selected population (Campbell et al., 2020; Wu Suen et al., 2014). The participants of the current study were selected using the snowball sampling technique, in which existing research participants provided referrals to recruit the sample needed for the research studies. The selection criteria included (1) being fully willing to become a resource person or research subject, (2) having good communication skills, (3) having a relationship with the research topic, and (4) having expertise related to the research topic.

Ethical concerns were addressed by obtaining informed consent from all participants, with parental consent for students, ensuring confidentiality and voluntary participation. Data was securely stored and anonymized, and the study adhered to institutional ethical guidelines to protect participants' rights and dignity. The research was conducted over one year, allowing for thorough data collection and analysis during each school term.

### **3.2. Data Collection**

Data collection techniques used in this study include (1) non-participant observation techniques, (2) questionnaire techniques, (3) in-depth interview techniques, and (4) documentation techniques. First, observation was used to collect data by observing the behavior and environment (social and/or material) of each student. Non-participant observation was employed, in which researchers observed participants without interacting directly with them (Chamdani et al., 2022). This observation technique allows observers to observe and record all activities carried out by the research subjects carefully and in detail. Observations were conducted both during formal learning activities and outside the classroom, such as when students engaged in outdoor activities, group projects, or social interactions within the school environment. Second, the questionnaire technique was preferred because it could give respondents sufficient time to consider their responses carefully without any interruption, could be given simultaneously, and could handle a large number of questions in a relatively efficient manner with a high response rate (Etikan, 2017; Roopa & Rani, 2012). The questionnaire used in this study consisted of 15 closed-ended questions. The questionnaire was distributed to 115 students over four weeks, allowing them sufficient time to reflect on their answers. To ensure clarity and minimize bias, the questions were carefully crafted with Likert scale responses ranging from "strongly agree" to "strongly disagree."

Third, semi-structured interviews were conducted with 20 students, 10 teachers, and two principals, each lasting approximately 45-60 minutes. The interview process was designed to be systematic, with each participant guided through a set of open-ended questions related to the research topic. For students, the interviews were held during school hours, while for teachers and principals, interviews were scheduled at times convenient for them, often outside teaching hours. Fourth, documentation techniques were employed to provide an overview of various information about students in the past (which was recorded or documented) and to explain students' conditions with concrete evidence (Bowen, 2009; Thooyibah et al., 2019). The documentation process aimed to offer concrete evidence regarding students' academic performance, behavioral records, and other relevant details that could help explain their character development over time.

### **3.3. Data Analysis**

The data analysis was performed using an interactive model (Miles & Huberman, 2014) which consists of four stages: (1) data collection, which was a process carried out from the beginning to the end of the research, gathering information from various sources, such as observations, interviews, questionnaires, and documentation; (2) data reduction, which involved selecting,

simplifying, and organizing raw data by categorizing, coding, and summarizing to focus on the most relevant and significant themes aligned with the study's objectives; (3) presentation of data, which involved organizing and structuring the reduced information into clear formats, such as tables, graphs, or descriptive narratives, to make it accessible and facilitate the identification of patterns and trend; and (4) synthesizing data, which was performed to ensure that the findings aligned with the original research questions and objectives, confirming consistency and accuracy, and revisiting earlier stages if necessary.

#### 4. Results

The research data was obtained from 115 elementary school students using a questionnaire for each character indicator. The indicator with the highest average score was persistence, while the indicator with the lowest average score was curiosity. The results of the questionnaire are demonstrated in Figure 1.

