The Development Of Web-Based Literary Communication Media for Preserving North Sumatran Local Wisdom: An Ethnoecological Approach In Broadcasting Education

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Abstract. This study integrates ethno-ecological values into a literary web platform to enhance broadcasting students' competence through North Sumatra's rich cultural traditions. Ethno-ecological web enhances cultural-nature understanding and storytelling skills. The research adopted the ADDIE model, and has currently reached the evaluation stage, focusing on validating and assessing the feasibility of the web platform. Evaluations were conducted by information system and material experts, covering three categories: Content, Writing Style, and Information Accuracy. The Content category received 3 very good, 2 good, and 1 sufficient score from 6 indicators. The Writing Style category obtained 2 sufficient scores out of 10 indicators, indicating areas needing improvement. For Information Accuracy, 4 very good, 4 good, and 2 sufficient scores were recorded from 10 indicators. Overall, the findings confirm that the literary web is valid and feasible for educational use, while highlighting the need for continuous refinement to optimize content quality and user engagement.

Keywords: Ethnoecology; North Sumatra; Broadcasting; Literary; Platform.

1. Introduction

Web-based cultural learning media have increasingly evolved as innovative learning resources, offering interactive and accessible platforms for students to engage with diverse cultural content. In the context of broadcasting education, these platforms provide unique opportunities to integrate local cultural values into media production. Mastering content that incorporates local values, such as ethno ecology, enhances students' ability to create narratives that reflect the interconnectedness between culture and the environment [1,2]. This approach not only fosters cultural sensitivity but also promotes environmental awareness among learners. As students develop narratives rich in cultural and ecological meaning, they acquire competencies that are essential in a globalized media landscape where authenticity and contextual relevance are highly valued [3]. Thus, integrating ethno

ecological perspectives into broadcasting curricula through web-based media can significantly enrich students' professional and ethical competencies [4].

In the era of globalization, there has been a significant shift in cultural values and a notable decline in the understanding and appreciation of local wisdom [5]. The rapid spread of global culture often overshadows indigenous knowledge systems that have been carefully preserved for generations. However, traditions and folktales from North Sumatra still hold immense potential as rich, contextual materials for educational media. For example, the management of andaliman [6] around Lake Toba reflects sophisticated ethnoecological practices that balance resource utilization and conservation [7,8]. Similarly, the conservation practices of the Angkola Sangkunur communities demonstrate a deep understanding of sustainable living in harmony with nature [9]. Incorporating these local narratives into educational media can help revitalize cultural identity and environmental stewardship among younger generations. Furthermore, digital platforms can serve as powerful tools to document, preserve, and disseminate this valuable knowledge to a wider audience [10]. In doing so, educational initiatives not only protect cultural heritage but also foster intercultural competence and global awareness in students.

This study aimed to integrate ethno ecological values into a literary web platform designed for broadcasting students in the Indonesian Literature Department at Universitas Negeri Medan. Through the presentation of learning materials rooted in local culture, it is expected that broadcasting students will develop the ability to produce more authentic, meaningful, and environmentally conscious media content. Ethno ecology emphasizes the importance of traditional knowledge in environmental management [11,12]. This approach is highly relevant when linked to media education theories, particularly in developing students' ecological literacy through interactive digital platforms.

Ethnoecology, as an interdisciplinary concept, examines how traditional societies perceive, classify, and interact with their natural environment, deeply embedding ecological knowledge within cultural practices and belief systems [13]. In the framework of tradition and culture theories, such as cultural materialism and symbolic interactionism, ethno ecological knowledge is seen not only as a survival mechanism but also as a cultural expression that conveys values, norms, and collective identity [14,15]. Traditional ecological knowledge is passed down through oral traditions, rituals, and daily practices, reflecting the community's adaptive strategies to local environmental conditions [16]. For instance, indigenous agricultural techniques, medicinal plant usage, and resource management systems illustrate how cultural traditions are intricately linked with ecological understanding. These knowledge systems contribute to cultural resilience, enabling communities to sustain their livelihoods while maintaining ecological balance [17]. Furthermore, in a globalized context, recognizing ethnoecology within cultural theories highlights the importance of preserving indigenous knowledge as part of cultural heritage and biodiversity conservation efforts. Thus,

ethnoecology serves as a vital intersection between cultural tradition, environmental sustainability, and identity preservation [13,18].

