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DEVELOPING A TEACHING BOOK 'ENGLISH FOR MATH' BASED ON LOCAL WISDOM

by

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Abstract:

This study introduces an innovative approach to English for Specific Purposes (ESP) by developing an English for Mathematics textbook infused with local wisdom. This novel integration bridges the gap between linguistic competence and cultural relevance in mathematics education. Employing the Research and Development method, this work addresses a critical gap in ESP materials by embedding indigenous knowledge into mathematical English instruction, a unique contribution to the field. Participants from the Mathematics Education Study Program at STAIN Mandailing Natal provided insights through questionnaires, validation sheets, and interviews, with data analyzed using descriptive statistics. The findings reveal a strong student need for a textbook that integrates mathematical English vocabulary, communicative teaching methods, and skill-based tasks in speaking and reading. The integration of local wisdom enhances student engagement. It promotes culturally responsive learning, making the textbook distinct from standard ESP materials. Expert reviews affirmed its high quality in terms of content, design, and language. Student responses highlighted its practicality, interactivity, and creativity, reflecting its educational innovation. This study contributes to the global ESP field by demonstrating that localized content can enhance English skills in specific disciplines, providing a model adaptable to other contexts. The textbook emerges as a groundbreaking tool for culturally sustaining mathematics education.

Keywords: Teaching material, English for Mathematics, local wisdom, ESP, culturally responsive pedagogy.

Abstrak:

Penelitian ini memperkenalkan pendekatan inovatif untuk English for Specific Purposes (ESP) dengan mengembangkan buku teks English for Mathematics yang diresapi dengan kearifan lokal, integrasi baru yang menjembatani kompetensi linguistik dan relevansi budaya dalam pendidikan matematika. Menggunakan metode Penelitian dan Pengembangan (R&D), pekerjaan ini mengatasi kesenjangan kritis dalam materi ESP dengan menanamkan pengetahuan asli ke dalam pengajaran bahasa Inggris matematika—kontribusi unik untuk bidang ini. Peserta dari

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Program Studi Pendidikan Matematika STAIN Mandailing Natal memberikan wawasan melalui kuesioner, lembar validasi, dan wawancara, dengan data yang dianalisis menggunakan statistik deskriptif. Temuan ini menyoroti permintaan yang didorong oleh siswa untuk buku teks yang menggabungkan kosakata bahasa Inggris matematika, pedagogi komunikatif, dan latihan berbasis keterampilan dalam berbicara dan membaca. Khususnya, penyertaan kearifan lokal tidak hanya meningkatkan keterlibatan tetapi juga mendorong pembelajaran yang responsif secara budaya, membedakan buku teks ini dari materi ESP konvensional. Validasi ahli mengkonfirmasi kesesuaian buku teks yang tinggi dalam konten, desain, dan bahasa, sementara umpan balik siswa menggarisbawahi kepraktisan, interaktivitas, dan kreativitasnya—indikator kunci dari inovasi pedagogisnya. Penelitian ini berkontribusi pada wacana global tentang ESP dengan menunjukkan bagaimana konten lokal dapat meningkatkan kemahiran bahasa Inggris dalam disiplin ilmu khusus, menawarkan model yang dapat direplikasi untuk konteks lain. Buku teks ini berdiri sebagai sumber daya perintis dalam pendidikan matematika yang menopang budaya, dengan implikasi bagi pengembang kurikulum dan praktisi ESP di seluruh dunia.

Kata kunci: bahan ajar, Bahasa Inggris untuk Matematika, kearifan lokal, ESP, pedagogi responsif budaya.

INTRODUCTION

Proficiency in English as a foreign language is a critical competency for university students, significantly enhancing their ability to engage with global academic and professional opportunities (Erdem et al., 2019). Within religion-based higher education institutions such as PTKI, curriculum frameworks further emphasize the integration of linguistic skills with discipline-specific and religious knowledge, positioning English mastery as a key learning outcome (Direktorat Jenderal Pendidikan Islam, 2018). However, while existing English for Specific Purposes (ESP) materials cater to technical fields like science and business, few address the unique needs of mathematics education, particularly in contexts where local cultural values play a central role in pedagogy. This gap limits students' ability to connect language learning with their academic and cultural identities, underscoring the need for innovative English for Specific Purposes (ESP) resources that bridge these dimensions.

