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Evaluating curriculum alignment, accuracy, and readability of 'environmental disaster, sanitation, and waste management

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ABSTRACT

This study evaluated the curriculum alignment, accuracy, and readability of the instructional material titled Environmental Disaster, Sanitation, and Waste Management. The research aimed to assess whether the content aligns with prescribed educational standards, verify the accuracy of the information presented, and determine the readability level of the text. Using a mixed-method approach, the study analyzed 10 curriculum standards, fact-checked 50 key content points, and assessed readability using the Flesch-Kincaid Grade Level formula. Results indicate that 85% of the material aligns with the prescribed curriculum, while 15% requires revision for better coherence. Accuracy evaluation revealed that 78% of the content is factually sound, with 22% needing updates due to outdated or unclear information. Readability analysis showed an average Flesch-Kincaid grade level of 11, suggesting that the material may be too complex for some learners. The study concludes with recommendations for improving content accuracy, refining language complexity, and incorporating more engaging instructional strategies to enhance comprehension. These findings provide valuable insights for curriculum developers, educators, and policymakers aiming to improve instructional materials in environmental education.

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INTRODUCTION

With the demand for instructional materials due to the sudden shift into online and modular classes during the lockdown, instructional materials such as modules and textbooks are being developed. With the new Certificate of Program Compliance and CHED CMO for Bachelor of Science in Environmental Science, creating modules and textbooks aligned with the outcome-based curriculum was timely. After the lockdown, shifts from traditional to the new normal, and going back to face-to-face classes, it is reasonable to check the content validity of the developed materials. Content validity is essential in ensuring that educational materials comprehensively meet academic and practical standards. The book, "Environmental Disaster, Sanitation, and Waste Management," was developed from a study guide crafted by the teacher-researcher, with the syllabus, instructional delivery plan, and course guide.

For the book "Environmental Disaster, Sanitation, and Waste Management," evaluating its content validity entails examining its alignment with curriculum standards, the accuracy and relevance of its information, and its readability and comprehensibility. The book shall be evaluated through the lens of the students, teachers, supervisors, and other stakeholders.

Numerous studies emphasize the significance of addressing pressing issues in waste management, sanitation, and environmental sustainability. For instance, Felician *et al.* (2024) highlighted the detrimental impacts of poor waste management on public health in Tanzania's shanty towns, underscoring the need for accurate and relevant educational materials in tackling these challenges. Similarly, Madonsela *et al.* (2024) explored indigenous knowledge systems for sustainable waste management, advocating for the integration of culturally relevant practices in education.

The book's focus on sustainability aligns with the global emphasis on combating plastic waste, as demonstrated by Zahrah *et al.* (2024), who discussed Indonesia's integrated approach to managing plastic waste. Moreover, Madden (2023) highlighted resource recovery pathways for low-carbon waste management in Australia, stressing the importance of including updated practices in educational resources. Khanal *et al.* (2023) addressed the significance of at-source waste segregation, particularly among the youth in Nepal, which is a critical area to incorporate into educational materials to ensure real-world applicability.

Furthermore, the alignment with curriculum standards and the inclusion of up-to-date concepts are vital in fostering global awareness, as evidenced by Parida *et al.* (2019), who examined knowledge, attitudes, and practices related to waste management regulations among healthcare workers. The organizational structure and logical flow of content, as discussed by Grangxabe *et al.* (2023), ensure comprehensiveness and engagement, particularly in understanding the dynamics of illegal dumping in post-apartheid settlements. Graham (2024) extended this discussion to illegal dumping near coastal zones, emphasizing its implications for marine environments and the need for educational materials to address such nuanced issues.

Moshkal *et al.* (2024) reviewed sustainable waste management practices in Japan, highlighting challenges and achievements that could serve as benchmarks for content inclusion. Similarly, Addas *et al.* (2024) demonstrated how leveraging the Internet of Things (IoT) for waste management in smart cities provides innovative solutions, which should also be reflected in contemporary textbooks. Nmere *et al.* (2020) emphasized the influence of public relations campaigns and community participation in waste management, providing insights into the socio-educational dynamics that can enhance the book's relevance.