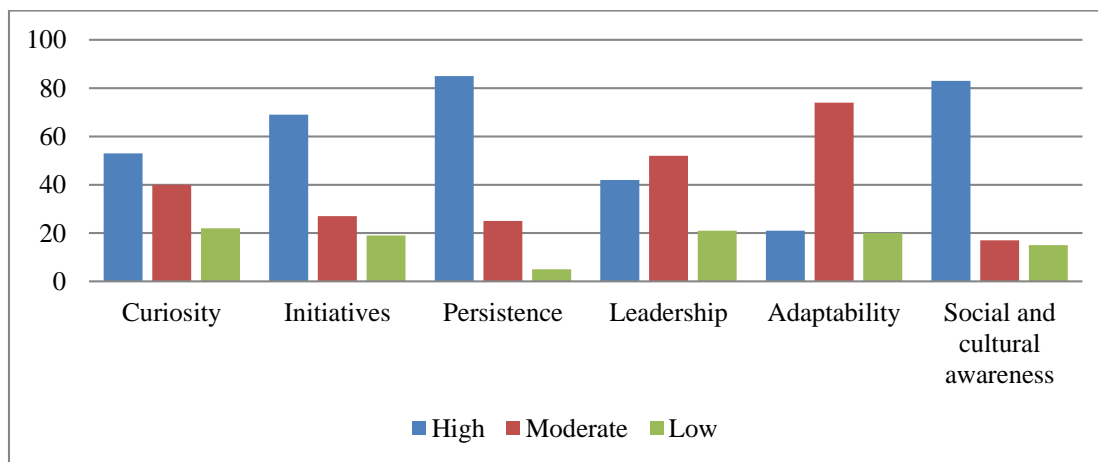


Figure 1. Summary of Students' Character Questionnaire Data

##### 4.1. Curiosity

Students' curiosity was evident in several aspects, including (1) exploring, (2) finding, (3) adventuring, and questioning. The exploring aspect is related to students' efforts to obtain new information and engage in sensory experiences that motivate their attitudes to explore. The observation results showed that students highly desired to explore more information related to their subjects. This could be seen in all locations of the school every day. Some students were engrossed in reading books wherever they were. This was also supported by the results of interviews with teachers. The following quote from the interview with a teacher participant illustrates this finding:

The students are fond of reading. They do not just read books in classes or at the library. They even read books on trees while relaxing, in the yard around the school, and at home. The books they read also vary in terms of topics such as knowledge related to spaces and school subjects, and even

books on religious knowledge, prophet books, and general knowledge like encyclopedias, which are the most popular among them.



**Figure 2.** Some students have a hobby of reading anywhere.

The discovery aspect is related to students' interest in discovery, experimentation, research, investigation, and experimental activities. The profile of students' curiosity is marked by their enthusiasm and activeness in experimental activities in each lesson. Students' curiosity can also be increased by problem-based learning, where the teacher describes problems that will be studied holistically and comprehensively together. Based on the results of observations, problem-based learning began with the teacher describing a problem, such as a disease of the respiratory organs. Then, students looked for the cause and studied respiratory organs. After that, a solution was found so that the disease of the respiratory organs could be improved or recovered.



**Figure 3.** Some students are doing a biology experiment and making compost.

#### **4.2. Guidelines on the Design, Development, and Implementation of SPOC**

The initiative aspects examined in this study included (1) the emergence of new ideas, (2) a positive attitude in learning, (3) courage to try without fear, (4) high spirits, (5) broad insight, and (6) high experience. Based on the results of observations, students always had original and free ideas. While learning, the teacher always freed students to create everything related to learning materials. For example, when learning to make crafts, the teacher only instructed students to make 3D objects out of clay, shapes, and decorations. All were directed and intended for students. Students always got the freedom to express and be creative. Many students molded the clay into glasses, bowls, and flower vases with various decorative motifs according to their respective creations. Students were also accustomed to making creations from used goods such as pencil cases from straws, mini castles from cardboard, dolls from socks, and face shields from used bottles. In addition, to bring out students' original ideas, they also routinely made batik (a cloth dyed using the batik method) using

various ways, such as the stamp technique, the canting technique, the tie-dyeing technique, and so on.



**Figure 4.** The students are making handicrafts using clay.

Students' initiatives were also evident in their ability to build self-confidence. The observation results showed that high-grade students were used to speaking in public, not only in front of the class but in front of a general audience. This was because they were used to speaking in front of the class since grade 1 of elementary school. Students also maintained their initiative process, namely through contextual experience. The observation results showed that students took the initiative to have new experiences. For example, when students were learning about various vegetables, they asked them to learn how to cook the vegetables they learned about. Furthermore, when learning about buying and selling materials, they wanted students to have an actual experience of shopping at a market where they could buy directly from the seller and bid on the price of goods. In addition, the Market Day activity at this school was also an opportunity for students to learn about entrepreneurship.



