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| **RESEARCH ARTICLE**

Designing a Needs-Based Flipped-TPACK Model for Animal Husbandry English

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| **ABSTRACT**

This study aims to design a Flipped-TPACK model tailored to the English for Specific Purposes (ESP) needs of Animal Husbandry students at Universitas Muhammadiyah Parepare based on a comprehensive needs analysis. The mixed-methods research included surveys and diagnostic language assessments to measure students' English proficiency and in-depth interviews to explore linguistic challenges and contextual requirements. Findings reveal significant gaps between students' current English skills and the demands of their specialized field, highlighting a preference for digital and entertainment media over formal and technical contexts. The Flipped-TPACK model, integrating flipped classroom strategies with the Technological, Pedagogical, and Content Knowledge (TPACK) framework, effectively enhances student engagement and learning outcomes by leveraging diverse multimedia resources and active learning techniques. This model addresses the specific linguistic needs identified, offering a robust framework for developing ESP teaching materials that improve English proficiency and professional readiness in animal husbandry. Future research should validate and refine this model across different contexts and disciplines, considering larger and more diverse samples and incorporating longitudinal studies for comprehensive evaluation. The study underscores the critical role of tailored ESP curricula in preparing students for professional success in specialized vocational fields.

1. Introduction

In the era of globalization, mastering English has become increasingly vital for professionals in various fields, including agriculture. For students specializing in Animal Husbandry, proficiency in English is essential to access the latest research, engage with international peers (Hyland, 2022), and stay informed about global trends and technological advancements. English for Specific Purposes (ESP), tailored to Animal Husbandry, equips students with the language skills needed to comprehend technical literature, participate in international conferences, and collaborate on global projects (Arias-Contreras & Moore, 2022). This linguistic competence not only enhances their academic performance but also broadens their career opportunities in an interconnected world where English serves as the lingua franca (Arias-Contreras & Moore, 2022).

Given the unique language requirements of Animal Husbandry students, there is a pressing need for effective and innovative learning methods and media (Arias-Contreras & Moore, 2022; Jeong Park, 2021). Traditional teaching approaches often fall short of addressing the specific demands of ESP. The integration of advanced teaching models, such as the Flipped Classroom combined with the TPACK (Technological Pedagogical Content Knowledge) framework, has shown promise in enhancing language acquisition (Syafitri et al., 2024). However, the success of any educational intervention hinges on a thorough needs analysis (Dou et al., 2023). Conducting a detailed needs analysis ensures that the teaching materials and methods are aligned with the students' actual

linguistic and professional needs (Daulay, 2021). This foundational step is crucial for designing relevant and effective ESP courses that can significantly improve students' English proficiency and their ability to apply it in their specialized field of Animal Husbandry.

Despite the recognized importance of English proficiency in the field of Animal Husbandry, students and educators at Universitas Muhammadiyah Parepare face significant challenges in ESP English learning. Traditional teaching methods often fail to address the specialized language needs of Animal Husbandry students, leading to gaps in their ability to understand and use technical terminology effectively (Meristo & López Arias, 2021). Moreover, these conventional approaches frequently struggle to maintain student interest and engagement, resulting in lower motivation and suboptimal learning outcomes (Salmani-Nodoushan, 2020). Motivation, meanwhile, plays a crucial role in ensuring the success of ESP courses (Dou et al., 2023). The lack of contextualized and relevant learning materials further exacerbates the problem, making it difficult for students to see the practical applications of their language studies in their professional field (Fortanet-Gómez & Beltrán-Palanques, 2022). Additionally, educators encounter difficulties in designing and delivering content that meets the diverse proficiency levels and specific needs of their students. These challenges underscore the pressing necessity for a novel and customized method for teaching English for Specific Purposes (ESP) that not only corresponds to the distinct demands of students studying Animal Husbandry but also cultivates a more interactive and efficient educational setting. Conducting a comprehensive needs analysis is essential to identify these specific problems and inform the development of an ESP curriculum that can overcome the limitations of traditional methods and better support students' academic and professional success.

