INTEGRATING AI AND LOCAL CULTURE IN ESP LEARNING: ENHANCING ENGLISH BROADCASTING SKILLS FOR COMMUNICATION SCIENCE STUDENTS

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This study explores the integration of Artificial Intelligence (AI) and local cultural identity in English for Specific Purposes (ESP) classrooms in Biak Papua. The purpose is to examine how AI-driven learning can be adapted to include culturally relevant materials, enhancing students' engagement and language proficiency. A mixed-methods approach was employed, combining surveys, interviews, aclassroom observations. The performance tests were conducted to evaluate language development. Data were analyzed using both qualitative thematic analysis and quantitative statistical methods. The results indicate that AI-assisted learning, when infused with local cultural elements, significantly improves students' motivation, comprehension, and language retention. The study concludes that integrating cultural identity into AI-driven ESP instruction fosters a more meaningful and effective learning experience, bridging global technological advancements with local educational needs.

Keywords: AI-Assisted Learning; ESP Teaching; Local Cultural Identity

1. INTRODUCTION

The rapid advancement of technology has significantly transformed education, particularly in language learning. English for Specific Purposes (ESP), as a field that tailors language instruction to students' academic and professional needs, is no exception. Traditional ESP instruction has often faced challenges such as the gap between theoretical knowledge and practical application, limited resources, and inadequate alignment with students' specific fields of study (Enesi, Vrapi, & Trifoni, 2021). Many ESP courses rely on outdated materials that do not fully reflect the dynamic nature of professional communication in various industries, making it difficult for students to develop the practical language skills needed for real-world contexts. Additionally, instructors often struggle with the diverse proficiency levels of students, large class sizes, and the need for specialized knowledge to effectively teach language within a particular discipline. As globalization demands proficiency in English within specialized fields, ESP programs in higher education institutions must evolve to meet these emerging needs. This includes integrating technology-enhanced learning tools, such as AI-powered platforms, digital simulations, and virtual reality experiences, to bridge the gap between theoretical instruction and hands-on application. Furthermore, collaboration between educators and industry professionals can ensure that ESP curricula remain relevant, equipping students with the linguistic and communicative competencies required for success in their respective careers.

One of the most pressing issues in ESP education is the effectiveness of instructional approaches in addressing students' linguistic, academic, and professional needs. Traditional ESP methods often fail to bridge the gap between classroom learning and real-world application due to outdated curricula, limited technological integration, and a reliance on generic language instruction rather than field-specific discourse (Basuki, 2023). In Indonesia, these challenges are further exacerbated by large, heterogeneous classrooms, a lack of discipline-specific teaching materials, and inconsistencies in students' English proficiency levels, making it difficult to provide personalized and industry-relevant instruction (Fitria, 2023). As a result, many students graduate with insufficient practical language skills for their professional fields. To address these issues, ESP instruction must integrate technology,

authentic learning materials, and interactive teaching methods, such as AI-driven tools and digital storytelling, while incorporating culturally relevant content to enhance student engagement and align learning with real-world communication needs.

In response to these challenges, recent studies have explored various strategies to enhance ESP instruction, such as integrating digital storytelling, task-based learning, and artificial intelligence (AI) tools (Kristiawan, Ferdiansyah, & Picard, 2022; Rahmawati, 2024; Hidayat & Prasetyo, 2023). Digital storytelling allows students to engage with subject-specific content in meaningful ways, enhancing both their linguistic skills and professional communication abilities. Task-based learning, on the other hand, provides students with real-world scenarios that mirror workplace communication, enabling them to develop problem-solving and critical-thinking skills while using English in authentic contexts. AI has emerged as a particularly promising tool for personalizing learning experiences, improving vocabulary acquisition, and providing real-time feedback, allowing students to track their progress and receive individualized support. However, AI-based learning alone may not fully address the diverse needs of ESP students, particularly in culturally diverse contexts like Indonesia, where language learning is deeply intertwined with local identity and professional aspirations (Santoso & Lestari, 2023). Many Indonesian students benefit from culturally relevant materials that reflect their backgrounds and career goals, suggesting that an effective ESP approach should blend AI-driven innovations with contextually appropriate content and interactive pedagogies that foster both linguistic competence and professional readiness.

The foundation of this study is based on three key theoretical perspectives: (1) English for Specific Purposes (ESP) pedagogy, (2) digital learning and AI integration, and (3) culturally responsive teaching (CRT). Each of these perspectives plays a crucial role in shaping the proposed instructional approach, ensuring that English learning in higher education remains relevant, technologically adaptive, and culturally meaningful. By combining these three frameworks, this study aims to enhance ESP instruction by making it both technologically innovative and locally relevant, addressing the diverse needs of non-English major students.

English for Specific Purposes (ESP) is a specialized branch of language education that focuses on equipping learners with the language skills necessary for their specific academic and professional fields. Unlike General English, which covers broad linguistic competencies, ESP is tailored to meet the specific communication needs of learners in areas such as business, law, medicine, engineering, and other professional disciplines. Hutchinson and Waters (1987) argue that ESP instruction should be developed based on a comprehensive needs analysis, ensuring that the curriculum aligns with students' professional domains and workplace communication requirements. This means that course design should consider not only the linguistic elements—such as specialized vocabulary, discourse structures, and functional language use—but also the real-life contexts in which students will apply these skills, such as writing reports, conducting meetings, or engaging in professional negotiations. Despite its advantages, ESP instruction faces challenges in implementation, particularly in ensuring that students develop not only linguistic competence but also the ability to apply language skills effectively in real-world professional contexts (Suherman, 2023). Many ESP programs struggle with outdated materials, a lack of authentic resources, and insufficient opportunities for students to practice industry-specific communication skills in realistic settings. Additionally, variations in students' English proficiency levels and the need for highly specialized instructors further complicate effective ESP delivery. To bridge this gap, modern ESP instruction must incorporate dynamic teaching approaches, such as task-based learning, digital tools, and collaboration with industry professionals, to ensure that learners are equipped with both the linguistic and practical competencies needed for their future careers.