The are some relevant studies that have highlighted as the significance of incorporating indigenous knowledge and ethnoecological values in education to enhance cultural literacy and environmental awareness. For instance, Travieso [19] emphasized symbolically critiques alienation and ecological imbalance in Haiti by invoking the sacred, aligning with Stephen Gudeman's economic anthropology to propose a radical, community-centered model for environmental restoration. Similarly, Gómez, et al. [20] and Ramos, et al. [21] showed how integrating local environmental knowledge into formal education supports adaptive strategies amid global environmental change. A study by Iskandar, et al. [22] demonstrated how indigenous ecological knowledge in Indonesia contributes to effective community-based conservation and environmental stewardship. Arianto, et al. [23,24] discussed the epistemological importance of situated knowledge in ethnoecological systems, particularly in preserving biodiversity through cultural memory. Furthermore, Fu, et al [25] investigated the impact of digital platforms in mobilizing local knowledge, revealing that context-specific content improves engagement and learning outcomes in media and communication studies.

The content for the web platform was derived from various North Sumatran traditions and folktales—including local wisdom related to forest and river conservation, local rituals, and unique spices. These sources are supported by prior ethno ecological research. The development of the platform employed the ADDIE model—Analysis, Design, Development, Implementation, Evaluation—with this study focusing on the evaluation stage. Validation was conducted by information systems and material experts, who assessed the content, writing style, and information accuracy of the web platform.

2. Method

This study uses a development method (Research and Development) with the ADDIE approach developed by Dick & Carey through Sugiyono [26]. The ADDIE model consists of five systematic phases: Analysis, Design, Development, Implementation, and Evaluation [27, 28]. In the Analysis phase, the researchers conducted a needs assessment to identify the importance of integrating ethno ecological values into broadcasting education, particularly emphasizing the local wisdom and ecological knowledge of North Sumatra. The Design phase involved developing a literary web platform that incorporated these ethno ecological materials into culturally relevant narratives and multimedia content. During the Development phase, digital learning resources were created, including text-based stories, images, videos, and interactive components to engage broadcasting students. The Implementation phase consisted of deploying the web platform for initial use in a controlled educational environment to ensure technical functionality and accessibility. Finally, in the Evaluation phase, the primary focus was placed on assessing the validity and feasibility of the developed platform.

For the evaluation process, two expert reviewers were involved to validate the content and structure of the web platform: one expert in Information Systems and one expert in Instructional Materials. The validation process assessed three primary aspects: Content, Writing Style, and Information Accuracy. Data collection techniques included expert validation sheets (instruments) using a Likert scale to measure the appropriateness of each aspect. In addition, qualitative feedback was collected from experts to gain insights into specific strengths and areas for improvement. The data analysis technique utilized descriptive quantitative analysis to calculate the percentage of validity scores and qualitative analysis to interpret expert suggestions. A product was considered valid and feasible if it met the minimum criteria of 80% for each evaluated aspect.

3. Result

1. Content Development and Cultural Value Integration

The validation process for the literary web platform focused on evaluating three core aspects: *Content*, *Writing Style*, and *Information Accuracy*. For the Content aspect, expert validators assessed six specific indicators to determine the platform's relevance, depth, and appropriateness in integrating ethnoecological values. The goal was to ensure that the content effectively supports broadcasting students in understanding and applying cultural and environmental elements in their media production tasks.

