




Exploring the impact of educational background, spiritual beliefs, and media exposure on environmental knowledge and attitudes

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Abstract

This research investigates the concurrent influence of educational background, spiritual beliefs, and media exposure on the environmental knowledge and attitudes. Utilizing a non-experimental, quantitative methodology, data were collected through structured questionnaires from 297 high school students at MAN Pangkep, Indonesia, a non-environmentally focused institution. The analysis used structural equation modeling to test the relationships between the studied variables. Results indicate significant positive correlations between educational background and both environmental knowledge and attitudes. Similarly, spiritual beliefs significantly influenced environmental attitudes, suggesting that integrating environmental stewardship into religious education could enhance commitment to environmental conservation. However, the influence of media exposure on environmental knowledge was not significant, highlighting the need for media to not only disseminate information but also to engage and form knowledge effectively. These findings underscore the importance of holistic educational approaches that incorporate environmental education into curricula to equip students with the necessary knowledge and attitudes to tackle environmental.

Keywords: educational background, environmental knowledge and attitudes, media exposure, spiritual beliefs

INTRODUCTION

The role of environmental attitudes among students holds significant importance in the endeavor to construct a sustainable future, as these attitudes serve as predictors of behaviors that profoundly influence the preservation and sustainability of our environment. Over the past few decades, there has been a notable surge in the awareness of global environmental challenges across the continents of Asia, America, and Europe, spurred by the escalating ecological crisis and heightened engagement of students in environmental issues (Jančius et al., 2021; Moore et al., 2023; Santri et al., 2022; Skalski et al., 2022; Wang & Zhang, 2021). Factors such as educational background, spiritual beliefs, and exposure to media have play significant roles in shaping students' environmental knowledge and attitudes (Li et al., 2024; Ngui & Lay, 2020; Polonyová & Pongrácz, 2022; Schwass et al., 2021).

Research reveals that education plays a pivotal role in enhancing understanding and fostering proactive attitudes toward environmental conservation (Jančius et al., 2021; Janmaimool & Khajohnmanee, 2019). Furthermore, empirical evidence underscores the substantial effect of educational attainment on environmental awareness, highlighting the role of formal education in shaping one's perceptions and responsiveness to environmental issues (Ma'rufah et al., 2021; Yu & Yu, 2017). Similarly, the impact of media exposure in this realm is acknowledged for its dual role in disseminating environmental information (Merenlender et al., 2016; Schwass et al., 2021), notwithstanding occasional instances of misinformation (Bridgman et al., 2020; Greenspan & Loftus, 2021). Moreover, spiritual beliefs are also identified as a major determinant in the formation of both individual and collective environmental knowledge and attitudes (Skalski et al., 2022). Certain studies posit that spiritual and religious frameworks significantly influence

Contribution to the literature

- The synergistic potential of education, spirituality and media in forming environmentally conscious attitudes and knowledge among students.
- Schools that are not environmentally based can effectively cultivate environmental knowledge and attitudes, although the influence of the media on students’ environmental knowledge may be limited.
- It is necessary to implement an environmentally based curriculum in order to shape students’ environmental knowledge and attitudes.

individual engagement and attitudes regarding the environment, underscoring the intricate interplay with culturally spiritual dimensions and highlighting their importance (Saxena & Sharma, 2024).

A growing body of literature indicates that these factors (i.e., educational background, spiritual beliefs, and exposure to media) individually contribute to shaping societal responses to the challenges of creating a green environment (Karim, 2022; Paul Victor & Treschuk, 2020; Rice & Miller, 2023; Wang et al., 2022). Nonetheless, while the significance of these variables is widely recognized, research that concurrently investigates the intricate interplay among educational background, spiritual beliefs, and media exposure concerning environmental knowledge and attitudes remains scarce. Previous studies often focused on isolated impacts, such as the role of education in isolation, without considering the synergistic effects that may arise when these factors interact. For instance, studies may concentrate solely on singular facets, such as the efficacy of educational initiatives in augmenting environmental awareness or the impact of religious doctrines on conservation behavior, neglecting to cross-reference these factors (Karim, 2022; Shahida, 2023). Although existing studies provide valuable insights, they often overlook a comprehensive analysis of how education, spirituality, and media-driven influences converge to affect environmental knowledge and attitudes.