While numerous recent studies have highlighted the effectiveness of ESP programs in enhancing specific language skills across various disciplines, there is a notable paucity of research focusing on the integration of innovative teaching models tailored to the needs of Animal Husbandry students. For instance, (Park et al., 2021) advocate for mixed-methods needs analysis to enhance curriculum design and instruction in ESP contexts. Arias-Contreras & Moore (2022) demonstrate the necessity of tailoring English language programs to the specific needs of agricultural technicians in Chile. (Basturkmen, 2021) identifies linguistic inquiry and case studies as major research areas in ESP while noting emerging topics like ESP learning and teacher education. (Syafitri et al., 2024) present a comprehensive needs analysis for Economics students, revealing preferences for specific language skills, activities, and topics. *However, these studies primarily address broad applications and do not delve into the unique linguistic and practical demands of Animal Husbandry*. Furthermore, existing literature often overlooks the critical preliminary step of conducting a detailed needs analysis to ensure that the instructional design is precisely aligned with student needs. Studies by these researchers underscore the importance of needs analysis in curriculum development, yet there is limited application of this practice within the domain of Animal Husbandry. This gap indicates a significant opportunity to explore and validate the effectiveness of a Flipped-TPACK model specifically designed for Animal Husbandry students, grounded in a comprehensive needs analysis. Developing ESP curricula that effectively bridge this gap is of utmost importance to ensure that the educational materials are not only original and captivating but also closely aligned with the specific professional environments of the learners.

This study aims to conduct a comprehensive needs analysis to identify the specific English language requirements of Animal Husbandry students at Universitas Muhammadiyah Parepare and to design a Flipped-TPACK model that addresses these needs. The specific objectives are to:

1. Conduct a needs analysis to determine the specific linguistic and contextual requirements of Animal Husbandry students in their academic and professional contexts.
2. Design a Flipped-TPACK model that incorporates the findings from the needs analysis to develop relevant and effective ESP teaching materials for Animal Husbandry students.

The importance of this research lies in its capacity to address crucial deficiencies in the current body of literature and implement English for Specific Purposes (ESP) instruction for students specializing in animal husbandry. Previous research, such as that by (Park et al., 2021) and Arias-Contreras & Moore (2022), has underscored the importance of conducting needs analyses for effective curriculum development and the advantages of integrating innovative pedagogical frameworks like the Flipped Classroom and TPACK. However, there is a noticeable lack of studies that focus specifically on the unique language needs of Animal Husbandry students, an area with distinct and specialized demands. By addressing these specific needs, this study will contribute to the theoretical advancement of ESP curriculum design tailored to the Animal Husbandry field.

2. Literature Review
2.1. Needs Analysis in ESP
Needs analysis is a crucial component in developing English for Specific Purposes (ESP) programs, serving as the foundation for curriculum design and teaching (Balatska & Vyslobodska, 2020); (Octaberlina & --, 2021) (Malicka et al., 2019); (Kong, 2018). It involves collecting and interpreting data about learners' language competence, learning needs, and target situations to define course objectives and principles (Balatska & Vyslobodska, 2020). Various research instruments can be employed, including

questionnaires, interviews, observations, and task analyses (Balatska & Vyslobodska, 2020). Needs analysis should be conducted at different stages: initially, during course design, and throughout the course for adjustments (Balatska & Vyslobodska, 2020). Mixed-methods approaches in NA can enhance the rigor of course design and curriculum improvement (Jeong Park, 2021). It helps identify specific areas of language use for particular disciplines, such as Informatics Engineering (Nimasari, 2018)). By understanding learners' needs, teachers can select appropriate teaching materials, increase motivation, and ensure course effectiveness (Balatska & Vyslobodska, 2020); (Octaberlina & --, 2021). Needs analysis is increasingly recognized as important not only for ESP but also for General English courses (Balatska & Vyslobodska, 2020).