A persistent issue in ESP education is the disconnection between course materials and students' actual career needs. Many ESP programs continue to rely on generic materials that fail to reflect the evolving demands of specialized fields, leaving students inadequately prepared for workplace communication. Additionally, instructors often struggle to design ESP courses due to a lack of familiarity with students' specific disciplines and the absence of well-

structured ESP textbooks tailored to local contexts (Basuki, 2023). These limitations highlight the need for a more dynamic and adaptable ESP curriculum that not only meets linguistic demands but also fosters communicative competence and critical thinking skills necessary for professional success.

The integration of digital tools and artificial intelligence (AI) in language learning is grounded in constructivist and personalized learning theories. AI-driven learning platforms can provide individualized instruction through adaptive assessments, automated feedback, and real-time language correction, enhancing the efficiency of ESP instruction (Rahmawati, 2024). These technologies enable students to engage in self-directed learning, allowing them to practice discipline-specific vocabulary, simulate real-world communication scenarios, and receive immediate feedback on their progress. AI-powered chatbots, for instance, can serve as conversation partners, helping students refine their speaking and listening skills within professional contexts. Additionally, AI-driven analytics can help educators track students' progress, identify areas of difficulty, and tailor instructional materials to better meet learners' needs. By combining AI with interactive digital tools, such as virtual simulations and gamified learning experiences, ESP instruction can become more engaging, contextually relevant, and aligned with industry-specific communication demands.

However, while AI has demonstrated its potential to enhance language learning, it cannot fully replace human instruction. Effective language acquisition involves not just technical proficiency but also the ability to navigate cultural nuances, interpret contextual meaning, and engage in meaningful communication. Studies suggest that technology-enhanced ESP instruction should be supplemented with interactive activities, collaborative learning, and human feedback to ensure that students develop well-rounded language skills (Ridwan & Athena, 2023). Additionally, the successful implementation of AI in ESP classrooms requires careful consideration of digital literacy levels among students and instructors, as well as institutional support to provide adequate technological infrastructure.

Culturally Responsive Teaching (CRT) is an instructional approach that recognizes the importance of students' cultural backgrounds in shaping their learning experiences. Rather than viewing culture as an external factor, CRT integrates students' identities, traditions, and values into the learning process to create a more inclusive and effective educational environment. According to Gay (2018) as cited in Matiso (2024), culturally relevant pedagogy enhances student motivation, engagement, and comprehension by integrating their lived experiences into instructional content, making learning more meaningful and personally relevant. This approach is particularly important in ESP education, where language learning should not only focus on linguistic proficiency but also align with students' professional aspirations, local identities, and community values to ensure practical application in real-world settings. In Indonesia, where cultural diversity plays a significant role in shaping communication practices, incorporating local narratives, traditional expressions, and industry-specific discourse into ESP instruction can foster a deeper connection between students and the target language (Santoso & Lestari, 2023). By integrating culturally familiar content, such as indigenous storytelling, regional case studies, and workplace scenarios reflective of local industries, ESP educators can create more engaging and contextually relevant learning experiences. Additionally, this approach can help students develop cross-cultural awareness and communication skills, preparing them not only for local job markets but also for global professional interactions.

One effective strategy for implementing CRT in ESP instruction is the use of digital storytelling. Research has shown that storytelling enhances vocabulary retention, fosters cultural representation, and increases student motivation by allowing them to create narratives that reflect their own experiences (Kristiawan, Ferdiansyah, & Picard, 2022). By integrating digital storytelling into ESP courses, students can develop language proficiency while simultaneously expressing their cultural identity, bridging the gap between English learning and personal experience. This approach aligns with the principles of communicative language teaching (CLT), which emphasizes meaningful interaction and real-world language use.

The combination of ESP pedagogy, AI-enhanced learning, and culturally responsive

teaching offers a promising framework for improving English instruction in higher education. While AI can personalize learning experiences and automate certain aspects of language acquisition, cultural relevance ensures that students remain engaged and find practical value in their learning. By integrating these three perspectives, this study aims to address the longstanding challenges of ESP instruction, making English learning more effective, technologically adaptive, and culturally meaningful for students in non-English majors.

Despite the increasing recognition of English for Specific Purposes (ESP) in higher education, many instructional approaches still fail to provide meaningful and practical learning experiences. A major concern is the limited relevance of ESP curricula, as many programs continue to rely on generic learning materials that do not align with students' professional aspirations or real-world communication needs (Enesi et al., 2021; Basuki, 2023). This misalignment results in students acquiring theoretical language skills that may not be directly applicable to their future careers, reducing the overall effectiveness of ESP instruction. Without content tailored to specific fields, students struggle to see the practical value of their English learning, leading to disengagement and low motivation.