The primary concern within this research pertains to the dearth of a comprehensive understanding regarding the interplay among educational background, spiritual beliefs, and media exposure in shaping the environmental knowledge and attitudes of students. Moreover, the intersection of education, spirituality, and media in shaping environmental attitudes is particularly relevant in today’s world. Whether in Asian, European or the American, where environmental challenges such as climate change, biodiversity loss, and natural disasters are increasingly top of mind for the public, understanding how students’ thinking can be influenced to become environmentally responsible citizens is essential (Li et al., 2024; Saltan & Divarci, 2017; Senarathne & Jayasinghe, 2021; Stefanis, 2024). Given the intricate nature of environmental issues and the myriad sources of information and values impacting students’ perceptions, it is imperative to examine these factors in

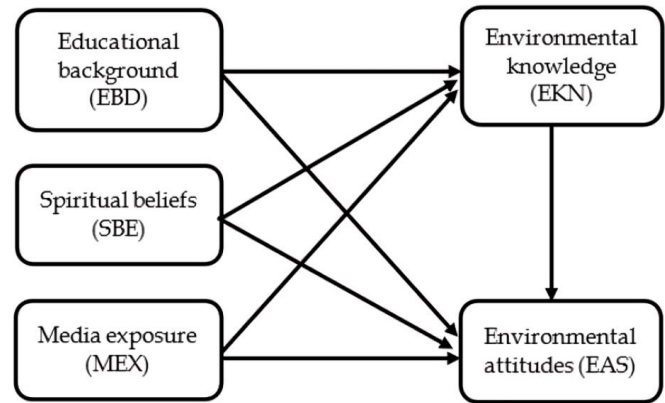


Figure 1. SEM diagram (Source: Authors’ own elaboration)

order to discern potential synergies. This gap underscores the necessity for a thorough investigation capable of offering deeper insights into how these variables collectively shape individual responses to environmental challenges, thereby potentially informing more efficacious educational and communication strategies in the future.

Hence, this research aims to elucidate how educational background, spiritual beliefs, and media exposure jointly influence the environmental knowledge and attitudes of individuals. The novelty of this research lies in its integrative approach, which examines the simultaneous impact of these three primary factors, a dimension insufficiently explored in prior research endeavors. The research hypothesis posits the existence of a synergistic relationship among the influences of:

- H1. educational background on environmental knowledge,
- H2. educational background on environmental attitudes,
- H3. spiritual beliefs on environmental knowledge,
- H4. spiritual beliefs on environmental attitude,
- H5. media exposure on environmental knowledge,
- H6. media exposure on environmental attitudes, and
- H7. environmental knowledge on environmental attitudes.

The theoretical framework delineating the research hypotheses is shown in Figure 1.

The diagram in Figure 1 shows how educational background, spiritual beliefs, and media exposure influence individuals’ knowledge and attitudes towards

Table 1. Research sample from 3 different grade levels

| Item | Grade | Percentage (%) |
|-----------------|-------|----------------|
| Male students | X | 15.49 |
| | XI | 16.48 |
| | XII | 15.16 |
| Total | | 48.48 |
| Female students | X | 16.50 |
| | XI | 18.18 |
| | XII | 16.84 |
| Total | | 51.52 |

the environment, and how environmental knowledge itself impacts individual attitudes towards the environment. The scope of this study will encompass demographic profile, with a particular emphasis on senior high school students, to ensure a comprehensive understanding of the potential variability of responses among different groups, thereby providing insights that can be generalized to a wider population. Additionally, the research subjects will also encompass non-Adiwiyata schools, i.e., schools that are not environmentally oriented, to observe the impact on students who are not directly exposed to environmental programs. This research will significantly contribute to the field of environmental education by offering a more holistic understanding of the factors that drive environmental knowledge and attitudes, thereby supporting the development of more effective educational interventions and policies.