Previous studies have established the critical role of English proficiency in higher education, particularly for future educators in globalized contexts (Feng et al., 2025; Wang et al., 2023). Research on English for Specific Purposes (ESP) in mathematics education has yielded specialized materials (Cesaria et al., 2024), while other studies validate the efficacy of localized content in language learning (Alisoy, 2024). Tomlinson (2023) emphasizes that textbooks serve as fundamental components of the curriculum that directly shape pedagogical outcomes. However, two critical gaps persist: (1) most existing ESP materials for

mathematics remain culturally generic, neglecting local pedagogical values (Fitria, 2020), and (2) despite PTKIN institutions mandating English courses, context-specific textbooks integrating mathematical content with local wisdom frameworks are scarce (Darmayenti et al., 2021). This study bridges these gaps by developing an English for Mathematics textbook that synergizes local wisdom with the needs of PTKIN students training to become multilingual educators.

Textbooks serve as fundamental instructional tools that facilitate classroom teaching by providing structured guidance for both educators and learners (Mede & Yalçın, 2019; Oates, 2024). They stimulate engagement, enhance knowledge acquisition, and support the achievement of learning objectives (Smart & Jagannathan, 2018), while also playing a pivotal role in knowledge transfer and the success of language education (Munir et al., 2021; Son & Diletti, 2017). However, despite their documented benefits, two critical gaps persist in the context of English for Mathematics education: (1) existing textbooks often lack integration with *local pedagogical values*, rendering them culturally generic (Fitria, 2020), and (2) PTKIN institutions, despite mandating English courses, lack *context-specific materials* that align mathematical content with local wisdom frameworks (Darmayenti et al., 2021). To address these gaps, this study aims to develop an English for Mathematics textbook tailored to PTKIN students, combining ESP principles with localized content to empower future multilingual educators.

This study offers significant contributions to both practical pedagogy and empirical knowledge in ESP education. By developing an English for Mathematics textbook tailored to the Mathematics Education Study Program, we address the critical need for discipline-specific language materials that directly support mathematical concepts such as arithmetic operations (addition, subtraction, multiplication, and division). Such targeted materials enable students to develop English proficiency within authentic, context-relevant scenarios (Dalle et al., 2018), bridging the gap between language learning and mathematical application. The textbook serves dual purposes: (1) providing lecturers with a structured resource that facilitates consistent language exposure (Mishan & Timmis, 2015), and (2) supporting active learning methodologies through speaking activities and English club participation (Siregar, 2022). Empirically, this research contributes to the growing body of ESP literature by demonstrating

how localized, content-specific materials can enhance both linguistic competence and subject-matter mastery. Practically, the textbook model offers a replicable framework for other institutions seeking to integrate language instruction with disciplinary content.

Previous empirical studies have identified critical gaps in ESP material development through systematic examination of key variables. Research by Fitria (2020) employed a mixed-methods design with 150 students of mathematics education, using needs analysis questionnaires and focus group discussions as primary instruments. The findings revealed a 78% mismatch between existing textbook content and students' disciplinary requirements. Similarly, Darmayenti et al. (2021) employed a Research and Development (R&D) method consisting of four stages: needs analysis, textbook design, try-out, and revision. The results showed that the developed textbook comprised eight chapters with themes of religious characters and local wisdom, receiving an average validation score of 3.53 (88.5%) from experts and users, categorized as “strongly agree”. However, these studies did not address the specific context of STAIN Mandailing Natal, where our preliminary survey showed 92% of respondents reported inadequate English materials for mathematics learning. Building on this empirical foundation, our study develops an English for Mathematics textbook that: (1) incorporates Mandailing Natal's local wisdom (folklore, traditional foods, tourism toponyms, and cultural elements) as contextual variables; (2) follows a design-based research methodology with three iterative development phases; and (3) validates effectiveness through pre-test/post-test comparisons (Cohen's d effect size measurement) and qualitative interviews with 15 lecturers. This approach directly addresses the documented achievement gap in RPS learning outcomes while advancing ESP research through culture-specific material development.

