

Critical Reading Materials Based on Buton Maritime Local Wisdom in the AI Era: A Cross-Institutional Study

Arsad

Department of Indonesian Language and Literature Education,
Universitas Muhammadiyah Buton, Baubau, Indonesia

Muslim

Department of Indonesian Language and Literature Education,
Universitas Muhammadiyah Buton, Baubau, Indonesia

Abdul Rajab

Department of Indonesian Language and Literature Education,
Universitas Muhammadiyah Buton, Baubau, Indonesia

Neylsa Nanda Safira

Department of Indonesian Language and Literature Education,
Universitas Muhammadiyah Buton, Baubau, Indonesia

Taslim

Department of Indonesian Language and Literature Education,
Universitas Muhammadiyah Buton, Baubau, Indonesia

Abstract: Although critical reading, local wisdom, and artificial intelligence literacy have each drawn increasing scholarly attention, previous studies tend to treat these elements separately within a single institution, leaving their combined implications for teaching-material development largely unexamined; this analysis examines them jointly across more than one institution. This study analyzes the needs for critical reading teaching materials based on Buton maritime local wisdom in the AI era across three universities in the Buton Islands. A convergent mixed-methods design integrated document assessment ($n = 9$), a student survey ($n = 63$; 19, 29, and 15 per institution), and interviews with three lecturers. The composite institutional indices were 61.8, 42.9, and 40.7 on a 100-point scale, one above and two at or below the 50-point threshold separating the Moderate and Low categories used in this study, while the semester-lesson-plan and teaching-material sub-indices ranged from 40.0 to 62.4. While 88.9% of the 63 students surveyed reported using ChatGPT and 82.5% relied on it for assignments, only 23.8% could verify its output, a gap lecturers echoed by describing current materials as supporting basic language competence more than systematic critical reading, local wisdom, or ethical AI use. These gaps in critical reading, cultural relevance, and AI-use guidance indicate a need for teaching materials that integrate Buton maritime local wisdom,

Correspondents Author:

Arsad, Department of Indonesian Language and Literature Education, Universitas Muhammadiyah Buton, Baubau, Indonesia
Email: arsadumbuton@gmail.com

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tiered critical reading activities, multimodal presentation, and AI literacy within a single pedagogical design, offering teaching-material developers and Indonesian-language lecturers an empirical foundation for materials that are contextual, humanistic, and responsive to AI-era learning challenges.

Keywords: Needs analysis, Critical reading, Buton maritime local wisdom, Artificial intelligence, Indonesian language teaching materials.

Introduction

Generative artificial intelligence is reshaping how students in higher education acquire, process, and apply academic information. Tools such as ChatGPT generate explanations and summaries within seconds, yet their output is not always accurate and is often delivered in a persuasive narrative that invites uncritical acceptance. This shift repositions students from passive recipients of information into active evaluators who must interpret, assess, and verify content before treating it as a basis for academic knowledge ([Macagno & Rapanta., 2019](#); [Rapanta & Macagno., 2023](#); [Wallace., 2003](#)). Because the ease of access to generative AI has outpaced students' capacity to evaluate the quality of the information it produces, critical reading has acquired an increasingly strategic role in higher education. Critical reading occupies a central position in the formation of academic reasoning, as it moves reading beyond information recognition toward the interpretation, evaluation, and testing of arguments at a higher order of thinking ([Luke., 2012](#)). This capacity nonetheless remains underdeveloped among students, whose reading tends to privilege literal comprehension over analysis and evaluation. Local wisdom offers one pathway for strengthening this capacity: texts rooted in students' own cultural experience deepen meaning-making and reflection while affirming learners' cultural identity as a legitimate resource for learning ([Apriyanto et al., 2026](#)). Recent studies similarly report that teaching materials grounded in local wisdom improve students' conceptual understanding and critical thinking skills ([Fitria & Handayani., 2024](#); [Ramadani., I., 2025](#)). This distance between generative AI's rapid uptake and students' underdeveloped evaluative capacity is particularly visible at three universities in the Buton Islands region. A survey of 63 students across these institutions found that ChatGPT was already used to search for references, understand course material, and complete assignments, yet the same students showed limited capability to verify the information it produced. A parallel review of the Indonesian-language teaching materials in use at the three institutions reinforces this picture: the document quality index for all three institutions fell below the level defined as adequate in the scoring rubric and varied unevenly, with composite institutional indices of 61.8, 42.9, and 40.7 on a 100-point scale and sub-indices for the semester lesson plans and teaching materials ranging from 40.0 to 62.4. Beyond a limited level of critical reading training, these materials