METHODS

Research Design

This research utilizes a non-experimental quantitative research methodology (Hair et al., 2021). It focuses on the systematic collection and analysis of data to elucidate the influence of diverse factors, such as educational background, spiritual beliefs, and media

exposure, on environmental knowledge and attitudes. Employing a cross-sectional design, structured offline questionnaires are utilized to gather data from a designated population at a specific point in time. This methodology is selected for its efficacy in assessing the determinants shaping students' environmental attitudes.

Research Subjects

The research participants consist of high school students from three different grade levels, namely grades X, XI, and XII at MAN Pangkep, Indonesia (**Table 1**). The chosen institution represents a non-Adiwiyata school (a school lacking an environmental education program). The non-Adiwiyata school was selected to examine the extent to which students develop environmental knowledge and attitudes without exposure to environmental programs. These students are ensured to have engaged in conventional education, religious practices, and media utilization. Among the 321 students across the aforementioned grade levels, only 297 met the criteria to proceed with the data collection process. Participation in this study was voluntary, and the students consented to participate and complete the research instruments.

Instruments and Data Collection

The primary instrument utilized in this study was a structured offline questionnaire, developed from relevant literature reviews (Amin et al., 2020; Hao et al., 2022; Jacob et al., 2020; Shintasiwi & Wasino, 2019), as delineated in **Table 2**. The questionnaire underwent rigorous validation and reliability assessment for each variable/item incorporated into the survey. Comprising two distinct sections, the research questionnaire includes students' demographic particulars, notably their grade levels, in the initial segment. The subsequent section

Table 2. The statement of each variable item in the research instrument

| Item variables | Survey item statements |
|----------------|--|
| EBD1 | The knowledge I acquire from my education influences my ability to solve environmental problems around me. |
| EBD2 | My educational experiences have enhanced my skills in environmental conservation efforts. |
| EBD3 | I am always confident in applying knowledge from non-formal education to address real-world environmental issues. |
| EBD4 | The experiences I gained in school have positively influenced my decision-making abilities regarding environmental conservation efforts. |
| EBD5 | The educational program I am enrolled in broadens my perspective on various environmental issues. |
| SBE1 | I feel a deeper connection to the Creator when I care for the nature and the environment around me. |
| SBE2 | I believe that caring for the environment is part of my spiritual responsibility. |
| SBE3 | I am confident that my spiritual state influences my interaction with the environment. |
| SBE4 | I often pray about the importance of preserving the environment. |
| SBE5 | My actions in preserving the environment are influenced by the spiritual teachings I adhere to. |
| MEX1 | Information from various media has influenced my view on the importance of environmental conservation efforts. |
| MEX2 | Information from various media has broadened my understanding of efforts to reduce, recycle, reuse, and replace. |

Table 2 (Continued). The statement of each variable item in the research instrument

| Item variables | Survey item statements |
|----------------|---|
| MEX3 | I often follow news or programs in the media that discuss environmental issues and sustainability. |
| MEX4 | Information from various media has shaped the values and beliefs I hold regarding environmental campaigns. |
| EKN1 | I am aware of the negative impacts of pollution on human health and the environment. |
| EKN2 | I understand the importance of biodiversity and conservation efforts. |
| EKN3 | I consider environmental knowledge important for making informed decisions. |
| EKN4 | I feel confident in my knowledge of environmental conservation practices. |
| EKN5 | I stay informed about the latest developments and information on environmental issues from various sources. |
| EAS1 | I personally take responsibility for protecting and conserving the natural environment. |
| EAS2 | I take environmentally friendly actions in my daily life. |
| EAS3 | I always participate in educating others about the importance of environmental conservation. |
| EAS4 | I actively support initiatives that promote environmental conservation. |
| EAS5 | I am confident that individual actions can contribute to a healthier environment. |

comprises inquiries concerning factors related to educational background, spiritual beliefs, media exposure, knowledge, and environmental attitudes. All survey questions were designed utilizing a four-point Likert scale (4 = strongly agree, 3 = agree, 2 = disagree, and 1 = strongly disagree). To ensure clarity and validity, the questionnaire underwent scrutiny by three experts, encompassing both researchers and academics, who provided valuable feedback and input. Furthermore, a pilot test was conducted on a limited scale, involving 50 students, to ascertain that the questionnaire items did not harbor any convolutions or ambiguities. Given the absence of anomalies, a comprehensive survey was subsequently administered to the students.