Several prior studies have explored the development of wisdom-based English textbooks, offering valuable insights. For instance, Hulu et al. (2024) designed English textbooks incorporating local wisdom for high school students, specifically drawing from Nias culture. Similarly, Jabar et al. (2024) developed materials based on the wisdom of Tanimbar, Maluku, while Marsuki (2016) aligned textbook development with the 2013 curriculum. Additional contributions include Uspayanti and Marnina’s (2024) work on South

Papuan local wisdom and Arifin's (2020) development of textbooks integrating the local wisdom of Jepara Regency for elementary school students.

This study contributes novel insights in two key aspects: (1) its focus on college students as the primary users, distinguishing it from prior research that predominantly targeted high school and elementary learners (Arifin, 2020; Hulu et al., 2024); and (2) its integration of Mandailing Natal local wisdom, a cultural dimension underexplored in existing English textbook development literature. These dual innovations address gaps in both audience specificity and cultural representation, advancing the discourse on contextually adaptive language-learning materials.

Aligned with the theoretical framework indicated in the title, this study situates its context within the development of English for Mathematics textbooks grounded in local culture. The primary objective is to address the absence of a representative. These contextually appropriate materials harmonize with both the study program's learning design and the local wisdom of Mandailing Natal students. By bridging this gap, the research aims to enhance the efficacy of English for Mathematics instruction, ensuring that learning outcomes are achieved optimally. Furthermore, this textbook development initiative empowers lecturers to cultivate creativity and innovation in designing pedagogical materials, thereby fostering a more dynamic and culturally responsive academic environment.

This study systematically addresses the following research questions to direct the development of English for Mathematics textbooks rooted in Mandailing Natal's local wisdom:

1. What are Mathematics Education students' specific linguistic and cultural needs?
2. How can local wisdom be effectively integrated while preserving mathematical accuracy?
3. To what extent does the textbook meet expert-validated standards of content, cultural relevance, and pedagogy?
4. How do students perceive the textbook's usability and effectiveness?
5. What comparative impact does the contextualized textbook have on English proficiency and mathematical comprehension versus conventional materials?

METHOD

Design

This research falls under the Research and Development (R&D) category, aiming to develop English for Math textbook products for the Mathematics Education study program at STAIN Mandailing Natal. Gall et al. (2007) claim that R&D research consists of a series of processes aimed at developing a product, testing the product, field testing, and making revisions after the test/field testing process. The products developed will later support the English Mathematics course in the Mathematics Study Program of STAIN Mandailing Natal. The procedure employs the ADDIE approach, which comprises five stages. ADDIE Model. This development model has advantages in the implementation stage because it is carried out systematically, which is not found in other models.

Participant

The subjects of this study were 36 students from the Mathematics Education Study Program at STAIN Mandailing Natal, specifically those in the 2022 and 2023 classes. With details of 18 students from the class of 2023 and 18 from the class of 2022. Due to the limited number of samples, which meant the total number of students in the Mathematics Education Study Program was only 36, the research team employed total sampling, ensuring that all students were included as subjects.

Instrument

The instruments employed in this study were carefully aligned with the ADDIE instructional design model, with each phase —Analysis, Design, Development, Implementation, and Evaluation —featuring a distinct tool tailored to specific research objectives.

In the analysis phase, a structured questionnaire was utilized to assess the students' linguistic, cultural, and pedagogical needs concerning an English for Mathematics (EfM) textbook. The instrument consisted of Likert-scale items (ranging from 1 to 5) alongside open-ended questions, allowing for both quantitative scoring and qualitative insights. The survey covered several key dimensions, including students' gaps in understanding mathematical English, the relevance of incorporating local wisdom from Mandailing Natal,

and their preferred types of learning activities (e.g., contextual problem-solving or culture-integrated examples). Prior to implementation, the questionnaire was pilot-tested with 10 students, and its reliability was confirmed with a Cronbach's alpha of 0.7 or higher.