**Figure 5.** The students are practicing cooking together.

### **4.3. Persistence**

The aspects studied for persistence included (1) optimism, (2) determination, (3) toughness, and (4) exercise. Students' optimistic attitudes could be seen in their short-term and long-term targets. This was supported by the interviews with several students regarding their aspirations. They had aspirations and a strong desire to make them happen, even accompanied by efforts mature enough for elementary school age. Furthermore, persistence could be seen in the unyielding attitude of students. Students were used to being involved in every competition, both academic and non-academic, at the school level and outside school, as well as at the regional, national, and international levels. The following is an illustrative excerpt from an interview with students:

My dream is to be a content creator. In the future, I will educate people about cooking. I want to be a public figure regarding my cooking content. (Then, the student shows her Instagram and TikTok accounts, which are indeed related to cooking content and information about the benefits of consuming vegetables).

Students' persistence and determination were also reflected in their daily activities, such as performing the dhuha prayer together, memorizing hadith, and memorizing verses from the Qur'an. The Quantum Kauny method, which utilized hand gestures (kinesthetic symbols), was taught to



ensure that students memorized the Qur'an and understood its meaning. Additionally, by memorizing and understanding the Qur'an, students could become qariah (Qur'anic reciters) and hafidzah (Qur'anic memorizers), capable of reading and memorizing the Qur'an effectively and embodying its teachings in their everyday lives.

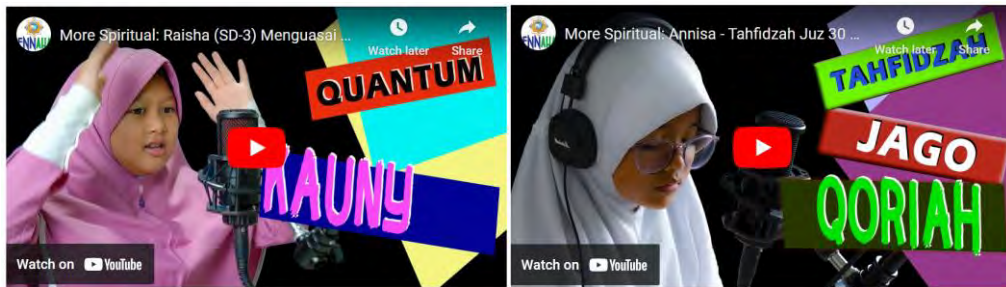


Figure 6. Students become content creators on YouTube

Finally, students and teachers created rules and punishments implemented every semester. Then, they also managed to make regular schedules for studying together. So, both students and parents clearly understood the activities performed, equipment used, and goals/targets achieved every week. The teacher also asked students what goals they wanted to achieve for certain weeks.

#### 4.4. Adaptability

Aspects of adaptability could be seen in students' ability to create changes in the environment, their ability to focus, and their interpersonal skills. The ability to create changes in the environment means that students can adapt by responding to changes in their surroundings quickly and/or making these changes according to the conditions in their environment. The following excerpt is from the interview with teachers:

Elementary school students are at an age in which they explore themselves to the fullest. This often causes them to be surprised by something new around them. For adaptability, we try to create changes that lead to good habits in students. Students who had never had good habits finally adapted and got used to them. Some examples of good habits for adaptation are directed to the necessities of life, such as cooking, washing dishes after eating, washing hands before eating, shopping, etc. This is because these activities have an impact on their lives, but not all parents can teach or get used to these activities for their children who are still at this elementary school level.



Figure 7. Students are used to creating good habits (washing hands).

The interview data was supported by the observations, which showed that students were accustomed to having new, unique habits at school, such as eating together, queuing to wash dishes after eating, and frequent hand washing. Students already had personal awareness. Students were

also taught to dry clothes. The subject matter was also naturally related to this unique habit by the teacher.