Another significant challenge lies in ESP teaching methods, as lecturers often face difficulties in designing courses that effectively integrate discipline-specific language skills. Many instructors lack expertise in students' specialized fields, making it challenging to create relevant and contextualized learning experiences (Fitria, 2023; Indrayadi, 2024). Additionally, institutional support for ESP instructors remains insufficient, leaving educators with limited resources to develop industry-oriented course materials. Without proper training and professional development opportunities, ESP teachers may struggle to bridge the gap between general language instruction and the specialized communication skills required in professional settings. Besides, the integration of technology in ESP instruction presents both opportunities and challenges. While AI-driven learning tools and digital platforms offer promising solutions for personalized learning, their implementation remains inconsistent across institutions (Rahmawati, 2024; Ridwan & Athena, 2023). Some universities lack the infrastructure to support AI-based ESP learning, and many instructors and students have limited digital literacy skills necessary for maximizing the benefits of these technologies. Moreover, while AI can enhance vocabulary acquisition and provide automated feedback, it cannot fully replace human interaction in developing communication skills, particularly in professional and cross-cultural contexts.

A critical but often overlooked issue in ESP instruction is the lack of cultural integration in curricula. Many ESP programs focus solely on linguistic competence without incorporating students' cultural backgrounds, making learning feel detached from their identities and lived experiences (Santoso & Lestari, 2023). Research suggests that culturally relevant teaching can enhance student motivation and comprehension by connecting language learning with local narratives and traditions. By neglecting cultural elements, ESP instruction risks alienating students from the learning process, reducing their engagement and confidence in using English in real-world settings.

Lastly, student engagement and motivation remain persistent challenges in ESP learning. Many students struggle with discipline-specific vocabulary and practical language application, leading to low confidence in professional communication (Suherman, 2023; Fitri, Yeri, & Nurcholis, 2023). Without interactive and real-world-based learning activities, students may find ESP classes monotonous and disconnected from their future careers. To address these issues, there is a need for innovative approaches that integrate AI-driven personalized learning, culturally responsive teaching, and practical ESP methodologies. By making learning more relevant, engaging, and technologically enhanced, ESP instruction can better equip students with the language skills necessary for success in their respective fields.

In the field of Communication Science, particularly in English Broadcasting courses, students are expected to develop language proficiency that aligns with media industry demands. However, many students struggle with discipline-specific vocabulary, effective pronunciation, and audience-oriented communication, making it difficult for them to perform confidently in news reporting, interviews, and scriptwriting. This issue is exacerbated by the reliance on generic ESP materials that fail to reflect real-world broadcasting contexts.

Additionally, despite the increasing presence of AI-driven tools and digital learning resources, their integration into English Broadcasting instruction remains limited, resulting in inconsistent engagement and learning outcomes. The lack of culturally relevant materials further disconnects students from the learning process, as existing ESP curricula often overlook local identity and communication patterns. For students in Biak, Papua, whose linguistic and cultural backgrounds influence their approach to English learning, an instructional model that combines digital innovation with culturally responsive pedagogy is crucial. Without addressing these gaps, students may continue to face difficulties in developing the professional communication skills necessary for careers in media and broadcasting. Thus, this study investigates how the integration of AI and local cultural elements can enhance ESP learning in the English Broadcasting course, making language acquisition more meaningful, relevant, and effective.

To address these challenges, this study proposes a novel instructional framework that integrates AI-based digital learning with culturally responsive ESP instruction, specifically tailored for Communication Science students in the English Broadcasting course. The proposed framework aims to enhance students' engagement, motivation, and linguistic proficiency by combining AI-driven adaptive learning platforms with locally relevant materials. First, AI-enhanced personalized learning will be leveraged to provide individualized language learning experiences. AI tools will assist students in vocabulary acquisition, pronunciation improvement, and real-time grammar correction through automated feedback and adaptive assessments (Rahmawati, 2024). These tools can help students overcome common linguistic difficulties in English Broadcasting, such as mastering industry-specific terminology and structuring professional news scripts. Second, culturally relevant materials will be integrated into ESP instruction by incorporating digital storytelling and local narratives. This approach will ensure that students connect their learning to their cultural identity, making language acquisition more meaningful (Kristiawan et al., 2022; Santoso & Lestari, 2023). Using Biak folklore, traditional storytelling, and local media contexts as teaching materials, students will be encouraged to apply their English skills in ways that are both personally and professionally relevant. Third, task-based and interactive learning strategies will be implemented to simulate real-world communication tasks, such as news reporting, live interviews, and podcast production, allowing students to practice their skills in an authentic setting (Hidayat & Prasetyo, 2023). These activities will encourage active learning and better prepare students for professional broadcasting environments. Fourth, lecturer training and institutional support will play a crucial role in ensuring the successful implementation of AI and culturally responsive ESP instruction. Since many ESP lecturers struggle with incorporating both digital learning tools and specialized industry knowledge, professional development programs will be designed to enhance their teaching capabilities (Fitria, 2023; Indrayadi, 2024). Training will focus on AI integration, task-based learning methodologies, and the use of culturally relevant teaching materials. Fifth, collaborative online learning will be explored through virtual classrooms and peer-learning platforms, enabling students to engage in interactive discussions, group projects, and feedback sessions beyond physical classroom settings (Ridwan & Athena, 2023). These digital platforms will not only enhance accessibility but also encourage students to develop their confidence in using English for professional communication. By implementing this comprehensive framework, this study aims to demonstrate how the integration of AI and local identity in ESP classrooms can significantly improve students' learning experiences, enhance their linguistic and communicative competence, and better prepare them for careers in media and broadcasting.

2. RESEARCH METHOD

This study employs a mixed-method approach, in which the data were collected using quantitative and qualitative data methods to analyze the impact of AI-enhanced digital learning and culturally responsive ESP instruction. The research was conducted with the second-semester Communication Science students at IISIP YAPIS Biak, who were enrolled in the English Broadcasting course. Following the principles of survey research (Babbie, 1990; Dillman, 2000), the study ensures clarity, reliability, and validity in data collection and

analysis.