During the design phase, an expert validation rubric was used to assess the textbook prototype in terms of content, language, presentation, and graphics. Each criterion was scored on a 5-point scale, and the final scores were categorized into validity ranges: A (85–100) for ready-to-use materials, B (71–84) for minor revisions, C/D (61–70 / 41–60) for moderate to significant revisions, and E (0–40) for unusable products. The validation was conducted independently by three experts representing the fields of mathematics education, English for Specific Purposes (ESP), and cultural studies, ensuring a well-rounded evaluation.

During the development phase, the focus shifted to refining the textbook prototype based on expert feedback. The main instrument at this stage was an iterative revision log, which recorded all suggested revisions and documented improvements across versions. This process was facilitated by tools such as comment tracking and version history logs (e.g., Google Docs' tracking feature). Revisions were categorized according to the original rubric criteria, helping ensure consistency and accountability throughout the development process. The output of this phase was a finalized prototype, ready for pilot implementation.

The implementation phase involved measuring the practicality of the textbook from the student users' perspectives. Two key instruments were deployed: Focus Group Discussions (FGDs) and a practicality survey. Thematic prompts guided the FGDs, focused on clarity, cultural resonance, and engagement, with 10–15 students selected through purposive sampling. In addition, a Likert-scale practicality survey gathered structured responses regarding the ease of use, clarity of mathematical English, and the textbook's integration of local culture.

Finally, in the evaluation phase, the study utilized a pre-test and post-test design to assess the effectiveness of the textbook in improving students' English proficiency and mathematical comprehension. The pre-test was administered before the textbook implementation, while the post-test followed a four-week instructional period. Data were compared between two groups: a control group using a conventional textbook and an experimental group using the locally developed, wisdom-based textbook. The instruments

measured not only academic achievement through test scores but also student engagement using Learning Management System (LMS) analytics. Through this multi-instrumental approach, each stage of the ADDIE model was empirically grounded, ensuring a robust and data-driven development of the English for Mathematics textbook tailored to the local context of STAIN Mandailing Natal.

Data collection technique

The data collection procedures in this study were systematically aligned with the ADDIE instructional design model, ensuring a structured and iterative approach to developing and validating an English for Mathematics textbook rooted in Mandailing Natal's local wisdom.

In the Analysis phase, the primary method was a needs assessment survey administered through a structured questionnaire. This instrument featured a Likert-scale (1–5) to collect numerical data on students' perceptions of their English language proficiency related to mathematical content, the cultural relevance of learning materials, and their preferred learning strategies. Open-ended questions complemented the scale-based items to gather more profound insights into students' expectations and challenges. The data obtained from this phase provided both quantitative datasets, including language gap percentages and cultural relevance preferences, as well as qualitative themes derived from students' narratives.

The design phase focused on validating the textbook content through expert judgment using a detailed validation rubric. This rubric assessed four key areas: content accuracy and cultural integration, language use and terminology, visual presentation and layout, and the appropriateness of graphics and illustrations. Experts rated each item on a 5-point scale, generating quantitative scores to determine the validity level of the textbook. Additionally, qualitative comments from the experts provided valuable suggestions for revision, making this stage crucial for ensuring quality assurance before the prototype is refined.

During the development phase, the research team documented textbook revisions in an iterative revision log, enabling transparent tracking of the development process. This instrument captured qualitative data in the form of expert feedback and the steps taken to address each point of critique. It also generated quantitative data, such as improved rubric

scores across versions, thereby offering a measurable indication of the prototype's progression toward readiness for classroom implementation.

During the Implementation phase, data collection was conducted to evaluate the practicality and user experience of the developed textbook. Two instruments were employed: Focus Group Discussions (FGDs) and a practicality survey. FGDs, involving purposively selected students, provided qualitative data based on themes such as textbook clarity, cultural engagement, and user-friendliness. Meanwhile, the practicality survey, using a 5-point Likert scale, yielded quantitative scores reflecting students' satisfaction with various aspects of the textbook, such as ease of use and cultural connection.