The last adaptation aspect is students' interpersonal skills. Students' interpersonal skills appeared to be very mature. This was shown by students who smiled and greeted strangers they met at school. They also did not forget to greet the teachers whenever they met. Their togetherness was evident at the time of camping and exploration. During the camping activity, students were divided into several groups of heterogeneous students consisting of grades 1 to grade 6. The older students instinctively helped their juniors. There was even one group that was willing to be left behind because one of the group member's leg was injured, even though it was a minor injury. They did not want a reward for the fastest group completing the exploration.



**Figure 8.** Students are shopping at traditional markets

#### **4.5. Leadership**

The leadership aspect consisted of honesty, responsibility, and organizational skills. At this time, students had the task of self-managing and shaping their personalities. This period was crucial for students to recognize good character, one of which was honesty. Students' honesty was observable when they gave actual facts about an incident, dispute, or misunderstanding. Students also understood that lying was wrong. If they made a mistake, they did not make excuses but admitted it. However, some students still seemed unable to leave the bad habit of cheating. During learning, the teacher rewarded students who always acted honestly to deal with students' dishonesty, such as cheating. The teacher praised students who did not cheat on assignments. This praise was a reward for their honest behavior. Giving words of praise was shown to be a good reward.



**Figure 9.** Students are doing outbound activities.

Students' leadership was also seen in their organizational ability. It existed in the clear organizational structure in each class, starting with the duties of the class captain, secretary, and class

treasurer. Meanwhile, the distinctive feature of these two nature-based schools was the election of a school president.



**Figure 10.** Students are voting for the student president in an election.

#### **4.6. Social and Cultural Awareness**

Aspects assessed on social and cultural indicators included helping, caring, showing empathy, tolerance, social action, cultural knowledge, cultural products, and culture-loving. Based on the results of interviews with teachers, it seemed that students' social awareness had already been good. The observations also showed that students' tolerance was evident during several activities in class such as discussion activities. For example, when they were in a group, they did not discriminate group members for their economic status or religious belief. Students usually formed a group based on their order in the student attendance book. Besides, students were often directly involved in social activities in the community.



**Figure 11.** Students are carrying out a community service.

The aspect of cultural awareness was observed in their activities of creating cultural products both in terms of music, dance, and appearance. Cultural activities in schools to increase students' cultural awareness seemed to have been well-implemented. Cultural activities at this school included drawing and painting both on paper and on items such as bags and t-shirts, theater/drama every year-end, singing, dance, and martial arts. In addition, there is an extracurricular *angklung* (an Indonesian musical instrument consisting of two to four bamboo tubes suspended in a bamboo frame, bound with rattan cords) and photography to support students' cultural awareness. Furthermore, traditional games were included in students' daily activities. Students did not play games with their cell phones, but they played traditional games they prepared together. The

observations showed that students played hide and seek, marbles, congklak, engklek, gobak sodor, tops and walking on stilts.



Figure 12. Students are playing traditional games.

## 5. Discussion

### 5.1. Curiosity

The indicator of the adventurous aspect relates to students' involvement in exploring or adventurous activities to gain new knowledge and experiences (Avcı & Gümüş, 2020; Taş & Gülen, 2019; Yıldırım & Akamca, 2017). The observations revealed that students enjoyed exploring. This is indicated by their repeated involvement in discussions related to exploring activities. They also understood the things they needed to do during these activities very clearly since they followed the teacher's instructions very carefully during these exploring activities. Engaging in activities that seek new knowledge and experiences significantly impacts elementary students by enhancing their cognitive development, promoting critical thinking, and encouraging creativity, thus laying a strong foundation for understanding complex concepts and effective problem-solving (Harwood et al., 2022).