To achieve a structured and efficient analysis, the study utilizes four primary data collection methods:

1. Surveys and Questionnaires – Administered to assess students' learning preferences, challenges, and perceptions of AI-enhanced and culturally relevant ESP instruction. The survey instrument includes Likert-scale questions to measure students' attitudes and open-ended questions to explore their perspectives in greater depth. The surveys are conducted at two points in the semester: a pre-survey to establish baseline data and a post-survey to assess changes in students' attitudes, engagement, and perceived effectiveness of AI-enhanced learning.

2. Pre-tests and Post-tests – Conducted to evaluate students' progress in news script writing and broadcasting skills over the semester. The news script writing test measures students' ability to structure, use grammar, and ensure clarity in their writing, while the broadcasting performance test assesses pronunciation, fluency, intonation, professionalism, and integration of local narratives in news delivery. To ensure systematic assessment, rubrics for news script writing and broadcasting performance are employed, evaluating key aspects such as headline quality, content accuracy, grammar, pronunciation, and engagement. The following table explains the details of element descriptions of both writing rubrics:

Table 1. News Script Writing Rubric

Element	Description	Max Score
Headline & Lead	Clarity, relevance, and effectiveness of the opening sentence.	20
Content Accuracy	Factual accuracy and use of credible sources.	20
Structure & Coherence	Logical flow and adherence to the inverted pyramid structure.	20
Grammar & Style	Correct grammar, punctuation, and journalistic tone.	20
Conciseness & Clarity	Precise wording and clear message delivery.	20
Total Score	Sum of all assessed elements.	100

Table 2. Broadcasting Performance Rubric

Element	Description	Max Score
Pronunciation & Clarity	Clear articulation and correct pronunciation.	25
Fluency & Pacing	Smooth delivery without unnecessary pauses or hesitations.	25
Intonation & Expression	Appropriate emphasis and voice modulation.	20
Engagement & Professionalism	Eye contact, confidence, and news-anchor presence.	20
Use of Local Narrative	Incorporation of culturally relevant stories.	10
Total Score	Sum of all assessed elements.	100

Students' scores were recorded for both pre-test and post-test stages, allowing for quantitative analysis of improvement.

1. Classroom Observations – Conducted to analyze student engagement, interaction patterns, and the effectiveness of AI-based and culturally integrated learning activities. Observational data is recorded through field notes and audio-visual documentation, ensuring comprehensive analysis.

2. Document Analysis – Examines instructional materials, lesson plans, AI-generated feedback, and student assignments to assess how cultural elements and digital tools are incorporated into teaching and learning. The analysis focuses on identifying patterns in AI-assisted corrections, vocabulary suggestions, and how local identity is reflected in learning materials and student outputs.

A triangulated approach is employed for data analysis. Quantitative analysis involves descriptive statistics to analyze survey responses and paired sample t-tests to compare pre-test and post-test scores for statistically significant improvements. Additionally, content analysis is performed on student-written materials to evaluate AI feedback application and cultural integration.

By focusing on these key data collection and analysis methods, this study provides a structured understanding of how AI and culturally relevant materials enhance ESP learning in the English Broadcasting course. The findings will contribute valuable insights into effective strategies for improving English language instruction for Communication Science students in Biak, Papua.

3. FINDINGS AND DISCUSSION

The integration of AI-enhanced learning and culturally relevant materials in English for Specific Purposes (ESP) instruction has the potential to transform students' learning experiences, particularly in disciplines like broadcasting. To evaluate the impact of this approach, surveys and questionnaires were conducted at two points in the semester: a pre-survey before implementation and a post-survey after students had engaged with AI tools and local culture-based learning activities. The survey focused on key aspects such as student engagement, confidence in English communication, perceptions of AI effectiveness, ease of using AI tools, and challenges in AI integration. By comparing students' initial perceptions with their experiences after the intervention, the data provide valuable insights into the effectiveness of AI-driven, culturally responsive ESP instruction in enhancing learning outcomes.
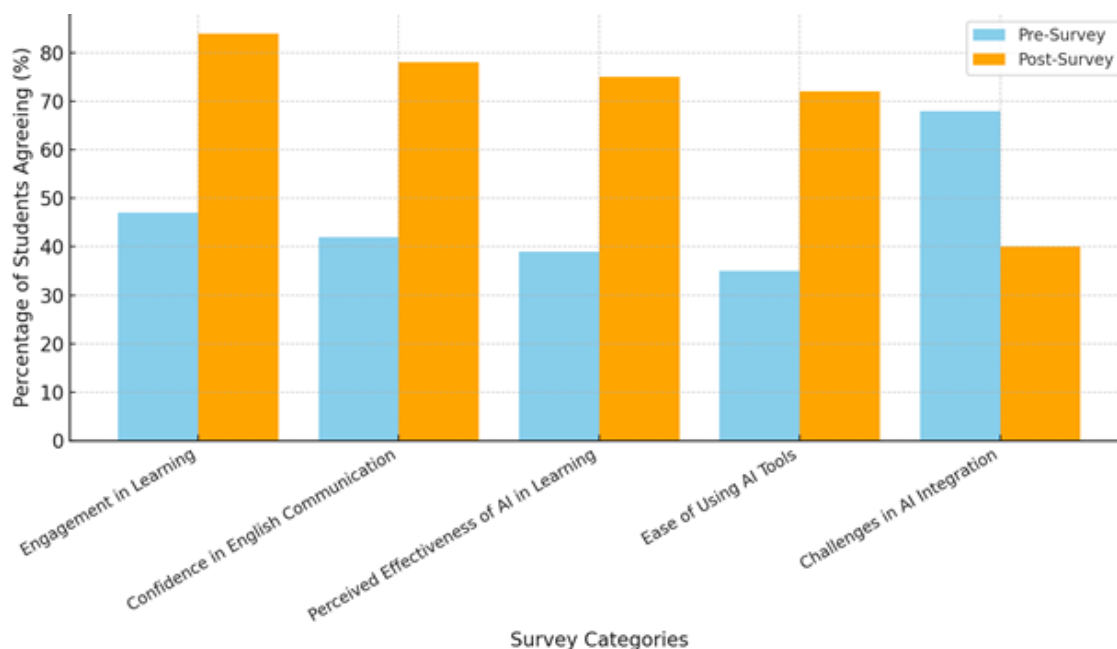
Picture 1. Comparison of Pre and Post Survey Result