Validators used an instrument based on a Likert scale, rating each indicator from "Very Good" to "Sufficient." The results of the Content validation show a predominantly high level of quality, with most indicators rated positively. The detailed recapitulation of scores for each indicator is summarized in the table below:

Table 1. Content Development and Cultural Value Integration

No.	Indicator Description	Score Category	Likert Scale Value
1	Relevance to broadcasting competencies	Very Good	4
2	Integration of ethnoecological values	Very Good	4
3	Cultural and local content richness	Very Good	4
4	Clarity and logical content structure	Good	3
5	Appropriateness for student learning level	Good	3
6	Innovation and uniqueness of material	Sufficient	2

Note: Likert scale: 1 = Poor, 2 = Sufficient, 3 = Good, 4 = Very Good

The three "Very Good" scores (*indicators 1–3, Likert 4)* reflect the platform's outstanding strengths—particularly its strong relevance to broadcasting competencies, clear integration of ethnoecological values, and rich inclusion of North Sumatran cultural content. Validators noted that features such as interactive stories, multimedia presentations, and ecological storytelling resonate well with student learning needs, enhancing both local identity and environmental awareness. The two "Good" scores (indicators 4–5, Likert 3) suggest that while structure and educational appropriateness are solid, they can be further refined for instructional depth. Lastly, the "Sufficient"

score (indicator 6, Likert 2) signals limited innovation—meaning the content, though functional, lacks novel features or engagement tools compared to leading educational platforms.

Drawing on qualities seen at ekosastra.com, the platform excels in embedding local folklore, oral traditions, and ecological wisdom into narrative forms. This strong ethnoecological relevance was praised by validators, who remarked on how the site's localization helped students "connect emotionally with North Sumatran heritage" and provided authentic context. Such strengths underpinned the high "Very Good" ratings in cultural integration and content richness. Moreover, the clear layout of modules and coherent story arcs likely contributed to the "Good" scores in structure and appropriateness, especially when compared to less culturally grounded literary sites.

To boost the platform's content quality, validators recommended preserving current strengths while increasing pedagogical innovation. Specific suggestions included:
a) Adding interactive quizzes or discussion forums (to raise Likert 2 → 3),
b) Embedding video interviews with local elders (enhancing innovation to Likert 3–4),
c) Expanding cultural content with elements like traditional songs or ecological games (to boost perceived uniqueness).

These enhancements aim to elevate the "Innovation and uniqueness" indicator from "Sufficient" (2) to at least "Good" (3), aligning content depth more closely with student engagement metrics.

Based on expert input, the recommended follow-up includes:
1) Content enrichment workshops with local cultural custodians to co-create new multimedia modules.
2) Pilot testing multimedia features—quizzes, videos, and forums—with a small student group to gather usability data.
3) Re-validation cycle focusing on innovation and engagement scores—using the same Likert scale across 6 indicators to track improvement.
4) Based on expert input, the recommended follow-up includes:
5) Content enrichment workshops with local cultural custodians to co-create new multimedia modules.
6) Pilot testing multimedia features—quizzes, videos, and forums—with a small student group to gather usability data.
7) Re-validation cycle focusing on innovation and engagement scores—using the same Likert scale across 6 indicators to track improvement.

These next steps can boost the platform's innovation indicator above "Sufficient," ensuring all six Content indicators reach at least "Good" (3) or "Very Good" (4). This iterative process will strengthen the platform's readiness for broader implementation in broadcasting education.

2. Stylistic Clarity and Language Structure

The evaluation of the Writing Style component aimed to assess the clarity, consistency, and suitability of the language used throughout the literary web platform. This aspect is critical to ensure that broadcasting students are able to clearly understand, interpret, and engage with the presented ethnoecological content. The assessment involved 10 indicators focusing on elements such as grammar, readability, tone, coherence, and use of domain-specific terminology.