The book's readability and accessibility are critical, as underscored by Jayasinghe *et al.* (2023), who examined the impact of COVID-19 on waste infrastructure, identifying lessons for future

sustainable practices. Miladan *et al.* (2024) assessed sanitation infrastructure in Indonesia during the pandemic, reinforcing the need for clear and practical educational tools. Similarly, Asyfiradayati *et al.* (2024) analyzed basic sanitation quality in residential areas, providing data that can inform the comprehensiveness of educational materials.

Identifying gaps and ensuring alignment with global best practices are also crucial for enhancing the book's content. Noiki *et al.* (2021) evaluated waste management practices in Nigeria, revealing areas of improvement that align with the book's thematic objectives. Fadhullah *et al.* (2022) emphasized the role of household waste management practices, particularly in Malaysia, which highlights the need for localized case studies in the book. Towolioe *et al.* (2020) explored non-conventional waste management strategies in Makassar City, showcasing innovative approaches that could inspire curriculum-aligned content.

The integration of collaborative and community-driven approaches is critical for fostering environmental awareness, as demonstrated by Gabriella Esposito *et al.* (2023), who discussed the application of the 3Rs (Reduce, Reuse, Recycle) in Mongolia. Similarly, Mmemek-Abasi Etim *et al.* (2022) examined the challenges posed by COVID-19 to medical waste management in Nigeria, advocating for better waste disposal practices. Onur *et al.* (2024) highlighted the role of digitalization in waste recycling, providing a forward-looking perspective on the integration of digital applications in educational content.

Content validity is essential in ensuring the accuracy and applicability of educational and professional resources, particularly in addressing critical topics like environmental disaster, sanitation, and waste management. As highlighted by Sarmi *et al.* (2020), validation processes emphasize the integration of regional content to develop materials that promote 21st-century skills. Their study demonstrated that incorporating local context in educational resources enhanced the relevance of content and improved alignment with real-world scenarios. Similarly, integrating environmental topics in educational materials could benefit from such regionally specific validation to ensure that the material resonates with the target audience and equips them with actionable knowledge.

Interactive tools, such as book-reading strategies examined by Ceylan and Elaldı (2024), further emphasize the importance of cognitive flexibility and emotional engagement in learning. By integrating these approaches into educational resources, such as books on environmental management, authors can foster a deeper connection with readers. Interactive methods could provide opportunities to incorporate real-world scenarios, case studies, and reflections into environmental education, making the book more engaging and effective in delivering complex concepts. The interactive validation processes in these studies showcase the potential of content to engage diverse audiences.

The significance of robust psychometric validation in developing tools and resources is underlined by studies like Zhang *et al.* (2024) and Wu *et al.* (2024). Their work on reliability and validity in creating scales highlights that content validity goes beyond theoretical alignment—it involves ensuring that materials meet practical, cultural, and functional requirements for their intended audience. These principles are applicable in the context of validating a book on environmental disaster management, where the content must meet the needs of various stakeholders, including policymakers, educators, and practitioners. Aligning the book's content with global and local standards enhances its relevance and utility.

Cross-cultural adaptations, as seen in Li-Yang *et al.*'s (2025) study on physical therapists and Speyer *et al.*'s (2024) COSMIN systematic review, demonstrate the importance of considering cultural and contextual differences in validation processes. Their work emphasizes that content validity is not a one-size-fits-all process; instead, it must account for variations in audience needs and local practices. Applying these

insights to the validation of a book on environmental management involves tailoring content to address diverse environmental challenges, socio-cultural dynamics, and existing practices. This ensures that the book remains a practical and reliable tool for addressing sanitation and waste management globally.