A proportional sampling method was used, considering the structural equation analysis employed, and the recommended sample size was 100 samples or more (Hair et al., 2011). Data collection was conducted during the learning process at MAN Pangkep school in February 2024.

Data Analysis Technique

Data analysis was conducted using structural equation modeling (SEM) with SmartPLS 3.3.2 software. This method is suitable for testing the relationships between multiple dependent and independent variables (Hair et al., 2019). The SEM approach allows for detailed examination of the hypothesized paths between educational background, spiritual beliefs, media exposure, knowledge, and environmental attitudes. Validity assessment is observed through outer loading (> 0.70) (Hair et al., 2019). As for reliability consistency, it is evaluated through Cronbach’s alpha (> 0.70), rho A (> 0.70), composite reliability (> 0.70), and convergent validity through average variance extracted (AVE) (> 0.50), as well as discriminant validity through Fornell-Larcker criteria and cross-loading (Barclay & Thomson, 1995; Hair et al., 2019). Discriminant validity, according to the Fornell-Larcker criteria, requires that the square root of the AVE (in diagonal) for each variable should be

greater than the correlations with other variables (Fornell & Larcker, 1981; Hair et al., 2019). Additionally, cross-loading variables should have the highest value among all other cross-loadings (Hair et al., 2021). The benchmark value of internal consistency ranges from 0 to 1. Bootstrapping T and F statistical tests were conducted to determine the coefficient path levels using a structural model (T > 1.96, and p < 0.05) at a 95% confidence interval with 5,000 subsamples (Henseler, 2012).

RESULTS

The SEM analysis, as detailed in **Table 3**, reveals that the outer loading values of each variable item derived from student assessments surpass the threshold of 0.70. This signifies that all variable items effectively measure the respective constructs they intend to assess. Notably, the highest outer loading for each variable item is found in EBD4, at 0.782. This implies that every change in the educational background variable will be reflected by (0.782 × 0.782 = 61.15%), SBE5 (0.821 × 0.821 = 67.40%), MEX4 (0.873 × 0.873 = 76.21%), EKN3 (0.803 × 0.803 = 64.48%), and EAS4 (0.795 × 0.795 = 63.20%).

The scores obtained for Cronbach’s alpha, rho A, and composite reliability for each variable exceed the stipulated minimum threshold. Hence, it can be deduced that Cronbach’s alpha, rho A, and composite reliability demonstrate commendable reliability. Furthermore, the assessment of convergent validity AVE, as depicted in **Table 3**, indicates that all AVE values surpass 0.50. Hence, it can be concluded that the measurement model evaluation of the convergent validity aspect is duly met (Hair et al., 2021).

Table 4 presents the assessment of discriminant validity at the variable level utilizing the Fornell-Larcker approach.

According to the Fornell-Larcker criterion, the square root of the AVE for educational background (0.852), which is higher than its correlations with spiritual beliefs

Table 3. The results of the reflective measurement model analysis

| Variable | Item variables | Outer loadings | Cronbach's alpha | Rho A | Composite reliability | AVE |
|-------------------------|----------------|----------------|------------------|-------|-----------------------|-------|
| Educational background | EBD1 | 0.744 | 0.829 | 0.829 | 0.879 | 0.593 |
| | EBD2 | 0.779 | | | | |
| | EBD3 | 0.774 | | | | |
| | EBD4 | 0.782 | | | | |
| | EBD5 | 0.773 | | | | |
| Spiritual beliefs | SBE1 | 0.766 | 0.857 | 0.858 | 0.897 | 0.636 |
| | SBE2 | 0.780 | | | | |
| | SBE3 | 0.805 | | | | |
| | SBE4 | 0.814 | | | | |
| | SBE5 | 0.821 | | | | |
| Media exposure | MEX1 | 0.765 | 0.831 | 0.830 | 0.888 | 0.666 |
| | MEX2 | 0.866 | | | | |
| | MEX3 | 0.753 | | | | |
| | MEX4 | 0.873 | | | | |
| Environmental knowledge | EKN1 | 0.775 | 0.840 | 0.840 | 0.886 | 0.610 |
| | EKN2 | 0.782 | | | | |
| | EKN3 | 0.803 | | | | |
| | EKN4 | 0.764 | | | | |
| | EKN5 | 0.780 | | | | |
| Environmental attitude | EAS1 | 0.778 | 0.848 | 0.848 | 0.892 | 0.622 |
| | EAS2 | 0.788 | | | | |
| | EAS3 | 0.791 | | | | |
| | EAS4 | 0.795 | | | | |
| | EAS5 | 0.791 | | | | |