The bar chart illustrates the comparison between students' responses in the pre-survey and post-survey across five key categories: engagement in learning, confidence in English communication, perceived effectiveness of AI in learning, ease of using AI tools, and challenges in AI integration. Before the implementation of AI-enhanced and culturally relevant instruction, only 47% of students reported feeling engaged in their ESP learning. However, after the intervention, this number increased significantly to 84%, indicating a positive shift in motivation and interest. One student reflected, *"At first, learning English felt like a routine, but when we started using AI to write news about our local culture, I became more excited to participate."* This suggests that integrating cultural identity into ESP learning fosters deeper

engagement.

Similarly, confidence in English communication improved from 42% to 78%. Many students initially struggled with expressing themselves in English, particularly in spoken contexts. One participant shared, *"I used to avoid speaking English because I was afraid of making mistakes. But after practicing with AI tools and seeing my progress, I feel more confident presenting news scripts."* This highlights how AI-assisted learning, combined with culturally relevant materials, provided a supportive environment for students to develop their communication skills. The perceived effectiveness of AI in learning also saw an increase, from 39% to 75%. Students acknowledged the benefits of AI tools in improving grammar and vocabulary. However, some also pointed out the limitations. One student noted, *"AI helped me fix my sentences, but sometimes I just accepted the suggestions without fully understanding why."* This indicates that while AI can enhance writing, guided instruction is still necessary to ensure deeper learning. Ease of using AI tools rose from 35% to 72%, suggesting that students became more comfortable with AI integration over time. Initially, some found the technology intimidating or unfamiliar. One participant stated, *"At first, I didn't know how to use AI properly, but as we practiced, I realized it could really help me write better."* This reflects how consistent exposure and practice can help students adapt to new technological tools. Interestingly, the percentage of students identifying challenges in AI integration decreased from 68% to 40%. While difficulties remained, they were less pronounced by the end of the semester. Some students still faced issues related to dependency on AI, but overall, the intervention helped them become more autonomous learners. The overall results indicate that AI-enhanced and culturally responsive instruction had a significant impact on student engagement, confidence, and learning effectiveness. However, the findings also suggest the need for balanced AI integration, ensuring that students develop critical thinking skills alongside technological assistance.

To assess students' progress in news script writing and broadcasting performance, pre-tests and post-tests were conducted over the course of the semester. The pre-test provided baseline data on students' initial abilities in structuring news scripts, applying proper grammar, and delivering news with fluency and professionalism. The post-test, conducted after the implementation of AI-enhanced and culturally relevant instruction, measured improvements in these key areas. The writing assessment focused on the clarity, accuracy, and organization of news scripts, while the broadcasting performance test evaluated pronunciation, fluency, intonation, and the integration of local narratives in news delivery. To ensure consistency in scoring, detailed rubrics were used for both assessments, covering elements such as headline quality, content accuracy, grammar, pronunciation, and engagement. The results from these assessments highlight the impact of AI-assisted and culturally relevant learning on students' ability to write and present news effectively. The following The table below presents the pre-test and post-test scores of the 19 students in both news script writing and broadcasting performance:

Table 3. Pre- and Post- Test

Student	Pre-Test (Writing)	Post-Test (Writing)	Pre-Test (Broadcasting)	Post-Test (Broadcasting)
S1	65	80	60	75
S2	70	85	62	78
S3	55	75	50	72
S4	60	78	55	74
S5	68	82	65	80
S6	72	88	67	83
S7	50	73	48	70
S8	58	77	54	76
S9	64	81	60	79
S10	70	86	68	84
S11	62	79	61	78
S12	53	74	50	71

Student	Pre-Test (Writing)	Post-Test (Writing)	Pre-Test (Broadcasting)	Post-Test (Broadcasting)
S13	57	76	56	75
S14	75	90	72	88
S15	60	80	59	77
S16	65	82	63	79
S17	67	84	65	81
S18	55	74	52	73
S19	69	85	66	82

The following table presents the mean and standard deviation for students' performance before and after AI-assisted learning:

Table 4. Mean and Standard Deviation For Students' Performance

Assessment Type	Pre-Test Mean (SD)	Post-Test Mean (SD)	Improvement
Writing Scores	63.2 (7.1)	80.1 (5.8)	+16.9
Broadcasting Scores	60.3 (7.5)	77.9 (6.2)	+17.6

The mean score for news script writing increased from 63.2 to 80.1, while the broadcasting performance improved from 60.3 to 77.9. The standard deviation decreased, indicating greater consistency in students' performance after the intervention.

To determine whether the improvement was statistically significant, a paired sample t-test was conducted for both writing and broadcasting scores.