have yet to draw on the richness of Buton's maritime local wisdom, such as the philosophy of sabangka asarope and its associated shipping traditions, and offer little guidance on the academic use of artificial intelligence ([Christomy., 2011](#); [Malim & Tahara., 2022](#); [Tahara., 2016](#); [Tahara & Bahri., 2019](#); [Waworuntu et al., 2016](#)). What remains insufficiently explored, however, is how critical reading, local wisdom, and artificial intelligence literacy are addressed jointly, and whether the resulting picture of needs holds across more than one institutional context. Prior research linking artificial intelligence literacy to cultural or linguistic learning has largely been examined within individual institutional settings and has not been designed to reveal patterns that converge or diverge across settings ([Indramini et al., 2025](#)). Because student characteristics, learning practices, and the intensity of artificial intelligence use plausibly vary between institutions, a needs analysis confined to one setting risks yielding recommendations with limited applicability elsewhere. The cross-institutional, needs-analysis focus of the present study addresses this unresolved question by examining whether needs identified through documents, students, and lecturers converge across three higher-education settings in the Buton Islands. The contribution of this study lies in examining critical reading, Buton maritime local wisdom, and artificial intelligence literacy not as separate concerns but as elements addressed within a single, integrated needs analysis. The study therefore contributes an empirically grounded set of teaching-material requirements derived from cross-institutional evidence, rather than a validated instructional model. Practically, these findings provide a basis for developing critical reading teaching materials that are contextual to the Buton Islands region and responsive to students' actual use of generative AI. The resulting requirements link tiered critical reading practice, culturally grounded content, multimodal representation, and guided AI literacy. Given the limited and uneven number of student participants across the three institutions and the focus on ChatGPT as the most widely adopted generative AI tool among the participating students, the findings are best read as an initial, context-bound mapping of needs rather than a generalizable claim. This study aims to analyze the needs for critical reading teaching materials based on Buton maritime local wisdom in the AI era across three universities in the Buton Islands region. Three questions guide this inquiry: first, what is the current condition of the critical reading teaching materials in use at the three institutions; second, what patterns characterize students' use of artificial intelligence, specifically ChatGPT, in their learning activities; and third, what characteristics should teaching materials have to strengthen students' critical reading skills within this context. Taken together, these questions extend prior single-institution work by testing whether the same combination of needs holds when examined jointly and across more than one setting.

Research Method

Research Design

This study employed a mixed-methods approach with a convergent design to analyze the needs for critical reading teaching materials based on Buton maritime local wisdom in the context of artificial intelligence use in higher education. A needs analysis of this kind requires two complementary strands of information: the distribution and level of a condition, most accurately captured quantitatively, and the meanings, experiences, and reasons underlying that condition, which can only be explored qualitatively. The quantitative strand mapped patterns of artificial intelligence use and the availability of critical reading content in teaching materials, while the qualitative strand explained the experiences and needs underlying those patterns (Creswell., 2002; Munce et al., 2026; Younas et al., 2025). The convergent design was selected because both strands were collected during the same period and subsequently merged to produce an integrated picture of needs, following recommended procedures for designing and reporting mixed-methods studies (Munce et al., 2026). Integration was carried out by placing the quantitative result for each research question alongside its corresponding qualitative theme and examining where the two converged or diverged, rather than analyzing and reporting the two strands separately. The cross-institutional perspective further strengthens the needs analysis by allowing institution-specific differences and shared patterns to be examined together (Long., 2005). Rather than assuming that the needs are identical across settings, the comparison was used to identify which needs appeared consistently and which varied between institutions.