Then, the finding aspect is characterized by students' ability to independently search for information, reflecting a proactive approach to learning. They frequently engaged in tasks that required gathering and analyzing information from various sources, showing a strong desire to understand complex concepts (Gruber & Fandakova, 2021). Furthermore, the questioning aspect relates to students' ability to compose simple questions to multilevel questions to deepen the information they want to know. According to the teacher, students' curiosity was aroused by situations that led them to ask many questions. Based on the results of observations, in each study, the students were always active in asking questions and actively guessing. Even, they sometimes want to be involved in finding the right answers. This is based on the information gap theory which states that curiosity arises because attention is focused on inconsistencies or gaps in one's knowledge (Mahama et al., 2022; Nadelson et al., 2019; Singh, 2021). The information gap causes a person to be motivated to obtain the missing information to find answers (Gruber & Fandakova, 2021).

### 5.2. Initiative

The initiative aspects examined in this study included (1) the emergence of new ideas, (2) a positive attitude in learning, (3) courage to try without fear, (4) high spirits, (5) broad insight, and (6) high experience. Students demonstrated the ability to generate new ideas through active involvement in various creative activities. Observations showed that students frequently created original works, such as making crafts from recycled materials and designing high-creativity 3D objects. Creative learning that generates new and original ideas occurs when students are given the freedom to explore, improvise, and experiment (Fajari et al., 2023; Fatmawati et al., 2022). Additionally, students' involvement in trying new things without fear reflects their high courage in facing challenges. In the current study, students were observed as not being afraid to take risks in the

learning process, whether through creative experiments or activities outside the classroom, such as making batik or cooking together. The habit of engaging students in these activities is crucial because it helps students develop not only practical skills but also builds the mental resilience necessary for success in the future workplace (Murwaningsih & Fauziah, 2020; Rahmat & Jon, 2023).

Students also demonstrated strong enthusiasm for performing tasks that require creativity and innovation. This enthusiasm emerges because students feel that they can see the tangible results of their efforts, whether in the form of the work produced or new experiences gained. Rich experiences were observed in students' ability to utilize various opportunities for learning and creation. Through activities such as school markets, students learned about economics, buying and selling transactions, and money management directly. They became involved in the negotiation process, calculating prices, and making financial decisions, which provided real-life experience in understanding economic concepts. Additionally, cooking activities allowed them to learn about hygiene, food preparation techniques, and knowledge about nutrition. Learning that emphasizes experience not only prepares students for academic challenges but also helps them develop essential life skills, such as flexibility, creativity, and adaptability, which are highly needed in an era of globalization and rapid technological advancement (Budiman et al., 2020; Hermino & Arifin, 2020). Furthermore, educational institutions, especially teachers, should encourage students' initiatives by allowing children to make their own decisions, not belittling their choices, providing positive support, finding out what students like and doing it together, giving praise or positive affirmation, building student self-confidence, and providing challenges so that students can look for better opportunities or solutions (Berger et al., 2022; Clark, 2022; Nicolaidis et al., 2020).

### **5.3. Persistence**

The aspects studied for persistence included (1) optimism, (2) determination, (3) toughness, and (4) exercise. Current results showed that students were very proud to have dreams of becoming content creators on various social media platforms. This demonstrates their optimism and determination from an early age, emphasizing their ambition to educate others through their content. Their involvement in various competitions, both academic and non-academic, at school, regional, national, and international levels reflects their persistence and drive to excel beyond conventional classroom settings. The use of social media platforms like Instagram and TikTok further highlights students' initiative and creativity, showcasing their strategic approach to achieving their aspirations in the digital age (Höfrová et al., 2024).

Students' toughness was reflected in their ability to face challenges with resilience. This was particularly evident in activities such as the Quantum Kauny method for memorizing the Qur'an. By using kinesthetic symbols, students not only learned the verses but also understood their meanings deeply. This approach exemplified how students were tough in their commitment to mastering complex skills and knowledge. Good persistence, on the other hand, involves maintaining direction even when facing difficulties—demonstrating persistence, confidence, and mutual encouragement (DiNapoli, 2019; Thorsen et al., 2021). This connection was clearly seen in how students engaged with challenging activities like the Quantum Kauny method, where their resilience and persistence are key to overcoming obstacles and achieving success.