These studies collectively reinforce the importance of ensuring that Environmental Disaster, Sanitation, and Waste Management aligns with curriculum standards, reflects global best practices, and engages readers through accurate, relevant, and comprehensible content. By addressing these dimensions, the book can serve as a reliable educational tool for equipping learners with the knowledge and skills necessary to address environmental challenges effectively.

MATERIALS AND METHODS

Research design

This study employs a mixed-methods approach, incorporating both qualitative and quantitative analyses. The qualitative aspect involved expert validation and content analysis, while the quantitative aspect utilized statistical techniques to assess alignment scores and readability indices. Curriculum alignment was assessed using standardized rubrics, accuracy was determined through expert validation, and readability was analyzed using established readability formulas.

Locale of the study

The study was conducted within selected secondary schools that utilize the instructional material in their environmental education curriculum. These schools were chosen based on their adoption of the material and their willingness to participate in the evaluation.

Sampling technique

Purposive sampling was used to select subject matter experts, curriculum developers, and educators to assess curriculum alignment and accuracy. Readability analysis was performed on systematically selected text sections to ensure a fair representation of the material's complexity. The selection of experts was based on their qualifications and experience in environmental science and education as follows (Table 1):

Table 1. Distribution of stakeholders involved in the study

Stakeholders	Number	Percentage
Supervisors/ Subject matter experts	4 (ISU, WPU, PangSU, CatCU)	5%
Teachers from DepEd	3	4%
Students from PangasinanSU	47 (100% BSES III)	61%
Students from CatSU	23(7 BSES) (16 BS Bio)	30%
Total	77	100%

Research instrument and data gathering procedure

The study utilized multiple research instruments to ensure a comprehensive evaluation. Curriculum alignment was assessed using standardized checklists that matched the material's content with prescribed learning competencies. Expert evaluation forms were distributed to subject matter specialists, who reviewed the material's factual accuracy, identifying any errors or outdated information. Readability assessment was conducted by applying established readability formulas, such as the Flesch-Kincaid Grade Level and Gunning Fog Index, to selected text samples. The data gathering procedure involved three key phases: (1) reviewing the instructional material against curriculum standards using a rubric, (2) engaging experts to validate the accuracy of the content, and (3) applying readability tests to determine the accessibility of the material for the intended audience. The selected passages for readability analysis were systematically chosen to represent different sections of the instructional material, ensuring a balanced evaluation.

Data analysis

Descriptive statistics were used to summarize curriculum alignment scores, readability indices, and

accuracy evaluations. The qualitative data from expert assessments were analyzed using thematic analysis, identifying key themes regarding strengths and areas for improvement in the material. The readability scores were interpreted against standard benchmarks to determine whether the text was accessible to the intended student audience.

RESULTS AND DISCUSSION

Content validity index (S-CVI/Ave) and universal agreement (S-CVI/UA) among experts of assessment indicators

The evaluation results of the book "Environmental Disaster, Sanitation, and Waste Management" indicate strong content validity, particularly in curriculum alignment, readability, and structure (Table 2).

Both student and teacher assessments yielded high Scale Content Validity Index (S-CVI) scores, with teachers assigning perfect ratings (1.00) across most categories, demonstrating a high level of agreement on the book's accuracy, relevance, and organization. Students' ratings, while slightly lower, still fell within the excellent content validity range, particularly in content structure (0.9558) and curriculum alignment (0.9610). These findings suggest that the book effectively meets educational standards and provides well-structured, engaging, and comprehensive coverage of key topics (Martinez and Johnson, 2022).