Location and Research Participants

The study was conducted at three universities in the Buton Islands region. To protect institutional and participant confidentiality, given the evaluative nature of the data collected, the three institutions are identified throughout this article as Institution 1MB, Institution 2KB, and Institution 3KB. The three were selected because each offers Indonesian-language instruction at the higher education level, operates within a closely related socio-cultural environment, and enrolls students with differing academic-field backgrounds; this combination of shared context and institutional variation was intended to reveal needs that are not confined to a single setting (Munce et al., 2026). Participation was voluntary and based on informed consent: the purpose, procedures, intended use of the data, and each participant's right to withdraw at any stage were explained to participating lecturers and students before data collection, and each confirmed their willingness to take part, consistent with the institutional anonymization described above to protect confidentiality. The quantitative

strand comprised all students enrolled in the Indonesian General Course during the semester in which data were collected, recruited through total sampling because the available population at each institution was relatively small. This procedure yielded 63 respondents: 19 from Institution 1MB, 29 from Institution 2KB, and 15 from Institution 3KB. Because total sampling was used, this distribution reflects each institution's actual enrollment rather than a deliberately balanced design; the smaller number of respondents from Institution 3KB in particular means that findings attributed to that institution are best read as indicative of its enrolled cohort, and all findings in this study are interpreted specifically in relation to the three participating institutions rather than generalized beyond them. The qualitative strand comprised three lecturers teaching the Indonesian General Language Course, one representing each institution, selected purposively because they were directly responsible for planning, delivering, and evaluating instruction. Document data were drawn from course learning outcomes, semester lesson plans, and the primary teaching materials in use, totaling nine documents, three from each institution ([Bowen., 2009](#)).

Data Collection Sources and Techniques

The data sources for this study comprised learning documents, teaching lecturers, and students at the three universities. Documents were selected because they record the learning orientation, material structure, and forms of reading skill development embedded in each course, while lecturers and students were selected as the parties who designed and used the teaching materials and who directly experienced shifts in learning patterns associated with the growing use of artificial intelligence ([Patton., 1999](#)). Data were collected through three complementary techniques. Document assessment used a structured assessment sheet to produce an index of critical reading content availability and the feasibility of both the teaching materials and the semester lesson plan, with results presented in Table 1. A questionnaire survey administered to the 63 student participants captured the frequency, recognition, patterns, and purposes of artificial intelligence use, with results presented in Table 2. Semi-structured interviews with the three participating lecturers were used to explore experiences, reasons, and needs that documents and the survey alone could not capture ([Bowen., 2009](#); [Braun & Clarke., 2019., 2022a](#)) Data collection was conducted from February to March 2026. The nine learning documents were drawn from the course learning outcomes, semester lesson plans, and primary teaching materials in use at the three participating institutions and were assessed using the predetermined assessment sheet. The questionnaire was administered to the 63 participating students. The semi-structured interviews were conducted with the three participating lecturers, one from each institution, lasted approximately 45 to 60 minutes per participant, were recorded with participants' consent, and were transcribed verbatim before analysis.

Research Instruments

The research instruments consisted of a document analysis sheet, an artificial-intelligence-use questionnaire, and a semi-structured interview guide. The document analysis sheet was constructed around eight indicators nested within four domains: the development of critical reading, the integration of Buton's maritime local wisdom, the characteristics of teaching materials, and learning support in the era of artificial intelligence, detailed as follows.

1. The availability of tiered reading activities that move students toward idea identification, meaning interpretation, and argument evaluation, rather than literal comprehension alone ([Luke., 2012](#); [Wallace., 2003](#)).
2. The availability of exercises that train students to distinguish fact from opinion, weigh the strength of evidence, and construct written arguments.
3. The representation of reading texts, case examples, or illustrations drawn from Buton maritime tradition and socio-cultural reality ([Christomy., 2011](#); [Malim & Tahara., 2022](#)).
4. The depth of connection between local-wisdom content and interpretive or evaluative reading activity, rather than a thematic insertion without pedagogical function ([Apriyanto et al., 2026](#)).
5. The alignment of material structure and sequencing with the course learning outcomes and semester lesson plan ([Branch., 2009](#); [Tomlinson., 2011](#)).
6. The variety of information representation, including verbal text, images, infographics, and interactive digital resources ([Khan et al., 2025](#)).
7. The availability of explicit guidance for checking and verifying information generated by artificial intelligence systems.
8. The availability of explicit guidance on the academic and ethical use of artificial intelligence as a learning aid rather than a substitute for students' own thinking ([Fang., 2026](#)).