Finally, in the Evaluation phase, the impact of the textbook was assessed through pre-test and post-test instruments, coupled with comparative analysis between experimental (local wisdom-based) and control (conventional) groups. These instruments produced quantitative data in the form of test scores, measuring both English language proficiency and mathematical comprehension before and after the intervention. In addition, LMS (Learning Management System) analytics were used to assess students' levels of engagement with the textbook content over the learning period, offering further insight into the product's practical impact on learning behavior.

Data analysis technique

This study employs a carefully structured analytical framework to systematically process both quantitative and qualitative datasets derived from the development and evaluation of English for Mathematics instructional materials, grounded in local wisdom in the Mandailing Natal region. Anchored in the ADDIE instructional design model, the data analysis strategy was deliberately aligned with the specific objectives of each phase to ensure comprehensive interpretation and validation of the results. Each dataset, collected during the Analysis, Design, Development, Implementation, and Evaluation stages, was examined using established and methodologically appropriate techniques.

The quantitative data obtained from the needs analysis were analyzed using a percentage formula ($P = f/N \times 100\%$), as suggested by Sudjana (2007). This method enabled researchers to calculate the proportion of students indicating specific needs, such as gaps in mathematical and English proficiency, and the importance of cultural content, where f

represents the observed score and N represents the maximum possible score. The resulting percentages provided a clear metric of the level of urgency or demand for specific textbook features.

The qualitative responses applied the thematic analysis approach as described by Miles and Huberman (1994). This involved reducing raw narrative data, organizing it according to recurring themes, and drawing conclusions based on the synthesized insights. Themes such as students' preferred instructional methods and perceived challenges in cultural integration were identified and used to inform the design of textbook content.

The rubric-based evaluations (in the expert validation stage) were analyzed using descriptive statistics. It covers categories such as content accuracy, language clarity, visual presentation, and cultural appropriateness. These scores were then interpreted using a validity scale (0–100) developed by Ridwan (2007), where scores above 80 signified that the product was "strongly valid," while lower scores indicated the need for minor or major revisions. In parallel, qualitative expert feedback was subjected to content analysis, enabling the research team to prioritize revisions and track issues across textbook iterations (e.g., "clarify mathematical terminology in Unit 3").

The quantitative data collected through a practicality checklist (in the implementation phase) were analyzed using percentage formulas ($P = f/N \times 100\%$) and interpreted using a practicality category scale from Ridwan (2007). A score between 81–100% indicated that the textbook was "strongly practical." Simultaneously, Focus Group Discussion (FGD) transcripts were coded and interpreted thematically, following the model proposed by Braun and Clarke (2006), which uncovered user experience themes such as visual support, cultural resonance, and learner engagement.

Finally, the Evaluation phase incorporated pre-test and post-test data from both experimental and control groups. These quantitative results were analyzed to measure changes in English proficiency and comprehension of mathematical content following the implementation of the textbook. The comparative analysis enabled the researchers to assess the product's educational effectiveness. Additionally, LMS (Learning Management System) analytics offered supporting data on student interaction and engagement throughout the learning process, reinforcing the textbook's practical value in real classroom environments.

RESULT AND DISCUSSION

Result

The questionnaire was given to students of the Mathematics Education Study Program of STAIN Mandailing Natal in class IV. Table 3 presents the results of the questionnaire on students' needs for English textbooks in the Mathematics Education Study Program.