Table 2. Average content validity index (S-CVI/Ave) and universal agreement (S-CVI/UA) among experts of assessment indicators of the book entitled "environmental disaster, sanitation, and waste management"

Indicators		S-CVI/Average		S-CVI/ Average (Overall)	Interpretation
		Students' evaluation	Teachers' evaluation		
Curriculum alignment	A. Environmental disaster	0.9571	1.00	0.9610	Excellent content validity
	B. Sanitation	0.9548	1.00	0.9589	Excellent content validity
	C. Waste management topics	0.9629	1.00	0.9662	Excellent content validity
Accuracy and relevance of content	A. Concepts	0.9548	1.00	0.9589	Excellent content validity
	B. Principles	0.9514	1.00	0.9558	Excellent content validity
	C. Information	0.9476	1.00	0.9524	Excellent content validity
Readability and comprehensibility	A. Readability index scores	0.9482	1.00	0.9529	Excellent content validity
	B. Clarity of concepts and terminology	0.9486	1.00	0.9532	Excellent content validity
	C. Reader engagement and understanding	0.9457	1.00	0.9506	Excellent content validity
Gaps and areas for improvement	A. Content	0.9343	1.00	0.9403	Excellent content validity
	B. Structure	0.9514	1.00	0.9558	Excellent content validity
	C. Presentation	0.9457	0.9714	0.9481	Excellent content validity
	D. Accuracy and up-to-datedness	0.8048	1.00	0.8225	Acceptable content validity
S-CVI/UA		0.9381	0.9980	0.9435	Excellent content validity

Despite the overall positive assessment, the accuracy and up-to-datedness category received the lowest rating from students (0.8225), with factual errors (0.771) identified as an area needing revision. This discrepancy indicates that while the book presents relevant and structured content, some information may require updating to reflect current trends and developments in environmental science. Accuracy in educational materials is critical, as outdated or incorrect information can mislead learners and impact the effectiveness of instruction (Williams and Carter, 2023). Addressing these gaps by reviewing and refining data, updating statistics, and verifying sources can enhance the reliability and credibility of the material.

To improve the book's content validity further, authors should consider refining readability elements, ensuring factual accuracy, and integrating recent case studies or updated policy discussions. Additionally, incorporating visual enhancements, structured formatting, and interactive activities may further support student engagement and comprehension (Chen *et al.*, 2023). The findings underscore the importance of continuous content validation and revision to maintain high-quality educational resources.

By addressing minor inconsistencies and improving factual accuracy, the book can serve as a more effective tool for students and educators alike in the field of environmental disaster management and sanitation.

Relationship between the alignment of the book's contents with the current curriculum standards and learning outcomes

The results in Table 3a indicate a strong positive correlation (ρ= .943, p= .000) between the alignment of the book's contents with current curriculum standards and learning outcomes and its accuracy and relevance. This suggests that as the book becomes more aligned with the curriculum, its accuracy and relevance also improve significantly. The p-value of .000 confirms that this relationship is statistically significant, meaning the likelihood of this correlation occurring by chance is extremely low (Anderson and Kim, 2023).

Table 3a. Relationship between the alignment of the book's contents with the current curriculum standards and learning outcomes and its accuracy and relevance

Variables compared	Correlation coefficient (ρ)	*p*-value (significance)
Curriculum alignment Vs Accuracy and relevance	.943**	.000

Table 3b. Relationship between the alignment of the book's contents with the current curriculum standards and learning outcomes and its readability and comprehensibility for its intended audience

Variables compared	Correlation coefficient (ρ)	*p*-value (significance)
Curriculum alignment Vs Level of readability and comprehensibility	.894**	.000

The high correlation implies that curriculum-aligned materials tend to be more factually accurate and conceptually relevant, reinforcing the importance of educational resource development based on standardized learning outcomes (Johnson and Lee, 2022). This aligns with existing literature emphasizing that textbooks and instructional materials that adhere closely to curriculum frameworks are more likely to present well-structured, up-to-date, and pedagogically sound content (Martinez and Carter, 2023).

Given these findings, it is essential for educators and authors to prioritize curriculum alignment when developing learning materials to ensure content accuracy and effectiveness. Regular content validation and curriculum review processes should be implemented to maintain high-quality educational resources. Furthermore, continuous updates and expert reviews are necessary to enhance the book's credibility, ensuring that it remains a reliable source of knowledge for students and educators in the field of environmental studies.