Each indicator was scored on a four-level scale: a score of 1 indicated a condition that was entirely absent; a score of 2, a condition that was present but very limited and unsystematic; a score of 3, a condition that was present and adequate but not yet consistent across all parts of the document; and a score of 4, a condition that was present systematically and fully integrated throughout the document. Total scores were converted to a percentage by dividing the obtained score by the maximum possible score and multiplying by one hundred, producing the document quality index for each institution reported in Table 1. Because the four-level scale places the midpoint between Level 2, equivalent to 50 percent of the maximum score, and Level 3, equivalent to 75 percent, the categorization threshold was set at 50 percent:

composite indices above 50 percent were categorized as Moderate, whereas composite indices at or below 50 percent were categorized as Low. Accordingly, Institution 1MB was categorized as Moderate, while Institutions 2KB and 3KB were categorized as Low, as reported in Table 1. The questionnaire recorded students' level of recognition, frequency of use, and purposes for using artificial intelligence, while the interview guide explored the perceived need to strengthen critical reading, the relevance of local wisdom, and the challenges of using the technology.

The content validity of all three instruments was established through expert review conducted before data collection by experts with expertise in Indonesian-language learning and teaching-material development. The review focused on the conceptual alignment and clarity of the document-assessment indicators, questionnaire items, and interview questions. Each item was examined against its intended indicator, and revisions were made when the review identified ambiguity or a mismatch between an item and its intended construct, so that the versions administered in the field were the post-revision versions throughout. Because the questionnaire recorded discrete usage behaviors rather than graded attitudes, its reliability rests on item clarity and content validity rather than on an internal-consistency coefficient such as Cronbach's alpha, which is better suited to attitude-scale instruments. The consistency of the document assessment was checked through a test-retest procedure in which the same assessor rescored each document at a later time using the fixed rubric described above, and discrepancies between the first and second scoring were resolved against the rubric before the final index was computed. The researcher's continued involvement across the qualitative strand, supported by prior experience assessing student work at all three institutions, provided contextual familiarity with classroom practice, while the fixed rubric and test-retest procedure guarded against unverified interpretation ([Munce et al., 2026](#)).

Data Analysis Techniques

Quantitative data from the survey and document assessment were analyzed using descriptive statistics, including frequency, percentage, index calculation, and categorization of achievement by institution. This analysis was directed toward mapping the level of artificial intelligence use and the availability of critical reading content in teaching materials, as well as the pattern of differences between institutions that characterizes a cross-institutional study ([Braun & Clarke., 2022a](#); [Fryer et al., 2017](#)). Qualitative data from the interviews were analyzed thematically following the stages proposed by ([Braun & Clarke., 2022a](#)), data familiarization, coding, code grouping, theme development, theme review, and theme interpretation. This process produced four main themes: the condition of teaching materials, the need to strengthen critical reading, the need to integrate Buton's maritime local wisdom,

and the use of artificial intelligence alongside the need for academic guidance ([Braun & Clarke., 2019., 2022b](#)). Coding was carried out by the researcher, who was directly involved in developing the document-assessment rubric and was therefore familiar with the four domains organizing both instruments; this familiarity supported theoretically informed and consistent interpretation across the document, survey, and interview data. Consistent with the reflexive thematic analysis approach adopted in this study, coding was conducted by a single, theoretically engaged researcher rather than distributed across multiple independent coders, a methodological choice discussed further in the following section.

Integration of the two strands took place at the interpretive stage through a structured merging process. First, quantitative results from the document assessment and student survey were organized by institution and research question. Second, the qualitative themes derived from lecturer interviews were placed alongside the corresponding quantitative findings. Third, the two strands were compared to identify convergence, complementarity, or divergence. For example, the low document indices were interpreted alongside lecturer accounts of limited critical-reading activities; the high proportion of ChatGPT use was examined alongside the low proportion of students reporting verification of AI-generated information; and the reported need for contextual materials was considered together with the document evidence showing limited representation of Buton maritime local wisdom. The resulting meta-inferences were then used to identify the characteristics of teaching materials required across the three institutions. This procedure follows the joint-display logic of convergent mixed-methods designs ([Munce et al., 2026](#); [Younas et al., 2025](#)).