Table 5. Paired Sample T-Test

Assessment Type	t-value	p-value	Significance
Writing Scores	8.92	0.000	Significant ($p < 0.05$)
Broadcasting Scores	9.44	0.000	Significant ($p < 0.05$)

The p-values for both writing and broadcasting scores were less than 0.05, indicating a statistically significant improvement after the AI-integrated learning method.

The findings confirm that integrating AI and culturally responsive teaching methods in ESP classrooms had a significant impact on students' performance. The structured teaching method, which included AI-assisted scriptwriting, feedback-based revisions, and interactive broadcasting activities, helped students improve their writing accuracy, speaking fluency, and engagement in news broadcasting.

To assess the impact of AI-based and culturally integrated learning activities, classroom observations and document analysis were conducted throughout the semester. Classroom observations focused on student engagement, interaction patterns, and the effectiveness of AI-enhanced instruction, capturing real-time responses through field notes and audio-visual documentation. These observations provided insight into how students adapted to AI tools and how cultural elements influenced their participation in news writing and broadcasting tasks. Additionally, document analysis examined instructional materials, lesson plans, AI-generated feedback, and student assignments. This analysis aimed to identify patterns in AI-assisted corrections, vocabulary suggestions, and the representation of local identity in learning materials and student outputs. The following tables summarize key findings from both data collection methods.

The following table categorizes student engagement levels, interaction patterns, and AI-based learning effectiveness based on field notes and audio-visual documentation.

Table 6. Summary of Classroom Observation

Observation Category	Findings (Pre-Implementation)	Findings (Post-Implementation)
Student Engagement	Low engagement, passive participation.	Increased enthusiasm, active discussions.
Interaction Patterns	Minimal peer collaboration, instructor-led.	More peer interaction, group discussions.

Observation Category	Findings (Pre-Implementation)	Findings (Post-Implementation)
Use of AI Tools	Hesitant use, unclear understanding.	Confident use, better integration into tasks.
Cultural Relevance in Learning	Limited references to local identity.	Stronger incorporation of local narratives.
News Script Writing	Struggled with grammar and structure.	Improved clarity, coherence, and accuracy.
Broadcasting Performance	Nervous, lack of fluency and confidence.	More fluent delivery, expressive intonation.

The classroom observations revealed significant differences in student engagement and interaction patterns before and after implementing AI and cultural integration. Initially, students displayed low engagement, with most interactions being instructor-led rather than collaborative. Many were hesitant to use AI tools due to unfamiliarity, and their news script writing and broadcasting performances lacked fluency and confidence. However, after systematic integration of AI and culturally relevant materials, students became more engaged, actively participating in discussions and peer interactions. Their use of AI tools also improved, leading to better-structured news scripts and more natural broadcasting performances. A key observation was that students became more expressive and confident in their news delivery when cultural elements were incorporated. The presence of familiar topics, such as local traditions and community issues, encouraged students to speak with greater fluency and authenticity. One student reflected, *"When we talked about local news, I felt more comfortable and knew what to say. It was easier to explain things when the topic was related to Biak."* This suggests that culturally relevant content not only enhances engagement but also contributes to linguistic confidence in ESP learning.

To assess the integration of AI tools and cultural elements in the learning process, a document analysis was conducted on instructional materials, lesson plans, AI-generated feedback, and student assignments. This analysis aimed to determine how effectively digital tools supported language learning while preserving local identity in English Broadcasting instruction. The focus was on identifying patterns in AI-assisted corrections, vocabulary suggestions, and the representation of Biak Papua's cultural elements in student work. The following table presents the results, showing the degree of AI and cultural integration across different instructional components.

Table 7. Document Analysis Results

Category	Findings	Examples from Documents
Instructional Materials	AI-based tools were incorporated into lesson content to support grammar, pronunciation, and vocabulary learning.	News script templates included AI-generated vocabulary suggestions.
	Local identity was integrated through culturally relevant texts and examples.	News articles featured Biak traditions and events.
Lesson Plans	A structured approach combining AI-enhanced learning and local narratives was applied.	Lesson plans included AI-supported peer reviews of student broadcasts.
	Activities emphasized self-directed learning and iterative feedback.	Students revised their news scripts based on AI grammar corrections.
AI-Generated Feedback	AI tools provided real-time corrections in grammar, sentence structure, and pronunciation.	AI feedback flagged common sentence structure issues and mispronunciations.

Category	Findings	Examples from Documents
	Personalized vocabulary suggestions supported contextual learning.	AI suggested replacing generic terms with culturally appropriate words.
Student Assignments	Students incorporated AI-generated improvements in their writing and speaking tasks.	Final news projects showed improved clarity and pronunciation.
	Cultural elements were effectively integrated into student work.	News scripts included local terms and references to Biak folklore.

The table provides an overview of how AI tools and cultural elements were incorporated into different instructional components, including lesson plans, instructional materials, AI-generated feedback, and student assignments. The analysis highlights several key findings. First, instructional materials demonstrated a balanced integration of AI and cultural relevance. Course content included news scripts featuring local events, traditions, and figures from Biak Papua, making lessons more relatable for students. AI tools were primarily used to enhance vocabulary and grammar, providing students with real-time suggestions to improve clarity and coherence in their writing. However, while AI-assisted learning helped refine students' writing mechanics, the cultural depth of the materials relied on the instructor's guidance to ensure authenticity. Lesson plans reflected a structured approach to embedding both AI technology and cultural identity in learning activities. Tasks such as AI-enhanced news writing and digital storytelling encouraged students to explore local narratives while receiving linguistic support. Observations from lesson execution revealed that students responded positively to lessons that combined AI assistance with familiar cultural references, as it made the learning experience more engaging and meaningful. AI-generated feedback played a crucial role in supporting students' language development, particularly in grammar and structure. The feedback provided instant corrections and suggestions, which many students found useful in refining their work. However, some students demonstrated over-reliance on AI corrections without fully understanding the grammatical rules behind the modifications. This underscores the need for structured guidance in AI tool usage to encourage active learning rather than passive acceptance of suggestions. Student assignments reflected the effectiveness of AI and cultural integration. In their news scripts and broadcasting performances, students showed improved language proficiency and a stronger ability to incorporate culturally relevant content. Many students successfully used AI tools to refine their work, yet some required additional support in critically engaging with AI feedback. The presence of local themes in their assignments also indicated that integrating cultural identity into ESP learning contributed to greater student engagement and motivation. Overall, the document analysis suggests that AI tools and culturally responsive teaching methods can enhance ESP instruction when properly balanced. The findings emphasize the importance of guided AI implementation, active cultural representation, and student training in effectively utilizing digital learning tools.