2.2. ESP in Animal Husbandry
The field of English for Specific Purposes (ESP) has indeed become crucial in various disciplines, including animal husbandry, where tailored English instruction addresses the specific linguistic and professional needs of students. ESP courses, as noted (Basturkmen, 2010, 2021), are designed to meet the unique requirements of learners by focusing on specialized vocabulary, communication skills, and contexts relevant to their professional practices. For animal husbandry students, this involves a curriculum that integrates technical jargon, scientific terminology, and industry-specific communication strategies, which are essential for engaging with international literature, collaborating with global peers, and participating in professional discourse within their field. The significance of customized education is emphasized by the multifaceted and intricate characteristics of animal husbandry, covering diverse elements like integrated crop-livestock systems, wildlife conservation, and the utilization of cutting-edge techniques such as nanoparticles in veterinary medicin. (Aubron et al., 2023); (Willette et al., 2023); (Rodrigues et al., 2023). Existing research underscores the effectiveness of ESP in enhancing the language proficiency and professional competence of animal husbandry students. Studies by (Lou, 2023)) (D. Liu & Zhang, 2020), and (Belcher, 2006) have demonstrated that ESP courses not only improve linguistic abilities but also bolster students' confidence and preparedness for their future careers. Therefore, an ESP curriculum tailored to animal husbandry not only equips students with the necessary linguistic skills but also enhances their ability to navigate and contribute to the global discourse in their field, ultimately fostering a more informed and competent workforce.

2.3. Flipped Classroom Approach
The Flipped Classroom approach has indeed revolutionized traditional language learning paradigms by inverting the conventional instructional model, where students are introduced to new content outside of the classroom through video lectures or reading materials, allowing classroom time to be dedicated to interactive and collaborative activities that reinforce learning. This approach promotes a heightened level of interaction and a learning environment that is centered around the student, as supported by a multitude of research studies spanning various educational disciplines. For instance, a study on low-proficiency language learners demonstrated that the flipped approach significantly improved their overall learning achievement, motivation, and self-efficacy compared to traditional methods, with students finding the approach interesting and engaging despite some challenges (Kneissl & Tichy, 2023) (Naing et al., 2023). The approach has also been beneficial in dermatology teaching, where it improved students' problem-solving, analytic, and written skills and was preferred over traditional lecture-based material(Golenya et al., 2023). Studies have shown that the Flipped Classroom methodology provides a wide array of advantages in the realm of language acquisition, especially with regard to enhancing critical thinking abilities and encouraging independence among learners (Le et al., 2024). In veterinary education, the flipped classroom led to higher scores, greater task value, and more positive emotions among students compared to traditional methods (Kneissl & Tichy, 2023). Furthermore, the integration of the flipped classroom in teaching viral hepatitis during the COVID-19 pandemic resulted in higher theoretical test scores and case analysis abilities, with students expressing a desire to continue this method even after physical classes resumed (Xia et al., 2023). In music education within a rural environment, both students and their families had a favourable opinion of the flipped classroom model, despite concerns about technology-related issues (Roig-Vila & Fabra-Brell, 2023). The approach has also been effective in interprofessional education for medical students, where it facilitated real-world case-based learning and interactions with other health professionals, although it did not significantly change interprofessional identity (Thomae et al., 2023). In orthopedic nursing education, the flipped classroom based on the CDIO concept improved students' clinical practice abilities, critical thinking, and autonomous learning, highlighting its potential for enhancing practical teaching (Su et al., 2023). In engineering education, incorporating reciprocal teaching into the flipped classroom reduced students' cognitive load and improved their high-level cognitive skills, ensuring sustainable learning practices (Hwang & Shadiev, 2023). Overall, the flipped classroom model has been shown to enhance student engagement, motivation, and learning outcomes across various disciplines, supporting (Sams & Bergmann, 2012) argument that it allows for more personalized and differentiated instruction.

2.4. TPACK Framework
The Technological Pedagogical Content Knowledge (TPACK) framework, developed by Mishra and Koehler (2006), is instrumental in integrating technology into education, particularly in language education, by emphasizing the interplay between content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). This framework assumes a critical position in facilitating the advancement and implementation of technology-enhanced instructional approaches that align with pedagogical goals and specific content demands. In a pedagogical makerspace, prospective teachers reported increased TPACK, technology

acceptance, and motivation, demonstrating the framework's applicability in hands-on, project-based learning environments (Max et al., 2024). The pandemic also revealed that preservice teachers' experiences with remote education positively impacted their technological knowledge and TPACK, underscoring the framework's relevance in crisis situations (Brianza et al., 2024). Furthermore, professional development workshops for middle and high school teachers showed that disciplinary perspectives influence the understanding and implementation of computational thinking (CT) within the TPACK framework, highlighting the need for inclusive CT infusion efforts across all content areas (Jocius et al., 2021). Language teachers, in particular, benefit from the TPACK framework as it guides the integration of innovative technologies into their teaching practices, enhancing language learning through technology-enhanced education (T. Liu et al., 2023).