The students' persistence was also influenced by cultural and social contexts. The involvement of parents and the community in educational activities, such as creating rules and punishments and managing study schedules, reflected a collaborative approach to education. Undeniably, an organized and mutually agreed schedule can create disappointment and boredom for some students (Verner-Filion et al., 2020). When faced with feelings of disappointment and boredom with something,

individuals with high persistence will not retreat quickly. They do not give up easily and keep trying to realize what they have chosen (Alhadabi & Karpinski, 2020; Xu et al., 2021).

#### **5.4. Adaptability**

Aspects of adaptability were observed in students' ability to create changes in their environment, their ability to focus, and their interpersonal skills. Students' ability to create changes in their environment was evident in the new habits they adopted at school, such as washing hands, washing dishes, and cooking. These activities had a direct impact on their daily lives while teaching them responsibility for basic needs. The continuous process of habituation allowed students not only to adapt to changes but also to actively create a better environment aligned with the values taught. Good habits must be habituated by inviting students to do them continuously at school (Nair & Fahimirad, 2019). This aims to instill good habits and attitudes and embed them in the students' subconsciousness. In the end, students can do them automatically without being asked by their teacher or parents (Gerami et al., 2015; Prajapati et al., 2016).

Furthermore, students' interpersonal skills were reflected in their daily habits, such as greeting teachers, smiling at strangers, and collaborating in heterogeneous groups. During camping activities, students demonstrated empathy and solidarity by assisting friends in difficulty, even if it meant sacrificing the chance to complete challenges more quickly. Students' interpersonal skills can be improved through several treatments and stimuli, either from the teacher or school, such as implementing an interaction-oriented culture that involves greeting, shaking hands, and being polite, increasing team-based activities or activities both inside and outside the classroom, getting used to delivering good criticism, making suggestions, giving opinions or feedback, getting used to techniques for dealing with conflicts and techniques for becoming a mediator (Abid et al., 2022; Haataja et al., 2022; Lindsey & Rice, 2015; Obsuth et al., 2022).

#### **5.5. Leadership**

Leadership aspects consisted of honesty, responsibility, and organizational skills. Students demonstrated honesty by revealing the facts when faced with incidents, disputes, or misunderstandings. They understood that lying was wrong, and when they made mistakes, they tended to admit them without making excuses. However, some students still struggled to avoid bad habits, such as cheating. To encourage honest behavior, teachers rewarded students who consistently acted honestly. This indicates that positive reinforcement, such as words of praise, can be effective in promoting good behavior (Skinner & Skinner, 1938) and (Jones & Skinner, 1939) state that verbal rewards, such as words of praise, help students feel appreciated, making them more proactive in maintaining good behavior. Moreover, positive reinforcement shifts the focus away from negative consequences or punishment, which often causes stress or fear in students.

Furthermore, students' leadership skills were also reflected in the clear organizational structure in each class, such as class captains, secretaries, and treasurers. This structure helped students learn responsibility and task management. A unique feature of this nature-based school was the election of a school president, which provided practical experience in leadership and democracy. This election process helped teach students to participate directly in an organizational system. Democracy education can be taught to children from an early age (Kniffin et al., 2017). The election of class administrators and the election of student presidents are examples of the implementation of democracy in the world of children (Kopińska, 2019). The student democratic party at this school aimed to provide a chance for students to understand and carry out their rights and obligations in a

polite, honest, democratic, and sincere manner as the color of an educated and responsible nation (Grzywacz, 2020; Nanggala, 2020; Weinberg & Flinders, 2018).

### **5.6. Social and Cultural Awareness**

Aspects assessed on social and cultural indicators included helping, caring, showing empathy, tolerance, social action, cultural knowledge, cultural products, and culture-loving. Students showed good social awareness by demonstrating care and empathy towards others, especially in group settings. This was reflected in their interactions during group discussion activities, where tolerance and non-discriminatory attitudes toward classmates from diverse socioeconomic and religious backgrounds were clearly evident. Creating social awareness in the students' environment was necessary because one day, students were required to be able to socialize with other people properly. (Dooly et al., 2021; Riney & Ku, 2021). The ability to socialize with other people requires a long time of adjustment and practice because, in that case, students need to adapt to the environment and learn to appreciate, respect, accept, and understand each other (Burks et al., 2019; Sangeetha & Vanitha, 2019).