The findings of this study highlight the transformative potential of integrating AI-assisted learning and cultural identity in ESP instruction, particularly in an English Broadcasting classroom. The themes of increased engagement through cultural relevance, AI-assisted learning (strengths and limitations), and confidence in broadcasting and public speaking reflect broader discussions in ESP research about the challenges and opportunities of adapting language instruction to student needs, technological advancements, and professional demands. Comparing these findings with previous studies provides deeper insights into how ESP curricula can be enhanced to maximize student learning outcomes.

One of the most significant findings of this study was the heightened engagement and motivation students experienced when writing news scripts based on local culture. By incorporating elements of Papua Biak traditions and real-life events, students felt a personal connection to their assignments, which in turn made learning English more meaningful and enjoyable. This aligns with the argument by Santoso & Lestari (2023) that culturally relevant materials in ESP courses enhance student motivation and comprehension. Similarly,

Kristiawan et al. (2022) found that digital storytelling rooted in local identity can promote vocabulary retention and learning engagement among Indonesian EFL students. The combination of cultural pride and linguistic development seen in this study reinforces the idea that ESP should not only be about professional language preparation but also about affirming students' local identities in a globalized world.

However, while cultural relevance is crucial for engagement, there is also a need to balance localized materials with global communication skills. Basuki (2023) emphasize that ESP instruction should prepare students for international contexts, meaning that exposure to global media practices, industry terminology, and diverse linguistic registers is equally necessary. Thus, while cultural integration enhances engagement, it should not isolate students from professional realities beyond their immediate communities. A strategic blend of local and global content in ESP courses could ensure students develop both linguistic confidence and professional adaptability.

The integration of AI tools in writing news scripts and refining language structures was another significant factor that shaped students' experiences in this study. Many students found AI tools helpful for grammar correction, vocabulary expansion, and structural improvements, which aligns with Rahmawati (2024), who found that AI can enhance language efficiency and personalized feedback in ESP instruction. The ability to receive instant corrections and suggestions allowed students to feel more confident in their writing skills and reduced their anxiety about making mistakes.

However, while AI-supported learning was generally perceived as beneficial, some students exhibited over-reliance on AI-generated suggestions without fully understanding them. This passive learning behavior, where students accept corrections without analyzing their errors, is a challenge highlighted by Ridwan & Athena (2023), who argue that technological readiness and pedagogical structuring are crucial for effective AI integration in ESP instruction. Without proper guidance, AI can become a crutch rather than a tool for skill development, potentially leading to superficial learning.

Furthermore, the findings resonate with Fitria (2023), who noted that many ESP instructors in Indonesia face challenges in motivating students and integrating technology effectively into their syllabi. This suggests that teacher intervention is necessary to guide students in actively engaging with AI-generated feedback, ensuring they analyze, reflect, and apply corrections independently rather than simply copying suggested edits. One possible solution is structured AI-assisted activities, where students are required to justify AI corrections and explain their revisions—thus fostering critical thinking alongside technological support.

Beyond writing, this study found that AI-assisted learning and culturally relevant materials significantly contributed to students' confidence in broadcasting and public speaking. Many students reported feeling less anxious and more prepared when delivering news scripts, particularly as structured AI feedback allowed them to refine their pronunciation, intonation, and delivery style. This finding is closely related to Hidayat & Prasetyo (2023), who emphasize that task-based learning (TBL) improves ESP students' writing and speaking skills by simulating real-world professional scenarios. Similarly, Fitri et al. (2023) argue that ESP instruction for Communication Science students should focus more on discourse analysis and real-life communication practice, rather than just linguistic structures.

Despite these improvements, some challenges remain. Indrayadi (2024) found that novice ESP lecturers often struggle with discipline-specific knowledge, making it difficult to provide specialized speaking instruction tailored to industry demands. If AI is to be used effectively in news broadcasting training, instructors must be equipped with strategies to blend AI feedback with practical speaking exercises. For example, AI-generated pronunciation feedback could be combined with peer evaluations and live practice sessions, ensuring that students develop both confidence and fluency in professional communication settings.

These findings provide valuable insights into how ESP instruction can be refined to better support student learning. First, culturally relevant materials should be integrated

strategically, ensuring that students engage with both local and global contexts. This approach aligns with Santoso & Lestari (2023), who advocate for culturally responsive curriculum development that balances industry relevance with student identity.

Second, while AI offers significant benefits, it should not replace active engagement and instructor-led guidance. The challenges identified in this study echo the concerns of Rahmawati (2024) and Ridwan & Athena (2023), that AI is most effective when integrated thoughtfully into the learning process. Instructors should design activities that require students to critically evaluate AI-generated corrections, ensuring that technology serves as a support mechanism rather than a passive learning tool.