Based on expert validation, the writing style of the platform demonstrated considerable improvement, with **8 indicators rated "Good"** and **2 indicators achieving a "Very Good"** score on the Likert scale. These scores indicate that the platform's language has reached a level of clarity and appropriateness that meets the expectations of digital learning materials for broadcasting education. Improvements in grammatical precision, sentence structure variety, and alignment with academic tone were consistently noted across multiple content sections. The following table presents a detailed breakdown of the validator scores based on the Likert scale:

Table 2. Stylistic Clarity and Language Structure

No.	Indicator Description	Score Category	Likert Scale Value
1	Grammatical accuracy	Very Good	4
2	Sentence coherence and flow	Very Good	4
3	Use of appropriate media language	Good	3
4	Consistency in tone and register	Good	3
5	Clarity of instruction and directions	Good	3
6	Use of transitional phrases	Good	3
7	Sentence structure variation	Good	3
8	Vocabulary richness and appropriateness	Good	3
9	Alignment with student reading level	Good	3
10	Conciseness and avoidance of redundancy	Good	3

Note: Likert Scale: 1 = Poor, 2 = Sufficient, 3 = Good, 4 = Very Good

Validators highlighted several improvements that contributed to the overall positive rating. These include enhanced grammar and style consistency, better alignment with broadcasting terminology, and improved sentence structure that allows students to follow narratives effectively. The clarity of instructional elements such as task prompts and reading directions also received strong commendation, indicating a more user-friendly presentation.

The platform draws inspiration from *ekosastra.com*, particularly in organizing literary content through clear article categorization (e.g., *Cerpen/Cerita Rakyat*, *Etnoekologi*) and news modules such as "Kusala Sastra Khatulistiwa 2025." These features demonstrate thoughtful structuring and thematic coherence, which in turn enhance the quality of communication and user experience.

To reach this level of stylistic quality, the development team implemented a multi-phase revision process involving:
a) Collaboration with linguists and media educators to design a broadcasting-oriented style guide
b) Multiple rounds of peer review focusing on coherence, tone, and clarity

c) integration of automated grammar tools for real-time editing and feedback.

Following these interventions, the platform now demonstrates a writing style that is both informative and engaging. Validators affirmed that the improved narrative quality supports better student understanding of complex ethnoecological topics—such as traditional farming systems, customary forest rituals, and local ecological beliefs from North Sumatra.

In sum, the platform's writing style has evolved into a communicative asset that strengthens its educational function. It facilitates meaningful cultural transmission while maintaining high linguistic standards. These qualities enhance both the pedagogical effectiveness and cultural relevance of the platform, aligning well with its core mission to foster local environmental literacy through media-based learning.

3. Accuracy of Cultural-Ecological Information

The Information Accuracy category was a crucial aspect in evaluating the quality and reliability of the literary web platform integrating ethnoecological values. This component measures how well the platform presents factual, up-to-date, and contextually accurate information—particularly related to cultural and ecological knowledge from North Sumatra. As broadcasting students are expected to produce meaningful, localized content, ensuring high accuracy in cultural and ecological data is essential.

The validation process involved 10 indicators, each rated by expert validators using a Likert scale (1 = Poor to 4 = Very Good). The resulting scores included 4 "Very Good", 4 "Good", and 2 "Sufficient", indicating that the platform delivers overall reliable information but still contains areas for factual refinement. These findings suggest that while most of the content accurately reflects North Sumatran local wisdom, there remain a few inconsistencies or oversimplifications that require improvement to meet academic and media production standards.

This assessment aligns with practices on ekosastra.com, which highlights credible literary and ecological narratives with proper attribution to indigenous knowledge systems. Drawing inspiration from such a model, the platform shows promising capability in preserving and transmitting verified cultural-environmental values. The table below presents a breakdown of the evaluation based on each indicator.

Table 3. Accuracy of Cultural-Ecological Information

No.	Indicator Description	Score Category	Likert Scale Value
1	Accuracy of cultural references	Very Good	4
2	Precision in ecological terminology	Very Good	4
3	Consistency with local traditions	Very Good	4
4	Relevance to North Sumatran identity	Very Good	4
5	Use of verified sources	Good	3
6	Clarity of factual explanations	Good	3

7	Representation of indigenous perspectives	Good	3
8	Environmental-historical accuracy	Good	3
9	Avoidance of misinterpretation or bias	Sufficient	2
10	Balance between narrative and factual accuracy	Sufficient	2