2.5. Integrating Flipped Classroom and TPACK
The amalgamation of the Flipped Classroom (FC) model with the Technological Pedagogical Content Knowledge (TPACK) framework presents a sturdy approach for enriching language education, especially in niche areas like English for Specific Purposes (ESP) in the realm of animal husbandry. The justification for this fusion stems from the synergistic advantages of both approaches: the FC's prioritization of active, student-centered learning is harmonious with TPACK's emphasis on the strategic integration of technology to bolster pedagogical goals. The FC model allows students to engage with content outside of class through pre-recorded lectures, readings, and multimedia resources, thereby freeing up classroom time for interactive, technology-enhanced activities that reinforce and apply this knowledge. This method has been shown to improve academic performance and student satisfaction in various educational settings, including health professional programs and veterinary education, where students in FC settings demonstrated higher scores and greater task value compared to traditional classrooms (Naing et al., 2023) (Kneissl & Tichy, 2023). For instance, in a study involving pre-service teachers, the integration of technology-rich courses significantly improved their attitudes toward educational technology and their overall TPACK scores, indicating a better preparedness to implement such approaches in their future classrooms (Lim et al., 2024) (Guo, 2024).

In the context of ESP for animal husbandry, this integration can be particularly beneficial. For example, veterinary students who used an eLearning platform to access relevant content before class and engaged in interactive, technology-enhanced activities during class showed significant improvements in their learning outcomes and satisfaction levels (Kneissl & Tichy, 2023). Additionally, the use of mobile-instant messaging platforms like Moodle and Telegram in technology-enhanced content and language integrated learning (TECLIL) settings has been found to empower students' in-depth knowledge co-construction and subject-specific language performance (Imamyartha et al., 2023). Furthermore, the integration of FC and TPACK can address the challenges of the digital divide and resource limitations, as seen in rural nursing programs where flipped teaching training significantly enhances faculty's ability to engage students through innovative, student-centered teaching methods (Gopalan et al., 2023). This approach also aligns with the needs and preferences of students, as evidenced by studies showing that student teachers and residents overwhelmingly favor active learning and FC methods for their relevance and feasibility in clinical practice and board exams (Bhatt et al., 2023; Han et al., 2023). Overall, combining the FC approach with the TPACK framework can lead to more effective and efficient learning experiences by leveraging the depth of content exploration and the richness of collaborative, hands-on practice, ultimately preparing students for real-world applications in specialized fields like ESP for animal husbandry.

3. Methodology
3.1 Research Method
This study adopts a mixed-methods research design, integrating both quantitative and qualitative approaches to thoroughly investigate the linguistic and contextual requirements of Animal Husbandry students. The quantitative aspect includes structured surveys and diagnostic language assessments to measure students' current language proficiency and the frequency and importance of various language skills in their academic and professional contexts. Complementing this, the qualitative aspect involves in-depth interviews with students and lecturers to gain deeper insights into the specific linguistic challenges and needs. This dual approach ensures a comprehensive understanding of the students' needs, which informs the development of a Flipped-TPACK model for effective ESP instruction.

3.2 Respondents
The respondents for this study consist of students from the Animal Husbandry Department at Universitas Muhammadiyah Parepare and their English lecturers. Fourteen student respondents, eight female, and six male, are conveniently selected to ensure representation across different academic levels, providing a comprehensive view of their language proficiency and needs. Student respondents came from different semester levels, starting from semesters 1, 5, and 7. The English lecturers are purposively sampled, bringing expert perspectives on the linguistic challenges and instructional strategies relevant to the students. This selection of respondents ensures that the study captures detailed and pertinent information from both the learners' and educators' viewpoints, forming a solid basis for developing an effective ESP curriculum.