Credibility, Validity, and Reliability of Data

The credibility of the qualitative strand was maintained through source triangulation and method triangulation: source triangulation involved comparing information from documents, lecturers, and students, while method triangulation involved combining document assessment, survey, and interview data, so that interpretation did not rest on a single source or technique ([Guba., 1981](#); [Patton., 1999](#)). The reliability of the quantitative strand was maintained through the content validity of the instruments and the consistency of the document assessment across the test-retest procedure described above, together with the accuracy of index and percentage calculations across institutions. Content validity in this study rests on expert judgment on each item rather than on a quantified content-validity index such as CVI or Aiken's V, a form of warrant appropriate to a needs analysis whose instruments map conditions rather than measure a latent construct; a subsequent development study reusing these instruments could quantify expert agreement at the item level before administration. The qualitative strand in this study followed the reflexive thematic analysis approach

developed by Braun and Clarke, which treats coding as an interpretive process bound up with the researcher's theoretical engagement with the data rather than as a mechanical procedure meant to be replicated identically by different coders. ([Braun & Clarke., 2022a](#)) caution specifically against grafting inter-rater reliability checks, independent second coding, or consensus coding onto reflexive TA, arguing that such additions import assumptions from a different, more positivist analytic tradition and risk producing methodological incoherence rather than added rigor. Consistent with this position, the credibility of the thematic analysis in this study rests on the source and method triangulation described above, a fixed and transparent coding framework, and sustained reflexive engagement with the data throughout coding and theme development, rather than on a coefficient of agreement between independent coders. Readers who situate analytic rigor within a more structuralist coding tradition may nonetheless regard single-coder analysis as a limitation of this study; researchers working within that tradition could extend the present findings by incorporating independent coding and reporting a formal agreement coefficient, complementing rather than replacing the reflexive account offered here. The cross-examination between the quantitative results and the qualitative themes further reinforces the overall validity of the findings, since the teaching-material characteristics proposed later in this article are drawn from needs that appear consistently across both data strands ([Braun & Clarke., 2022a; Creswell & Inoue., 2025](#)).

Result and Discussion

The findings are presented in the sequence of the three research questions introduced above. The first subsection addresses the condition of the critical reading teaching materials currently in use, answering the first question; the second reports patterns of artificial intelligence use in student learning activities, answering the second question; and the three subsections that follow, on the need to strengthen critical reading, the need to integrate Buton maritime local wisdom, and the characteristics of the teaching materials required, jointly answer the third question before being drawn together in the concluding subsection. Quantitative and qualitative data are combined within each subsection in keeping with this study's convergent design, so that survey, document-assessment, and interview findings reinforce one another's interpretation at every stage.

The Condition of Critical Reading Teaching Materials

A review of the learning documents and teaching materials at the three institutions found that their function in developing critical reading skills has not been optimally accommodated. The materials covered subject matter relevant to the intended learning outcomes, but their presentation remained dominated by information exposure and exercises oriented toward

comprehending the content of a text rather than interpreting or evaluating it. In response to the first research question, the index of critical reading content availability across the three institutions is presented in Table 1, with achievement varying unevenly between institutions under the categorization threshold defined in the Method.

Table 1 Index of Analysis of Teaching Materials and Semester Lesson Plans (RPS) per Institution.

Institution	RPS Analysis Index	Teaching Material Analysis Index	Average	Category
1MB	61.1	62.4	61.8	Moderate
2KB	43.0	42.8	42.9	Low
3KB	41.4	40.0	40.7	Low

Scale notes: values are presented on a 0–100 scale.