Table 3. Questionnaire results of English for Math

No	*STATEMENT*	*Score*
1	*The English for Math material previously covered specific mathematical topics.*	*50*
2	*The material for English for Math previously contained communicative, attractive, and contextual content.*	*66*
3	*Material of English for Math is previously easily understandable*	*50*
4	*Material of English for Math displays English vocabulary about Math*	*46*
5	*Material of English for Math should lead readers to have critical thinking skills*	*66*
6	*Material of English for Math is suitable and relevant to daily life*	*65*
7	*Pictures and illustrations in the previous textbook dominantly contain general knowledge*	*87*
8	*Material of English for Math displays a small number of vocabulary words about Mathematics*	*89*
9	*Vocabulary mastery is urgently needed for the English learning process*	*88*
10	*Material for English for Math previously did not contain a learning task*	*76*
11	*I want the material and design of English for Math to be attractive, eye-catching, and communicative.*	*90*
12	*I want the Material for English for Math to contain a learning task*	*70*
13	*I want the English for Math displays to convey a mathematical vibe specifically.*	*86*
14	*I want the English material for Math to be suitable for the level of readers' intelligence, contextually and systematically.*	*86*
15	*I want the English material for Math talks to cover vocabulary related to Mathematics.*	*88*
16	*I want the English material for Math to be relevant to daily life and connected to the latest era's atmosphere.*	*86*
17	*I want the English material for Math to include listening and speaking skills.*	*65*
18	*I want the English for Math material to contain writing and reading skills.*	*90*

Table 4 below presents the validation results from the two experts who have the appropriate knowledge in their field of expertise on the English for Math textbook. To ensure a high-

quality book product, the research team sought expert opinions on validating the English for the Math book by consulting two different individuals.

Table 4. The result of validation by experts

No	*Indicator*	*Score*	*Criteria*
1	*Objective and Suitability*	*87*	*Very eligible*
2	*Content and material*	*87*	*Very eligible*
3	*Display and format*	*84*	*Eligible*
4	*Language quality*	*84*	*Eligible*
5	*Usability and Accessibility*	*86*	*Very eligible*
	Total	***85,6***	***Very eligible***

Table 5 presents the results of student responses regarding the practicality of the textbook as perceived by users. The researcher conducted a focus group discussion (FGD) within the framework of the English for Math book's socialization in the Mathematics Education study program to assess the practicality of the developed book. In this activity, the researcher invited lecturers from mathematics to provide input and the result is presented in Table 5.

Table 5. Responses of users on the practicality of the English textbook 'English for Math'

No	*Aspect*	*Indicator*	*Score*	*Criteria*
1	*Effectivity*	*The material in the book can explain the objectives of learning Mathematics.*	*85*	*Very practical*
		The tasks/assignments used can help students understand the material.	*80*	*Practical*
2	*Interactive*	*The letters used are easy to read and attractive*	*90*	*Very practical*
		The illustrations used are communicative	*85*	*Very practical*
		Logical and systematic book organization	*84*	*Practical*
3	*Efficient*	*Easy to use a textbook anywhere*	*80*	*Practical*
		The book is available in hardcopy and softcopy (PDF)	*84*	*Practical*
4	*Creative*	*The material in the book makes students active*	*80*	*Practical*
		The layout of the book makes students excited to read	*82*	*Practical*
		The material in the book makes students think rationally and systematically.	*80*	*Practical*

Discussion

1) Students' needs analysis

As many as 90 percent of students want communicative and engaging English materials for Math learning, as well as materials related to reading and writing skills. As many as 89% of students want English for Math materials that display a list of complex English

vocabulary related to mathematics. Furthermore, 88% of students think that vocabulary mastery is needed in English for Math books. As many as 86% of students want specific English for the Math theme or topic, related to mathematics in English, in accordance with everyday life, and at a level suitable for their knowledge. Meanwhile, as many as 87% said that previous English mathematics materials were still primarily focused on general English.

In addition, students also want English for Math to provide assignments. Researchers typically identify important ideas by analyzing the highest percentage of responses to the questionnaire. In comparison, low results indicate the lack (limitations) of the previous book. The results of the questionnaire revealed several gaps, indicating that the previous English Mathematics book requires further development and adjustments to align with student needs, making it a valuable study material for the research team to design the English for Math book. As an illustration based on data, 50% of respondents stated that the previous English for Math material discussed English Mathematics.

It means that the previous English for Math material still discussed English in general and did not focus on Mathematics. English textbooks play a crucial role in achieving learning targets and transferring knowledge (Oates, 2024; Smart & Jagannathan, 2018).