Table 4. Descriptive correlation between variables and AVE (Fornell-Larcker criterion)

| Variable | EBD | SBE | MEX | EKN | EAS |
|----------|-------|-------|-------|-------|-------|
| EBD | 0.852 | | | | |
| SBE | 0.847 | 0.862 | | | |
| MEX | 0.837 | 0.858 | 0.816 | | |
| EKN | 0.826 | 0.832 | 0.784 | 0.835 | |
| EAS | 0.770 | 0.798 | 0.820 | 0.781 | 0.789 |

(0.847), media exposure (0.837), environmental knowledge (0.826), and environmental attitude (0.770). Similarly, the AVE for each spiritual belief, media exposure, environmental knowledge, and environmental attitude is higher compared to their correlations with other variables. Hence, the evaluation of discriminant validity based on the Fornell-Larcker criteria is accepted.

Cross-loading for all indicators/items of variables in **Table 5** shows that each measurement item correlates more strongly with the main variable it measures. This indicates that each variable shares stronger variance with its respective measurement items. Overall, the discriminant validity aspect at the measurement item level is fulfilled.

The results of hypothesis testing, path coefficient values, and item loadings for the research variables are presented in **Table 6** and **Figure 2**. This indicates that hypotheses **H1-H5**, and **H7** are accepted, suggesting that any change in these variables will significantly increase the influenced variables. However, hypothesis **H6** is rejected for the variable media exposure on

Table 5. Item variable (indicator) cross-loading

| | EBD | SBE | MEX | EKN | EAS |
|------|-------|-------|-------|-------|-------|
| EBD1 | 0.744 | 0.646 | 0.629 | 0.637 | 0.634 |
| EBD2 | 0.779 | 0.645 | 0.622 | 0.650 | 0.654 |
| EBD3 | 0.774 | 0.608 | 0.604 | 0.622 | 0.661 |
| EBD4 | 0.782 | 0.755 | 0.619 | 0.657 | 0.658 |
| EBD5 | 0.773 | 0.626 | 0.753 | 0.614 | 0.655 |
| SBE1 | 0.646 | 0.766 | 0.873 | 0.614 | 0.668 |
| SBE2 | 0.649 | 0.780 | 0.644 | 0.661 | 0.658 |
| SBE3 | 0.625 | 0.805 | 0.619 | 0.674 | 0.683 |
| SBE4 | 0.666 | 0.814 | 0.651 | 0.670 | 0.684 |
| SBE5 | 0.804 | 0.821 | 0.664 | 0.697 | 0.726 |
| MEX1 | 0.674 | 0.688 | 0.765 | 0.706 | 0.711 |
| MEX2 | 0.626 | 0.723 | 0.866 | 0.606 | 0.625 |
| MEX3 | 0.773 | 0.626 | 0.753 | 0.614 | 0.655 |
| MEX4 | 0.646 | 0.766 | 0.873 | 0.614 | 0.668 |
| EKN1 | 0.621 | 0.626 | 0.560 | 0.775 | 0.612 |
| EKN2 | 0.651 | 0.663 | 0.652 | 0.782 | 0.636 |
| EKN3 | 0.667 | 0.654 | 0.619 | 0.803 | 0.698 |
| EKN4 | 0.627 | 0.645 | 0.615 | 0.764 | 0.673 |
| EKN5 | 0.656 | 0.661 | 0.611 | 0.780 | 0.636 |
| EAS1 | 0.689 | 0.700 | 0.657 | 0.649 | 0.778 |
| EAS2 | 0.645 | 0.653 | 0.673 | 0.662 | 0.788 |
| EAS3 | 0.694 | 0.670 | 0.629 | 0.652 | 0.791 |
| EAS4 | 0.662 | 0.678 | 0.634 | 0.673 | 0.795 |
| EAS5 | 0.650 | 0.681 | 0.642 | 0.654 | 0.791 |

environmental knowledge ($t = 1.692 < 1.96, p = 0.05 > 0.091$).