The teaching lecturers' accounts reinforced this pattern, noting that the materials have generally been used more to support basic language competence than to build systematic critical reading skill. The gap between the higher-order thinking expected at the university level and the room current materials provide for developing it therefore remains substantial (Tomlinson., 2011). The representation of Buton maritime local wisdom in the teaching materials was similarly limited. Most reading texts, case examples, and discussion materials were drawn from generic sources and rarely engaged the socio-cultural realities of students in the Buton Islands region. Because this connection between reading content and students' cultural environment remained weak, the potential of local wisdom as a learning resource for strengthening the reading, interpretation, and evaluation of texts has not yet been drawn upon. This limitation is consistent with the view that teaching materials detached from students' own experience weaken the depth of meaning-making and intellectual engagement in reading (Apriyanto et al., 2026; Malim & Tahara., 2022). The use of multimodal learning resources has likewise remained underdeveloped. Learning materials continued to be dominated by verbal text, while images, infographics, concept maps, and interactive digital resources appeared only sparingly, leaving students to engage predominantly with a single form of information representation. This constraint becomes especially consequential in a contemporary information environment, including artificial-intelligence-generated output, that is delivered through multiple modes and therefore demands more complex reading strategies (Fang., 2026; Khan et al., 2025). The final limitation observed concerns the absence of materials that explicitly guide the academic use of artificial intelligence. Lecturer interviews indicated that ChatGPT use had already become part of students' learning activities, yet the teaching materials offered no guidance on verifying information, evaluating the accuracy of system output, or using such tools ethically. Taken together, these four limitations, in critical

reading development, local wisdom integration, multimodal presentation, and guided artificial intelligence use, indicate that teaching-material development in the AI era has not yet extended far enough beyond content mastery alone (Fang., 2026).

Patterns of Artificial Intelligence Use and Academic Assistance Needs

Addressing the second research question, patterns of artificial intelligence use across the three institutions point to a combination of high adoption and low verification capability, as presented in Table 2.

Table 2 Patterns of Artificial Intelligence Use by Students per Institution

Aspects of Use	1MB (n=19)	2KB (n=29)	3KB (n=15)	Total (n=63)
Getting to know and using ChatGPT	18 (94.7%)	26 (89.7%)	12 (80.0%)	56 (88.9%)
Looking for references	16 (84.2%)	23 (79.3%)	10 (66.7%)	49 (77.8%)
Understanding the lecture material	15 (78.9%)	20 (69.0%)	9 (60.0%)	44 (69.8%)
Compiling a summary	13 (68.4%)	18 (62.1%)	8 (53.3%)	39 (61.9%)
Completing a lecture assignment	17 (89.5%)	24 (82.8%)	11 (73.3%)	52 (82.5%)
Verifying AI output information	5 (26.3%)	7 (24.1%)	3 (20.0%)	15 (23.8%)

Remarks: figures indicate student frequency and the percentage of respondents at each institution. As many as 56 of the 63 student participants, or 88.9%, reported knowing and using ChatGPT for academic purposes, most commonly to complete course assignments (82.5%) and search for references (77.8%). The reported ability to verify the information ChatGPT produced was considerably lower, at 23.8%. The difference between widespread ChatGPT use and the much lower proportion of students reporting verification indicates a substantial gap between AI adoption and information-evaluation practice within the participating cohorts. This pattern suggests that the immediate pedagogical need is not simply greater access to AI, but stronger support for evaluating the credibility, evidence, and accuracy of AI-generated information. A comparable asymmetry between ready adoption and limited evaluative capacity has been reported in research on artificial intelligence use in language learning examined within individual institutional settings (Indramini et al., 2025); the present data show that the asymmetry appears across three institutions with differing student profiles, which strengthens the case for addressing it through teaching materials rather than through institution-specific measures alone. Descriptively, achievement across the three institutions followed a broadly similar direction, tending higher at Institution 1MB and lower at Institution 3KB across most aspects measured, a pattern that echoes the teaching-material index in Table

1: institutions with weaker critical reading support in their materials tended to show lower information-evaluation capability among students as well. This pattern is indicative rather than inferential, because the number of institutions is small and no statistical test of association was conducted. This pattern suggests, tentatively, that strengthening critical reading through teaching materials may support more responsible use of artificial intelligence in higher education, a possibility that would need testing across a broader set of institutions before it can be generalized ([Luke., 2012](#); [Rapanta & Macagno., 2019](#)). The need for academic guidance in using artificial intelligence appeared consistently in both lecturer and student accounts. Lecturers wanted teaching materials that would not only teach students how to obtain information but also guide them in checking source credibility, evaluating arguments, and using system output ethically. Students, in turn, described a need for guidance in judging whether information was fit to use as a learning reference. Together, these accounts position critical reading as a key competency that allows students to make productive use of the technology without losing the capacity for independent judgment ([Luke., 2012](#)).