3.3 Instruments

The study utilizes a combination of quantitative and qualitative instruments to collect comprehensive data. For the quantitative aspect, a structured questionnaire is administered to students of the Animal Husbandry Study Program to evaluate their language proficiency and identify the frequency and importance of specific language skills in their academic and professional contexts. The qualitative aspect involves semi-structured interviews with English lecturers to gather detailed insights into the linguistic challenges and instructional strategies relevant to the students. These instruments are meticulously developed and validated to ensure reliability and relevance to the research objectives, providing a solid foundation for the subsequent analysis and curriculum development.

3.4 Procedure of Collecting Data

The data collection procedure is meticulously planned and executed in multiple phases to ensure comprehensive and accurate data gathering. Initially, a structured questionnaire is administered to the selected Animal Husbandry students to obtain quantitative data on their language proficiency and needs. This questionnaire has been structured to gather comprehensive data pertaining to the language proficiencies of students at present, as well as the particular linguistic demands within their academic and professional environments. Subsequent to this, qualitative data is acquired via semi-structured interviews with English educators to obtain a comprehensive understanding of the linguistic obstacles encountered by students and the pedagogical approaches utilized. The interviews are carried out in a suitable setting, documented, and transcribed word for word for meticulous examination. Ethical principles, such as obtaining informed consent and maintaining confidentiality, are rigorously followed during the data gathering phase to uphold the integrity and ethical norms of the study.

3.5 Technique of Data Analysis

The data analysis involves a systematic approach to integrate and interpret the quantitative and qualitative data. Quantitative data from the surveys and language assessments are analyzed using descriptive statistics. Some inferential statistical methods (t-test and Importance Performance Analysis (IPA), which were introduced by Martilla dan James (1977), were also applied. Statistical analysis was conducted utilizing Statistical Package for the Social Sciences (SPSS) version 29**.** They helped identify key trends and significant differences in language needs across different respondent groups. The qualitative data obtained from interviews was subjected to thematic analysis in order to reveal recurring themes and patterns pertaining to linguistic and contextual obstacles. The findings from both data sets are then triangulated to provide a comprehensive understanding of the students' needs, which informs the development of the Flipped-TPACK model. This integrated analysis ensures that the curriculum design is both evidence-based and tailored to the specific needs of Animal Husbandry students.

4. Results and Discussion

This section explains the findings of this research and also discusses the findings based on the data obtained and confirmation of relevant theories. The objective of this study was to conduct a needs analysis to determine the specific linguistic and contextual requirements of Animal Husbandry students in their academic and professional contexts and to design a Flipped-TPACK model that incorporates the findings from the needs analysis to develop relevant and effective ESP teaching materials for Animal Husbandry students. The following are the results and the discussions of the research arranged sequentially based on the research objectives.
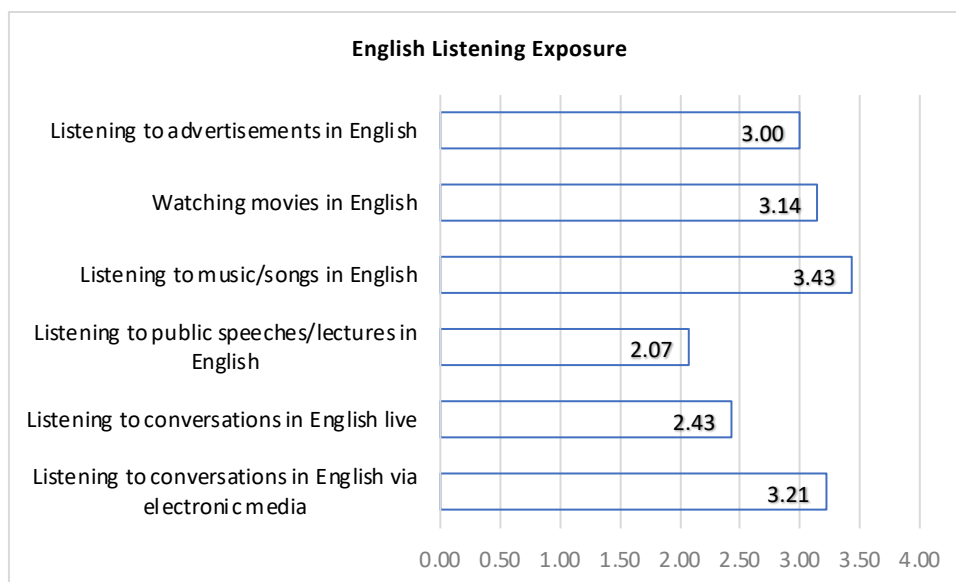
4..1. Results