Moreover, students were also involved in social activities in the community, participating in direct social actions such as cleaning public places, helping with local events, and supporting community projects. This practical involvement fostered a deeper sense of responsibility and concern for the wider community. Social awareness can be interpreted as awareness of rights and obligations as members of society (Fubara, 2020; Sanchez, 2018).

Students showed cultural awareness through their involvement in various cultural activities such as music, dance, and arts. Schools implementing these activities allow students to explore and create cultural products, including drawing, painting, and drama. These activities not only enhance students' appreciation for their cultural heritage but also allow them to express themselves creatively. Through art education provided at the school, students gain experience of beauty or aesthetics (Jin et al., 2022; Longinou, 2020). Furthermore, in the current study, students were observed to engage in daily traditional games such as hide and seek, congklak, and gobak sodor. These activities help maintain cultural traditions and practices, promoting appreciation for local heritage and teaching students about their cultural roots. Using traditional games like spinning tops and walking on stilts also emphasizes the importance of cultural continuity and the passing down of traditions to younger generations (Saemee & Nomnian, 2021). Activities of appreciation, expression, and artistic creation in elementary schools can help foster students' sensitivity to the beauty and value of art (Smith et al., 2022).

## **6. Conclusion and Implications**

Based on the results of the study, it can be concluded that the characteristics of students in nature-based schools involve these aspects: (1) curiosity, which is characterized by exploratory, discovering, adventurous, and questioning aspects; (2) initiatives marked by the emergence of new ideas, being positive in learning, courage to try without fear, high enthusiasm, broad insight, and experience; (3) persistence marked by an optimistic attitude, determination, tenacity, and continuous practice; (4) adaptability characterized by the ability to create changes around, the ability to focus and employ interpersonal skills; (5) leadership characterized by honesty, responsibility, and organizational ability; and (6) social and cultural awareness marked by helping each other, caring, empathy, tolerance, social action, cultural knowledge, cultural products, and culture-loving. The character profile of students in nature-based schools belongs to the good category.

This research has several limitations. First, the research was conducted in only two nature-based elementary schools, so the results may not be fully representative of all elementary schools, and the findings cannot be directly applied to schools with different educational approaches (non-nature-

based schools). The data collected relied more on qualitative techniques, which allow for high subjectivity, so there may be bias in data interpretation. Additionally, the data collection period was limited to only one year, which could affect the depth of the analysis of students' character development in the schools studied.

Based on the findings of this study, it is recommended that schools focus on and make the character an important school agenda. In this case, teachers become a vital source in implementing character education. It needs the involvement of various activities and programs, various models and methods of learning, and innovative techniques to attract students' interest in learning effective and successful integration of character education. Given the various weaknesses found in this study, the researcher recommends further research to expand the research context. Future research can also examine the character of students enrolled in nature-based schools in various regions or countries or different school contexts, such as inclusive schools. In addition, researchers can increase the number of participants so that the data is more comprehensive and valid. Furthermore, there are many character indicators that future researchers can use in their study, which would enrich our understanding into effective character education.

## Declarations

**Author Contributions.** F.A.Y.: Conceptualization, methodology, and data analysis. L.E.W.F.: Literature review, review-editing and writing, and data coding

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**Ethical Approval.** This study was approved by the Ethics Committee of Universitas Bina Bangsa and Universitas Sultan Ageng Tirtayasa, Gen Ahad Elementary School, and Peradaban Nature School, with all participants providing written informed consent, ensuring confidentiality, anonymity, and voluntary participation in compliance with ethical research guidelines.

**Data Availability Statement.** (Data supporting the findings of this study are available from the corresponding author upon reasonable request.

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