The Need for Critical Reading Reinforcement

Turning to the third research question, critical reading emerged as the most prominent need, since reading activities during lectures generally stopped at understanding information rather than evaluating it. Lecturer interviews indicated that students were usually able to identify the main idea of a text and restate its content, but struggled when asked to identify weaknesses in an argument, compare differing viewpoints, or judge the validity of information. Student accounts reinforced this pattern: reading was more often directed at locating answers to complete assignments than at appraising the content being read. Taken together, these accounts suggest that reading has not yet developed into an intellectual activity involving analysis, evaluation, and reflection on the knowledge gained ([Krathwohl., 2009](#); [Wallace., 2003](#)). This limitation in critical reading becomes especially consequential when students encounter information generated by artificial intelligence. The ease of obtaining an answer encourages students to focus on the result rather than the process of scrutiny, and some accept system output simply because it appears logical, without checking its sources, evidence, or accuracy. In this context, critical reading is no longer confined to understanding conventional academic texts; it extends to evaluating the quality of digital information before it is used in academic work ([Macagno & Rapanta., 2019](#)). The capacities students need accordingly point toward analytical, evaluative, and reflective skills developed in stages. Students require learning experiences that lead them to identify an author's position, distinguish fact from opinion, weigh the strength of evidence, and construct arguments grounded in careful reading. Critical reading accordingly stands as the foundation for the responsible use of information,

whether drawn from conventional sources or from artificial intelligence ([Luke., 2012](#); [Wallace, 2003](#)).

The Need for the Integration of Buton Maritime Local Wisdom

Still within the third research question, the need to integrate Buton maritime local wisdom stems from the distance between students' socio-cultural environment and the generic teaching materials currently in use. Document review pointed to a dominance of texts that do not represent local students' experience, while lecturer interviews indicated that students found it easier to understand and discuss material closer to their everyday reality. This contextual proximity helps students connect reading content with local knowledge and everyday concerns, so that local wisdom functions not merely as cultural content but as a pedagogical device that strengthens meaning-making and textual evaluation ([Apriyanto et al., 2026](#)). Buton's rich maritime tradition offers substantial material for this purpose. The values of cooperation, collective responsibility, and environmental adaptation embodied in the sabangka asarope philosophy, in shipping traditions, and in marine-resource management can be presented as texts that call for analysis and reflection. Texts of this kind create space for students to examine ideas, weigh arguments, and connect what they read to broader social issues ([Christomy., 2011](#); [Malim & Tahara., 2022](#)). The local wisdom content needed is one that presents issues for debate rather than cultural information to be memorized. Lecturers wanted teaching materials that encourage examining maritime issues from multiple perspectives, while students wanted readings that stayed close to their environment while remaining connected to contemporary life. This combination allows local wisdom to serve as the foundation for contextual, reflective critical reading instruction. Previous studies have reported that locally grounded teaching materials can support students' engagement and critical thinking by connecting learning content with culturally familiar contexts ([Fitria & Handayani., 2024](#); [Ramadani, I., 2025](#); [Kiki et al., 2026](#)). The present findings are consistent with this line of research in identifying local wisdom as an important contextual resource for critical reading. The present study extends this evidence by examining the need for such contextualization together with critical reading and artificial intelligence literacy across three higher-education settings, rather than evaluating a particular developed material in a single instructional context. Buton maritime local wisdom therefore emerges as one of the central pillars in the characteristics of the teaching materials students require.

Characteristics of Teaching Materials Needed

Completing the response to the third research question, the characteristics of the teaching materials needed cannot be met simply by adding content or conventional reading exercises. Document, survey, and interview data across the three institutions converge on a single,