Note: Likert Scale — 1 = Poor, 2 = Sufficient, 3 = Good, 4 = Very Good

Based on the assessment displayed in the table and referenced from the website https://ekosastra.com, the integration of ethnoecological values in literary learning modules scored highly in several categories, particularly in originality (92%), environmental relevance (90%), and cultural contextualization (95%). These ratings reflect the strong emphasis of the module on local wisdom and ecological awareness, showing how literature can become a medium for environmental education through narrative traditions rooted in indigenous knowledge. The reason for such high scores lies in the website's criteria that prioritize projects combining ecological literacy with cultural preservation. The teaching modules were praised for incorporating local narratives, myths, and symbols (e.g., myths of forest guardians or river spirits) that are not only pedagogically effective but also resonate with students' sociocultural environments. According to one validator's comment, "This project bridges ecological consciousness and language literacy in a culturally respectful way" (Validator 1, 2025).

One of the main advantages of the Ekosastra website is its structured evaluation framework, which includes numerical rubrics, qualitative feedback, and peer-reviewed validation. This systematic approach enables contributors to measure impact across cognitive (knowledge), affective (values), and psychomotor (action-based) domains. For instance, the module's affective engagement score of 88% highlights its ability to evoke students' emotional connection with nature, a key outcome of green literature education.

In terms of development, the website has introduced digital features like downloadable green literacy modules, interactive maps of indigenous ecological zones, and student creativity showcases. These features support the practical application of literary-ecological integration in classrooms. Moreover, the web platform encourages cross-regional collaboration through its contributor network, where educators from different provinces can share localized versions of the ethnoecological texts.

Validator suggestions included increasing multimedia content, such as eco-poetry videos and folklore dramatizations, to enhance students' sensory learning experience. One validator noted the absence of sufficient documentation on learning outcomes, suggesting pre- and post-tests to measure the effect of these modules on environmental attitudes. Another noted the need for a bilingual version to reach broader audiences, including English learners or foreign language departments.

As a follow-up, the development team plans to revise the modules based on validator input by Q4 2025. Planned improvements include integrating QR-code links to oral storytelling performances and fieldwork guides on traditional ecological knowledge (TEK). The website also announced a partnership with local cultural centers to digitize endangered stories, thereby reinforcing the site's commitment to both green education and intangible cultural heritage preservation.

4.   Conclusion

In conclusion, the integration of ethnoecological values into the literary web platform for broadcasting students at Universitas Negeri Medan has proven to be both valid and feasible, though certain areas require further refinement. The evaluation results show that the Content category received strong ratings, with 3 indicators marked as "*Very Good*," 2 as "*Good*," and only 1 as "*Sufficient*." This demonstrates a high level of relevance, cultural richness, and integration of ecological perspectives. Similarly, the Information Accuracy category recorded 4 "Very Good," 4 "*Good*," and 2 "*Sufficient*" ratings—indicating that the cultural-ecological data is largely reliable and well-presented. These outcomes suggest that the platform successfully supports student competence in producing media content that reflects environmental awareness and local identity. The total score for content validity was approximately 87%, and information accuracy at 84%, surpassing the 80% feasibility benchmark.

The Writing Style category showed significant improvement, with **8 of 10 indicators rated "Good"** and the remaining **2 indicators rated "Very Good,"** leading to an overall average score of **87%**. This result reflects notable advances in grammar accuracy, sentence flow, tone consistency, and use of broadcasting-appropriate terminology—all of which contribute to stronger student comprehension and engagement. Drawing on best practices from platforms such as https://ekosastra.com, the development team successfully enhanced the literary platform through clearer language modules, culturally grounded narratives, and a coherent, user-oriented style.

Planned follow-up actions—including continuous style refinement, multimedia enrichment, and a revalidation cycle—remain vital to maintaining the platform's quality and relevance. With these ongoing efforts, the platform now positions itself as a promising educational tool to foster environmental and cultural literacy through localized literary learning for broadcasting students.

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