4.1.1. Needs Analysis Results

4.1.1.1 Students' perception on their Current English Language Exposure
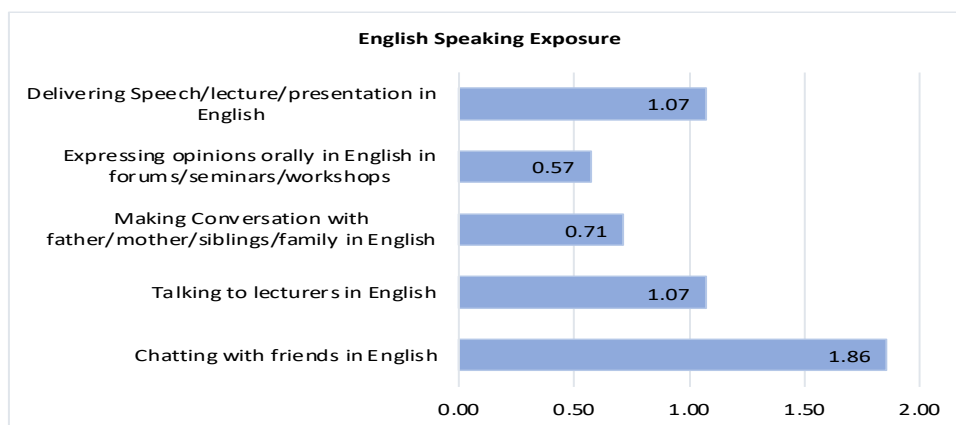
a) English Listening Exposure

The data asserts that students have the highest exposure to English through listening to music and songs, suggesting that music is a highly preferred medium for engaging with the English language. Additionally, electronic media, including listening to conversations via platforms such as podcasts or videos and watching English-language movies, plays a significant role in students' English listening practices. Advertisements in English also contribute considerably to their exposure. On the other hand, live conversations in English and listening to public speeches or lectures are less frequent activities. These insights underscore the necessity of incorporating a variety of audio-visual materials into the ESP curriculum, reflecting students' current preferences and engagement patterns to effectively enhance their listening skills.

English Listening Exposure

Listening to advertisements in English — 3.00
Watching movies in English — 3.14
Listening to music/songs in English — 3.43
Listening to public speeches/lectures in English — 2.07
Listening to conversations in English live — 2.43
Listening to conversations in English via electronic media — 3.21

0.00 0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00

Figure 1. The Frequency of Students' English Listening Exposure
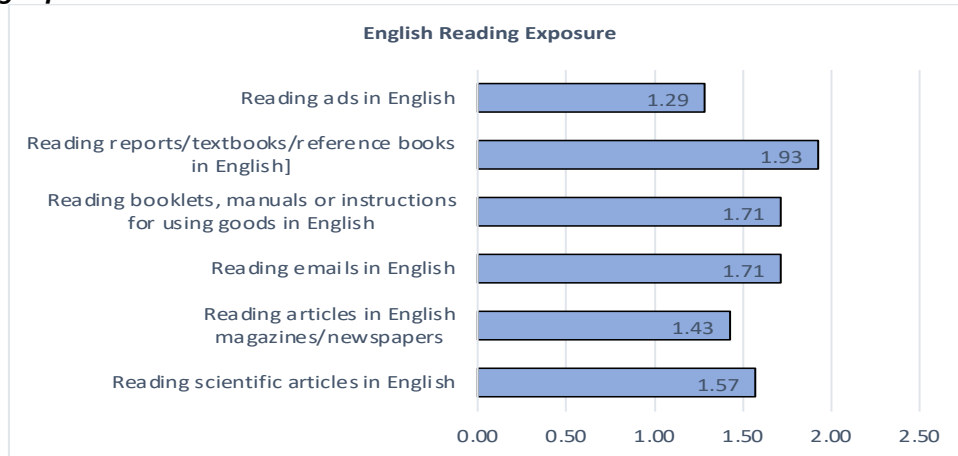
b) English Speaking Exposure