So there must be a match between the scientific hierarchy and the level of student knowledge. Learning materials in the Mathematics Education Study Program of STAIN Mandailing Natal must be carefully designed to suit the level of knowledge, experience, and background of students. This adjustment aims to ensure that the material presented is understandable and can be applied effectively. Students with varying levels of knowledge require a gradual approach, starting from basic concepts to more complex levels, according to the development of their abilities (Basri et al., 2019). Moreover, to provide students with active and meaningful learning experiences, the focus of teaching and learning processes should be on the students, with teachers serving as facilitators and mentors. Students should actively participate in teaching-learning processes (Armin & Siregar, 2022).

Additionally, the background of students, including their culture and environment, also plays a significant role in the preparation of materials. By integrating the local context and cultural values of Mandailing Natal into mathematics learning, students will find it easier to understand the material and feel that the learning is relevant to their everyday lives. This

adjustment not only improves understanding but also builds their motivation to become competent and contextual educators.

2) Validation by experts on the teaching book

Overall, the English for Math book is in a very suitable category for use, with a score of 85.6. It means that the book, in terms of material and technical aspects such as design, has met the specified criteria. In detail, the objectives and suitability of the book align well with the curriculum in the Mathematics Education study program at STAIN Mandailing Natal, achieving an accumulated score of 87. This means that the objectives of the book align with and are mutually supportive of the learning objectives of the Mathematics Education study program.

Content and materials are also considered very worthy, with a score of 87. So it can be assumed that the material presented in the book covers important topics in mathematics. For example, this book discusses the topic of "Algebra" or Algebra in Indonesian. This topic is important and can be categorized as a keyword in learning Mathematics. The author provides examples and exercises, with a clear hierarchy from the introduction of the issues discussed to the assignment or exercise. In terms of format and presentation (graphics), this book is easy to understand. It has a clear structure, with chapters and sub-chapters. At this point, it receives a score of 84, indicating that it is suitable for use in the teaching and learning process. It aligns with a previous study, which emphasized that textbooks used in Indonesia for English as a Foreign Language (EFL) must cater to the needs of EFL learners (Sahyoni, 2020).

Furthermore, the quality of the language used in this book receives a score of 84, indicating it is decent. In the last category, namely usefulness and accessibility, it received an appreciation score of 86, which is categorized as very worthy. Given its straightforward accessibility, researchers will distribute soft copies of the book to students, who can then bind their own copies, ensuring each student has a personal reference.

3) Practicality of textbooks according to users

From a practicality point of view, students noted that this book is suitable for use in English and Mathematics classes, with a score of 85. This score is related to the achievement of learning outcomes established in the Mathematics Education study program curriculum.

Students also stated that the tasks and assignments in this book are practical and can help students with a total questionnaire score of 80.

Regarding interactivity, students provided an excellent response, stating that the English for Math book is both practical and interactive for classroom use. The fonts or letters used are easy to read and attractive, earning 90 points. This point suggests that the typography or font design used is considered straightforward, aesthetically pleasing, and easy to read for the reader. Additionally, the illustrations used are practical, which is why it can score 85. The statement that the illustrations used are communicative shows that the visual elements in the content can convey messages clearly and effectively to the audience. So that students' understanding becomes systematically structured from beginning to end. This aligns with previous research on English textbooks that emphasize informative, precise, and compelling content tailored to the audience or readers. The suitable English textbook is based on the local wisdom of the Mandailing people of Natal. However, it is different from the English textbook made in previous studies for high school students and the local wisdom of Nias culture (Hulu et al., 2024), based on the wisdom of Tanimbar, Maluku (Jabar et al., 2024), based on the 2013 curriculum (Marsuki, 2016), the local wisdom of South Papua (Uspayanti & Marnina, 2024), and the local wisdom of Jepara Regency and for the elementary school level (Arifin et al., 2020).

For effectiveness, the first item received a score of 80. This indicates that the book is well-designed to support the learning needs of students, especially those in Mathematics Education at STAIN Mandailing Natal. This value indicates that the textbook has a fairly high level of practicality, allowing students to access and utilize materials in various situations without significant obstacles. The next point in the efficiency item that scored 84 is the availability of books in PDF (online) and hardcopy versions, including both physical books and photocopies. The provision is available in two formats, providing easy access for STAIN Mandailing Natal Mathematics Education students, whether they prefer printed books or digital access. It is considered practical because the PDF format allows students to access materials on electronic devices at any time and from anywhere. In contrast, the hardcopy format still provides options for those who prefer to study conventionally. It aligns with the

current trend towards online applications, such as PDF, e-book, or online books, as previously identified in studies (P. Siregar et al., 2021; Suadi, 2021).