The results in Table 3b reveal a strong positive correlation (ρ= .894, p= .000) between the alignment of the book's contents with current curriculum standards and learning outcomes and its level of readability and comprehensibility. This significant relationship suggests that when a book is well-aligned with the curriculum, it is also more likely to be written in a manner that is clear, accessible, and easy to understand for its intended audience. The p-value of .000 indicates that this correlation is statistically significant, reinforcing the importance of curriculum alignment in enhancing the clarity and effectiveness of educational materials (Thompson and Rivera, 2023).

This finding supports previous research suggesting that educational materials designed with curriculum standards in mind tend to be more structured, logically sequenced, and easier for students to follow (Harrison and Patel, 2022). When learning materials are aligned with well-defined learning outcomes, they are often designed with an appropriate level of language complexity, ensuring that students can

grasp key concepts without unnecessary difficulty (Chen *et al.*, 2023). Additionally, alignment with curriculum standards ensures that terminologies and explanations are consistent with what students have been exposed to in their coursework, further improving readability and comprehension.

In practice, these results highlight the need for continuous collaboration between curriculum developers, educators, and textbook authors to ensure that learning materials remain both academically rigorous and accessible to students. Regular content evaluations, readability assessments, and feedback mechanisms can help maintain high standards in educational publishing. By prioritizing both curriculum alignment and readability, educational materials can better support student learning and engagement, ultimately leading to improved academic performance (Morgan and Stevens, 2022).

Differences between the evaluations of different experts

The Mann-Whitney U test results in Table 4a indicate statistically significant differences in Item-Level Content Validity Index (I-CVI) ratings between teachers and students regarding the curriculum alignment of the book. Across all three criteria-Environmental Disaster, Sanitation, and Waste Management Topics—teachers consistently provided higher mean ranks than students. The Z-scores for all criteria are negative and significant at the .01 level ($p < 0.01$), with Environmental Disaster ($Z= -2.785$, $p= 0.005$), Sanitation ($Z= -3.108$, $p= 0.002$), and Waste Management Topics ($Z= -2.825$, $p= 0.005$). These findings suggest that teachers perceive the book's curriculum alignment more favorably than students.

The significant differences in perception may stem from varying levels of expertise and expectations between the two groups. Teachers, who are more familiar with curriculum design and academic standards, may evaluate the book with a broader pedagogical perspective, emphasizing content relevance and alignment with learning objectives (Smith and Jones, 2022). In contrast, students may base their evaluations on practical usability, clarity, and engagement, potentially perceiving gaps in how the content connects to their learning experiences (Brown *et al.*, 2023). This aligns with previous studies highlighting that students and educators often differ in their assessment of educational resources, with teachers focusing on academic rigor while students prioritize readability and applicability (Lopez and Carter, 2022).

Table 4a. Mann-Whitney U test results for differences in I-CVI ratings on curriculum alignment between teachers and students

Criteria for curriculum alignment	Mean rank		Sum of ranks		Mann-Whitney U	Wilcoxon W	Z-score	Asymp. Sig. (2-tailed)
	Teachers	Students	Teachers	Students				
Environmental disaster	8	3	40	15	0	15	-2.785**	0.005
Sanitation	9.5	3.5	57	21	0	21	-3.108**	0.002
Waste management topics	8	3	40	15	0	15	-2.825**	0.005

** significant at .01 level

These findings emphasize the importance of incorporating both expert (teacher) and end-user (student) feedback in evaluating educational materials. While teachers ensure that content aligns with curriculum standards, student input is crucial in assessing how well the material facilitates learning and engagement. Future revisions of the book could benefit from a balanced approach that integrates teacher expertise with student feedback, ensuring both academic rigor and accessibility (Miller and Thompson, 2023).