The results of the R-squared analysis reveal that the combined influence of educational background, spiritual beliefs, and media exposure on environmental

Table 6. Data description: Mean, standard deviation, T-values, and p-values

| | Original sample (O) | Sample mean (M) | Standard deviation (SD) | T-statistics (O/SD) | p-values |
|------------|---------------------|-----------------|-------------------------|-----------------------|----------|
| EBD -> EKN | 0.387 | 0.390 | 0.059 | 6.572 | 0.000 |
| EBD -> EAS | 0.258 | 0.256 | 0.065 | 3.993 | 0.000 |
| SBE -> EKN | 0.413 | 0.411 | 0.068 | 6.119 | 0.000 |
| EBD -> EAS | 0.295 | 0.299 | 0.069 | 4.297 | 0.000 |
| MEX -> EKN | 0.104 | 0.102 | 0.061 | 1.693 | 0.091 |
| MEX -> EAS | 0.144 | 0.142 | 0.057 | 2.516 | 0.012 |
| EKN -> EAS | 0.264 | 0.263 | 0.052 | 5.050 | 0.000 |

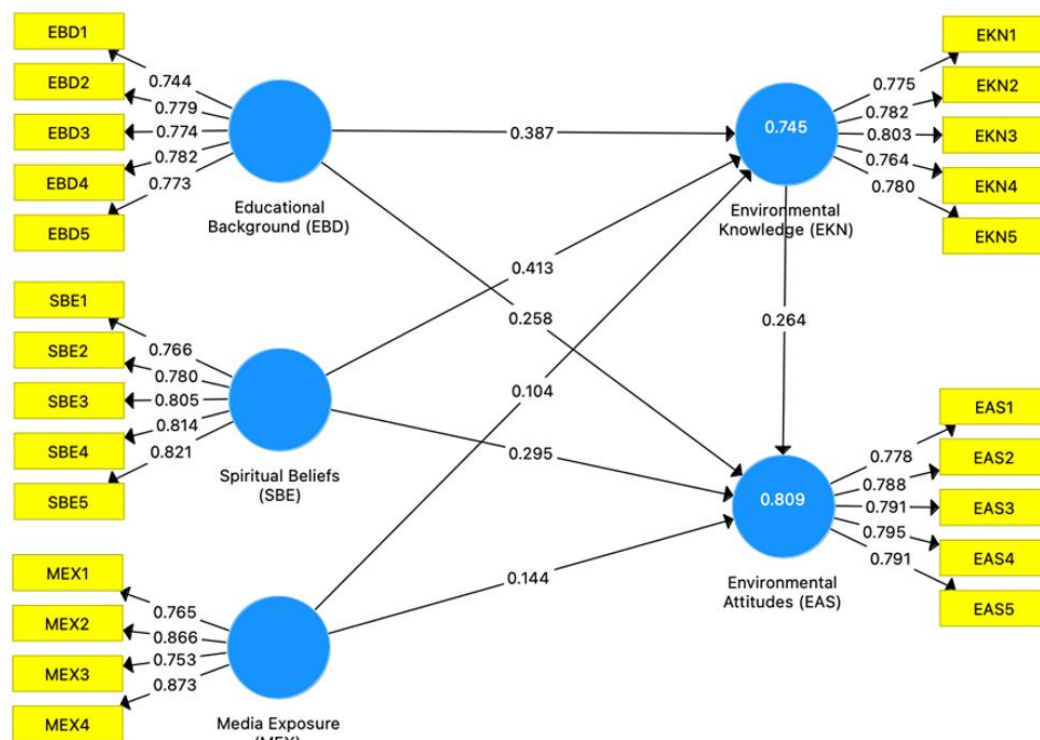


Figure 2. SEM analysis results (Source: Authors’ own elaboration, using SmartPLS 3.3.2)

knowledge is 74.5%, indicating a high level of influence. Similarly, the combined influence of educational background, spiritual beliefs, and media exposure on environmental attitude is 80.9%, also reflecting a high level of influence. These findings suggest that there exist additional factors that contribute to the shaping of both environmental knowledge and attitude.