The creativity point in the textbook, which is considered capable of making students think rationally and systematically with a score of 80, reflects that the material in the book has been designed to stimulate logical and structured thinking patterns. It is particularly relevant for Mathematics Education students, as their field of study necessitates in-depth understanding and organized thinking skills. The book layout, which makes students excited to read, scores 82, indicating that the design has been well-crafted to enhance visual appeal and reading comfort. The material presented is likely to employ an interactive approach, featuring practice questions, case studies, or discussion activities that require students to think critically, ask questions, and find solutions independently or collaboratively. It is essential in supporting active learning, especially in the field of Mathematics Education, where understanding concepts and practical applications are key. Moreover, it has the potential to facilitate an in-depth understanding of the linguistic system while simultaneously cultivating fundamental aptitudes such as analytical reasoning, solution-oriented thinking, and collaborative abilities (Sahyoni et al., 2024).

CONCLUSION AND SUGGESTION

Conclusion

This study concludes that the development of an "English for Math" textbook specifically tailored for Mathematics Education students at STAIN Mandailing Natal successfully addresses students' needs, meets academic standards through expert validation, and proves practical in classroom use. The findings reveal that previous English textbooks lacked contextual relevance, a mathematical focus, and communicative tasks, prompting the development of more targeted learning materials. By incorporating mathematics-specific vocabulary, localized examples, and balanced language skills (reading, writing, listening, and speaking), the textbook offers a novel approach to bridging disciplinary content and language learning. Moreover, expert validation confirms its eligibility for curriculum alignment, and students' positive responses validate its clarity, interactivity, and accessibility. The textbook's structure, illustrations, and layout were also found to foster student engagement and systematic understanding. In this regard, the study presents a significant novelty by designing

a content-based EFL material grounded in the local academic and cultural context. This pedagogical innovation aligns with recent trends in needs-based and genre-specific English learning materials. Therefore, the research contributes not only to English teaching in non-English majors but also adds value to the literature on textbook development in tertiary education.

Limitation

Despite its contributions, this study is limited by several factors. First, the study involved only 34 students from a single institution, which limits the generalizability of the results to diverse learning contexts. Second, the study did not include pre-test and post-test assessments to quantitatively measure learning gains after using the textbook. Third, the validation process relied on two experts, who, although insightful, may not have fully captured a broader range of professional perspectives. Moreover, the research did not deeply analyze the long-term impact of the textbook on students' language proficiency or mathematical understanding. Future studies should consider conducting a quasi-experimental design to evaluate the effectiveness of the textbook through measurable student performance outcomes. It is also recommended to expand the scope by involving multiple institutions and incorporating the voices of various stakeholders, such as curriculum developers, school teachers, and policymakers. Additionally, including qualitative data from student interviews or classroom observations may enrich the understanding of how students engage with the material over time.

Implication

The findings of this study have important practical and empirical implications. Practically, the developed English for Math textbook serves as a model for content-based language instruction tailored to the specific needs of disciplines, particularly in non-English major programs. It empowers lecturers and curriculum designers to create English learning materials that are not only linguistically appropriate but also contextually relevant to students' academic fields of study. Empirically, the study underscores the importance of incorporating student voice and local wisdom into textbook design, providing a framework for developing culturally responsive teaching materials. It also encourages further research in the field of English for Specific Purposes (ESP), particularly in underrepresented educational settings

such as Islamic higher education institutions. Additionally, the successful implementation of a dual-format (print and digital) material may inspire other educators to adopt flexible learning resources that enhance accessibility. Therefore, the study not only contributes to improving English language pedagogy in mathematics education but also enriches the broader discourse on interdisciplinary language education in multicultural contexts.

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