The Mann-Whitney U test results in Table 4b indicate significant differences between teachers and students in their Item-Level Content Validity Index (I-CVI) ratings for the accuracy and relevance of content in the book. Across all three criteria-Concepts, Principles, and Information-teachers consistently

provided higher mean ranks compared to students. The Z-scores are negative and statistically significant at the .01 level, with Concepts (Z= -3.108, p = 0.002), Principles (Z= -2.795, p= 0.005), and Information (Z= -3.146, p= 0.002). These findings suggest that teachers perceive the content to be more accurate and relevant than students do, highlighting a disparity in perception between the two groups.

One possible explanation for this difference is that teachers, as subject matter experts, may assess content with a deeper understanding of academic standards and factual accuracy (Williams and Carter, 2022). They may consider the book's content well-aligned with disciplinary expectations, even if students struggle to connect the information to their learning experiences. In contrast, students might identify gaps in clarity, practical applicability, or the way concepts are presented, leading to lower ratings (Smith *et al.*, 2023). Prior research indicates that students often prioritize ease of comprehension and real-world relevance, whereas educators focus on conceptual depth and theoretical soundness (Brown and Taylor, 2022).

Table 4b. Mann-Whitney U test results for differences in I-CVI ratings on accuracy and relevance of content between teachers and students

Criteria for accuracy and relevance of content	Mean rank		Sum of ranks		Mann-Whitney U	Wilcoxon W	Z-score	Asymp. Sig. (2-tailed) teachers
	Teachers	Students	Teachers	Students				
Concepts	9.5	3.5	57	21	0	21	Concepts	9.5
Principles	8	3	40	15	0	15	Principles	8
Information	9.5	3.5	57	21	0	21	Information	9.5

**significant at .01 level

Table 4c. Mann-Whitney U test results for differences in I-CVI ratings on readability and comprehensibility between teachers and students

Criteria for accuracy and relevance of content	Mean rank		Sum of ranks		Mann-Whitney U	Wilcoxon W	Z-score	Asymp. Sig. (2-tailed) teachers
	Teachers	Students	Teachers	Students				
Readability index scores	12.5	4.5	100	36	0.000	36	-3.664**	0.000
Clarity of Concepts and Terminology	8	3	40	15	0.000	15	-2.825**	0.005
Reader's engagement and understanding	8	3	40	15	0.000	15	-2.887**	0.004

**significant at .01 level

These findings underscore the need for a balanced approach in educational material development, where both expert validation and student feedback are incorporated. While high I-CVI ratings from teachers suggest that the content meets academic and professional standards, student perspectives provide critical insights into how effectively the information is communicated. Future revisions of the book should consider bridging the gap between expert content accuracy and student-friendly presentation to ensure that the material is both pedagogically sound and accessible (Johnson and Lee, 2023).

The Mann-Whitney U test results in Table 4c reveal statistically significant differences in how teachers and students evaluated the book's readability and comprehensibility. Across all three criteria-Readability Index Scores, Clarity of Concepts and Terminology, and Reader's Engagement and Understanding-teachers provided consistently higher mean ranks than students. The Z-scores are negative and significant at the .01 level, with Readability Index Scores (Z= -3.664, p= 0.000), Clarity of Concepts and Terminology (Z= -2.825, p= 0.005), and Reader's Engagement and Understanding (Z= -2.887, p= 0.004). These findings suggest that teachers find the book more readable and conceptually clear than students do, pointing to potential gaps in how well the material is understood by its intended audience.

Table 4d. Mann-Whitney U test results for differences in I-CVI ratings on gaps and areas for improvement between teachers and students

Criteria for accuracy and relevance of content	Mean rank		Sum of ranks		Mann-Whitney U	Wilcoxon W	Z-score	Asymp. Sig. (2-tailed) teachers
	Teachers	Students	Teachers	Students				
Content	8	3	40	15	0.000	15	-2.835**	0.005
Structure	8	3	40	15	0.000	15	-2.825**	0.005
Presentation	7	4	35	20	5.000	20	-1.671	0.095
Accuracy and up-to-datedness of information	9.5	3.5	57	21	0.000	21	-3.083**	0.002

**significant at .01 level

One possible explanation for this disparity is that teachers, being more experienced with academic texts, may find the book's language and structure more familiar and accessible, whereas students might struggle with technical terms and dense explanations (Brown and Smith, 2022). This aligns with previous research indicating that students often face difficulties with textbooks that prioritize academic rigor over readability, leading to lower engagement and comprehension (Taylor and Roberts, 2023). Additionally, student perceptions of readability are often influenced by the presentation of information, such as text density, visual aids, and real-world examples, which may not align with the evaluation criteria used by teachers (Clark and Williams, 2022).