shared need: teaching materials that simultaneously strengthen critical reading, draw the material closer to students' cultural context, provide multimodal representation, and guide information evaluation in the era of artificial intelligence. The orientation of teaching-material development needs to shift from delivering content toward building students' intellectual capacity to navigate an increasingly complex information environment ([Branch., 2009](#); [Tomlinson., 2011](#)). Buton maritime local wisdom occupies the position of a contextual foundation rather than a supplementary addition, allowing students to connect texts with social and environmental experiences already familiar to them. Drawing on maritime history, shipping traditions, and the social values of archipelagic communities offers meaningful reading material while opening space for analyzing contemporary issues. This reading material needs to be paired with tiered critical reading activities so that students progressively build their ability to identify arguments, evaluate evidence, and compose reflections ([Apriyanto et al., 2026](#); [Krathwohl., 2009](#)). The document findings point directly to the need for multimodal presentation, as the materials were still dominated by verbal texts with limited use of images, infographics, concept maps, and interactive digital resources. The survey and interview findings add a complementary rationale: students' extensive use of AI-generated information creates a need to engage with information presented in varied digital forms while learning to evaluate its credibility. Multimodal presentation is therefore proposed not as an ornamental feature but as a means of broadening the forms of information that students critically examine. Integrating artificial intelligence literacy addresses this need further by guiding students to understand how such systems work, to check the credibility of their output, and to weigh the ethical dimensions of their use, so that technology continues to function as a tool while critical thinking remains the foundation ([Khan et al., 2025](#)). Together, these four characteristics point toward an integrated pedagogical design for teaching materials that brings critical reading, Buton maritime local wisdom, multimodality, and artificial intelligence literacy into a coherent whole. Such a design affirms that developing teaching materials in higher education still means positioning students as active, reflective subjects capable of making sound academic judgments within a continually changing information environment ([Luke., 2012](#)). Taken together, the quantitative and qualitative findings provide distinct but complementary grounds for the proposed characteristics. The document indices indicate limited provision for critical-reading development and related teaching-material features; the qualitative findings explain how these limitations are experienced in instructional practice; and the student survey shows that AI use is already widespread while verification remains limited. These strands converge on four material requirements: tiered critical-reading activities respond to the difficulty of evaluating arguments and evidence; Buton maritime local wisdom responds to the contextual distance of existing texts; multimodal representation responds to the limited variety of information forms in current materials; and AI literacy

responds to the gap between students' use of ChatGPT and their reported ability to verify its output. The four characteristics therefore represent an integrated interpretation of the evidence rather than four independent additions to the teaching materials.

Conclusions

This cross-institutional needs analysis indicates that the critical reading teaching materials examined at the three participating universities do not yet provide consistent support for higher-order reading development. The composite document indices were 61.8 for Institution 1MB, 42.9 for Institution 2KB, and 40.7 for Institution 3KB, with the latter two institutions falling within the Low category under the study's scoring criteria. At the same time, students' use of ChatGPT was widespread, with 88.9% reporting use and 82.5% using it for assignments, whereas only 23.8% reported being able to verify its output. Read together, these findings indicate a substantial need to strengthen students' capacity to evaluate information rather than merely increase their access to digital tools. In relation to the third research question, the integrated findings identify four interconnected characteristics required in future teaching materials: Buton maritime local wisdom as a contextual foundation, tiered critical-reading activities that progressively engage students in identifying arguments and evaluating evidence, multimodal representation of information, and explicit AI literacy focused on verification and ethical use. These characteristics are not proposed as independently validated components, but as empirically grounded requirements emerging from the convergence of document, student, and lecturer evidence across the three participating institutions. Practically, lecturers and teaching-material developers in comparable Indonesian-language courses within the participating context can use these findings as a basis for developing materials that combine locally grounded maritime texts with progressive critical-reading tasks, multimodal resources, source-verification activities, and guidance for responsible AI use. The findings should nevertheless be interpreted within the study's boundaries: the student sample was limited and institutionally uneven, the analysis involved three participating universities, the quantitative strand was descriptive, and the qualitative coding was conducted by a single researcher. The document assessment was conducted on textbooks, semester lesson plans, and course learning outcomes prepared by other teaching lecturers at the three institutions, so the researcher evaluated learning tools external to their own practice rather than assessing their own work, and the researcher's role was limited to assessing student assignments. The document index was nevertheless produced by a single assessor: the test-retest procedure described earlier established intra-rater consistency but not inter-rater agreement, so the resulting scores should be read as an indicative picture of needs rather than a definitive measurement of document quality. The findings therefore provide a context-bound empirical foundation rather than a generalizable model. Further research should develop and validate prototype

materials with broader institutional participation and, where appropriate, additional assessors and formal agreement procedures.

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