DISCUSSION

The research findings unveil significant path coefficients between the independent variables (educational background, spiritual beliefs, and media exposure) and the dependent variables (environmental knowledge and attitude). For instance, the influence of educational background on environmental knowledge exhibits a path coefficient of 0.387, with a T-value of 6.572 and a significance level (p-value) of 0.000, indicating a strong positive influence. Similarly, the path coefficient for the impact of spiritual beliefs on environmental attitude is 0.295, with a T-value of 4.297 and a p-value of 0.000. Additionally, the R-squared values illustrate the model’s strength, with educational

background, spiritual beliefs, and media exposure collectively accounting for 74.5% of the variance in environmental knowledge and 80.9% of the variance in environmental attitude. These high percentages indicate that the studied factors play a crucial role in shaping the environmental knowledge and attitudes of non-Adiwiyata high school students.

The amalgamation of knowledge acquired through formal and non-formal education, alongside personal decision-making experiences and engagement in educational activities centered on environmental concerns, significantly bolsters the impact of the educational background variable on environmental knowledge and attitude. These findings align with prior research underscoring the pivotal role of education in fostering environmental awareness. Formal education enhances individuals’ understanding and foster proactive attitudes towards environmental conservation (Janmaimool & Khajohnmanee, 2019; Polonyová & Pongrácz, 2022). This study corroborates previous assertions by unveiling a strong positive correlation between educational background and both

environmental knowledge and attitude. The strong influence of educational background on environmental knowledge and attitude underscores the need to integrate comprehensive environmental education into school curricula. Such integration can equip students with the critical thinking and problem-solving skills necessary to address environmental challenges (Korkmaz et al., 2018; Ordaz et al., 2021).

Additionally, the significance of spiritual beliefs in shaping attitudes toward the environment is supported by Eom and Ng (2023), who noted that religious frameworks significantly guide individual and collective engagement in environmental issues. This research, which measures the influence of spiritual beliefs, supports these findings, demonstrating a significant impact on students' environmental attitudes. Furthermore, the substantial impact of spiritual beliefs suggests that incorporating environmental stewardship into spiritual and religious education can further enhance students' environmental attitudes (Eom et al., 2021; Shahida, 2023). The tangible actions undertaken to safeguard the environment, rooted in spiritual teachings, demonstrate a substantive impact on the spiritual belief variable (0.821). The identified influence of spiritual beliefs indicates that integrating ethical and moral reasoning related to environmental concern into educational programs can further strengthen students' commitment to environmental stewardship. This approach can foster a deeper, value-based commitment to environmental conservation among students (Eusebio, 2018; Highland et al., 2022; Omoyajowo et al., 2023).

However, this study also reveals differences from existing literature regarding the impact of media exposure. While Merenlender et al. (2016) and Schwass et al. (2021) advocated for the media's efficacy in disseminating environmental information, this study did not find a significant direct influence of media exposure on environmental knowledge. The moderate impact of media exposure on environmental knowledge suggests that while the media is a powerful tool for information dissemination, its efficacy may hinge upon the manner in which media strategies are deployed and amalgamated with other educational endeavors. The moderate influence of media exposure aligns with findings by Han and Xu (2020), who stated that its impact is often less direct compared to formal education and spiritual beliefs. Instead, its impact is more evident in shaping environmental attitudes, indicating that media is more effective at forming attitudes than merely conveying factual knowledge. This phenomenon can be attributed to media campaigns' emphasis on fostering emotional engagement and conveying value-laden messages, which effectively bolster students' attitudes toward environmental sustainability (Greenspan & Loftus, 2021; Trivedi et al., 2018). Hence, the strategy should boldly harness the potential of media, not solely

as a conduit for disseminating information, but also as a platform for fostering interactive, engaging, and enduring environmental education experiences, particularly in shaping knowledge (Rice & Miller, 2023).