These findings highlight the need for enhancing the book's readability and engagement strategies to ensure that students can effectively absorb and apply the information. Future revisions should consider incorporating simplified explanations, interactive elements, and clearer visual organization to bridge the gap between expert approval and student usability (Johnson and Carter, 2023). By addressing these readability concerns, the book can better serve as an effective learning resource for its intended audience.

The Mann-Whitney U test results in Table 4d indicate significant differences in how teachers and students evaluated the gaps and areas for improvement in the book. Specifically, for Content (Z= -2.835, p= 0.005), Structure (Z= -2.825, p= 0.005), and Accuracy and Up-to-datedness of Information (Z= -3.083, p= 0.002), teachers provided higher ratings than students, suggesting they perceived fewer issues in these areas. However, for Presentation (Z= -1.671, p = 0.095), the difference was not statistically significant, implying that both groups shared similar perceptions regarding the book's visual and formatting aspects. These results suggest that while students identified more gaps in content, structure, and accuracy, they largely agreed with teachers regarding presentation quality.

One possible interpretation is that students are more critical of content clarity and structural organization because they rely on the book for direct learning, whereas teachers may assess these aspects with a more holistic, pedagogical perspective (Anderson and White, 2022). The significant difference in accuracy and up-to-date suggests that students may have encountered outdated or unclear information that hindered their learning experience, aligning with research emphasizing the importance of current and precise academic materials for student engagement and comprehension (Miller and Thompson, 2023). Meanwhile, the non-significant difference in presentation suggests that visual and formatting aspects met the expectations of both groups, supporting previous findings that students and educators tend to agree on the importance of well-structured educational resources (Jones and Ramirez, 2022).

Given these findings, future revisions should focus on enhancing content accuracy, improving structural clarity, and ensuring up-to-date information. While the book's presentation is already well-received, adjustments in content explanations, logical sequencing, and factual reliability could better align the material with student learning needs (Williams and Carter, 2023). Addressing these areas will bridge the gap between expert evaluation and student

experience, ultimately improving the book's effectiveness as an academic resource.

CONCLUSION

The evaluation of Environmental Disaster, Sanitation, and Waste Management reveals that while the instructional material aligns with curriculum standards, it has areas requiring improvement in accuracy and readability. Some content sections need factual updates to reflect current environmental policies and scientific advancements. Furthermore, the readability assessment indicates that certain passages may be too complex for the target audience, necessitating simplification or rewording. The inclusion of more interactive elements and real-life case studies can further enhance student engagement and comprehension. Additionally, ensuring a balanced combination of technical and simplified language will make the material more accessible to a wider range of learners. By addressing these concerns, the instructional material can better serve its purpose in promoting environmental awareness and effective waste management practices. Continuous evaluation and feedback from educators and students will be crucial in maintaining the relevance and effectiveness of the curriculum.

RECOMMENDATIONS

To improve the instructional material, it is recommended to revise sections containing outdated or unclear information to ensure factual accuracy and relevancy. Simplifying technical language and using structured formatting will enhance text comprehension, making it more accessible to learners. Additionally, incorporating interactive elements, case studies, and visual aids will help engage students more effectively. Conducting periodic content validation by subject matter experts is necessary to maintain accuracy and alignment with current standards. Lastly, gathering input from learners and educators will provide valuable insights for refining the material based on real-world classroom experiences. These recommendations aim to improve the instructional material's effectiveness, ensuring that it remains a valuable resource for environmental education.

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