Finally, this study reinforces the idea that ESP instruction should prioritize real-world communication skills, particularly in fields like broadcasting where verbal fluency and presentation skills are crucial. Task-based learning (Hidayat & Prasetyo, 2023) and discipline-specific speaking practice (Fitri et al., 2023) should be incorporated into ESP programs to help students develop confidence, clarity, and professional readiness.

Incorporating AI and cultural identity into ESP instruction presents a dynamic and effective approach to improving student engagement, writing proficiency, and confidence in professional communication. However, as previous studies have shown, over-reliance on AI, the need for teacher training, and curriculum balancing remain challenges that must be addressed. Future research should explore best practices for AI integration in ESP, focusing on methods to enhance student autonomy, critical thinking, and practical application of AI-assisted learning. By doing so, ESP courses can better equip students with both linguistic and professional competencies, ensuring they are prepared for both local and global communication demands.

4. CONCLUSION AND SUGGESTIONS

The findings of this study highlight the significant impact of integrating AI tools and cultural identity into ESP instruction for Communication Science students. The results from surveys, pre- and post-tests, classroom observations, and document analysis reveal that students demonstrated notable progress in their news script writing and broadcasting skills when AI-enhanced learning was combined with culturally relevant materials. The pre-survey data indicated initial challenges, including limited confidence in using AI, difficulty in incorporating local narratives into news writing, and concerns about fluency in broadcasting. However, the post-survey results showed improvements in students' engagement, confidence, and ability to integrate cultural elements into their work, suggesting that AI-assisted learning, when guided effectively, can enhance both technical skills and cultural awareness. The pre- and post-tests further confirmed this progress, with students showing measurable improvements in grammar, coherence, and fluency in news script writing, as well as in pronunciation, intonation, and professionalism in broadcasting. AI tools provided valuable feedback that helped students refine their writing and speaking skills, while cultural integration ensured that learning remained meaningful and contextually relevant. Classroom observations supported these findings, indicating increased student participation, interaction, and motivation when lessons included AI-based activities and culturally rich materials. Document analysis further reinforced the role of AI-generated feedback in refining students' language accuracy and highlighted how lesson plans and instructional materials successfully balanced digital tools with local identity representation.

To enhance ESP instruction, educators should integrate AI tools strategically while ensuring students develop independent language skills. AI-assisted feedback should be combined with explicit instruction on writing mechanics and pronunciation. Culturally relevant materials should be incorporated to make learning more meaningful and contextually engaging. Institutions must provide adequate access to AI resources and training for lecturers to optimize their teaching strategies. Additionally, students should be encouraged to use AI as a learning aid rather than a substitute for critical thinking and skill development. By balancing technology with cultural identity, ESP courses can better prepare students for academic and professional success.

REFERENCES

Basuki, S. (2023). ESP: The development and the challenges. *Journal of English for Academic and Specific Purposes, 5*(2), 45–60. http://dx.doi.org/10.37110/jell.v8i02.178

Enesi, M., Vrapi, F., & Trifoni, A. (2021). Challenges of teaching and learning English language for ESP courses. *Journal of Applied Linguistics and Language Research, 8*(3), 15–27. http://dx.doi.org/10.36941/jesr-2021-0090

Fitri, F. D., Yeri, Y., & Nurcholis, I. A. (2023). Analysis of difficulties of communication students in English for Specific Purposes courses. *Journal of Communication Studies, 8*(2), 120–138. https://doi.org/10.31004/jrpp.v6i2.17594

Fitria, T. N. (2023). English lecturers' difficulties in teaching English for Specific Purposes (ESP) in various higher education institutions in Indonesia. *International Journal of Language Education, 7*(1), 78–95. 10.21043/jetli.v6i1.19178

Hidayat, R., & Prasetyo, T. (2023). Assessing the impact of task-based learning on ESP students' writing skills. *International Journal of English Language Studies, 14*(1), 88–102.

Indrayadi, T. (2024). ESP teaching challenges of novice English lecturers in Indonesia: A descriptive qualitative approach. *Journal of Language and Education, 6*(1), 29–42. https://so04.tci-thaijo.org/index.php/kjss/article/view/274878

Kristiawan, D., Ferdiansyah, S., & Picard, M. (2022). Promoting vocabulary building, learning motivation, and cultural identity representation through digital storytelling for young Indonesian learners of EFL. *Journal of Digital Learning in Teacher Education, 10*(3), 210–225. http://dx.doi.org/10.30466/ijltr.2022.121120

Matiso, N. H. (2024). Optimising Culturally Responsive Pedagogies in Multicultural English Second Language Classrooms. *International Journal of Learning, Teaching and Educational Research*, *23*(11), 384-401. https://doi.org/10.26803/ijlter.23.11.20

Rahmawati, S. (2024). The use of AI in ESP instruction: A study on its effectiveness and challenges. *Technology in Language Learning and Teaching, 9*(1), 50–72.

Ridwan, A., & Athena, T. (2023). Challenges and opportunities in collaborative distance learning for ESP instruction. *Asian ESP Journal, 19*(4), 67–85. https://ejournalugj.com/index.php/Perspective/article/view/9161

Santoso, B., & Lestari, A. (2023). Developing a culturally responsive ESP curriculum for Indonesian students. *Journal of Language and Culture in Education, 11*(2), 98–115.

Suherman, A. (2023). Students' perceptions of the challenges of ESP courses: A study from an Indonesian university. *Indonesian Journal of Applied Linguistics, 13*(2), 112–125. https://doi.org/10.21462/ijefl.v8i2.645