Overall, this research offers valuable insights to inform the development of targeted interventions through educational development, spiritual engagement, and media to foster a holistic understanding and proactive attitudes towards the environment among the younger generation. Good environmental knowledge and attitudes emerge as a result of prioritizing the development of educational background, spiritual beliefs, and media exposure during the course of schooling. The results align with several studies indicating that European and American societies are highly supportive of environmental policies, such as the European green deal and the United States' ongoing dialogue that emphasizes the importance of fostering environmental awareness in students from an early age. Understanding the influence of education, spirituality and media, can help Asian, European, and American stakeholders in continuously improving their educational strategies to promote proactive environmental behavior among young people, which ultimately contributes to global sustainability efforts. Furthermore, by prioritizing the enhancement of students' environmental knowledge, educational institutions can directly influence positive environmental attitudes (Li et al., 2024; Saltan & Divarci, 2017; Senarathne & Jayasinghe, 2021; Stefanis, 2024; Tagliapietra et al., 2023; Wang et al., 2022). This suggests that education not only enhances knowledge but also translates into actionable behaviors that contribute to environmental conservation (Patwary et al., 2024). The implications of these findings are crucial for educators and policymakers aiming to improve environmental education, particularly in non-Adiwiyata schools.

CONCLUSION

The findings illustrate that educational background, spiritual beliefs, and media exposure among high school students play a crucial role in shaping environmental consciousness and behaviors, particularly in schools without specific environmental education programs. The study underscores the significant impact of educational background in enhancing environmental knowledge and fostering positive environmental attitudes. This emphasizes the necessity for educational institutions to integrate comprehensive environmental education into their curricula, equipping students with essential knowledge and skills to tackle environmental challenges effectively. Spiritual beliefs were found to significantly influence environmental attitudes, suggesting that. This suggests that incorporating environmental stewardship into spiritual and religious teachings could deepen students' commitment to environmental conservation. The study supports the

idea that spiritual and ethical considerations are integral to nurturing a proactive stance towards environmental issues among students.

The influence of media exposure on environmental attitudes, though significant, did not strongly impact environmental knowledge directly. This outcome indicates that while media is a potent tool for shaping attitudes, its effectiveness in enhancing factual environmental knowledge is less pronounced. The study suggests optimizing media strategies to more effectively combine information dissemination with engagement techniques that resonate emotionally and ethically with students.

Overall, the research highlights the synergistic potential of education, spirituality, and media in molding environmentally conscious attitudes and knowledge among students. These insights are invaluable for developing targeted educational policies and programs aimed at fostering a generation that is well-versed and proactive in addressing environmental issues.

Limitations

The research acknowledges several limitations that could influence the generalizability and the interpretation of the findings. One of the primary constraints is the use of a non-experimental, cross-sectional design, which, while effective for capturing a snapshot of variables at one point in time, limits the ability to determine causality among the educational background, spiritual beliefs, and media exposure in shaping environmental knowledge and attitudes.

Furthermore, the research was conducted in a single geographic location at MAN Pangkep Indonesia, with participants from non-Adiwiyata schools, which are schools not specifically oriented towards environmental education. This specific demographic and educational setting may not represent the broader population of students, especially those from schools with strong environmental programs or different cultural backgrounds.

These limitations suggest that while the findings provide valuable insights into the factors influencing environmental attitudes among high school students, further research using longitudinal, multi-location studies with diverse educational settings could enhance understanding and provide a more comprehensive perspective of the factors influencing environmental attitudes and knowledge across different populations.

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Ethical statement: The authors stated that ethical considerations were meticulously upheld to ensure the integrity and ethical

conduct of in the study. The participation of high school students from MAN Pangkep, Indonesia, was strictly voluntary, with all participants providing informed consent, in accordance with ethical guidelines for research involving human subjects. To further safeguard the confidentiality and privacy of the participants, all data collected through the structured questionnaires was anonymized before analysis. The authors further stated that the questionnaires themselves were designed with careful attention to ensure clarity and avoid potential biases or misunderstandings, and they underwent rigorous validation and reliability assessment with input from academic experts. This thorough approach underscores the commitment to ethical research practices, aiming to minimize any potential harm or discomfort to the participants while enhancing the reliability and validity of the study findings.

Declaration of interest: No conflict of interest is declared by the authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

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