Figure 2 outlines the average scores for various English-speaking subskills, measured on a Likert scale. The highest average score is for chatting with friends in English, indicating that this is the most common context in which students practice speaking English. Talking to lecturers and delivering speeches or presentations in English are also notable activities, though they occur less frequently. Making conversation with family members in English and expressing opinions orally in formal settings like forums, seminars, or workshops are the least frequent activities. Overall, the data suggests limited exposure to English speaking activities, with an average score reflecting minimal practice across all subskills. This highlights the need for targeted interventions in the ESP curriculum to increase opportunities for students to practice speaking English in diverse and meaningful contexts.

English Speaking Exposure

Delivering Speech/lecture/presentation in English — 1.07
Expressing opinions orally in English in forums/seminars/workshops — 0.57
Making Conversation with father/mother/siblings/family in English — 0.71
Talking to lecturers in English — 1.07
Chatting with friends in English — 1.86

0.00 0.50 1.00 1.50 2.00

Figure 2. The Frequency of Students' English Speaking Exposure

The data reveals that students' English-speaking exposure is highest when chatting with friends, suggesting that informal peer interactions are the most common context for practicing spoken English. This indicates a preference for casual conversations over formal or academic settings. Speaking activities such as talking to lecturers and delivering speeches or presentations are less frequent, highlighting a gap in more structured speaking practice. Conversations with family members and expressing opinions in formal forums or workshops are the least common, suggesting limited opportunities for students to engage in English speaking within their personal and academic environments. Overall, the low average score across all subskills points to a need for enhancing the ESP curriculum with more diverse and frequent speaking opportunities, ensuring students can practice and develop their oral English skills in various meaningful contexts.
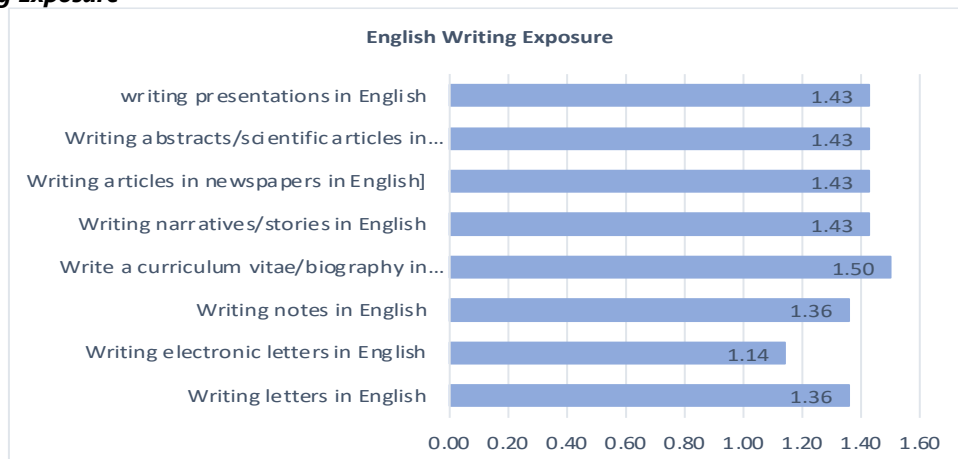
c) English Reading Exposure

English Reading Exposure

Category	Value
Reading ads in English	1.29
Reading reports/textbooks/reference books in English]	1.93
Reading booklets, manuals or instructions for using goods in English	1.71
Reading emails in English	1.71
Reading articles in English magazines/newspapers	1.43
Reading scientific articles in English	1.57

Figure 3. The Frequency of Students' English Reading Exposure

The data indicates that students have the highest exposure to English reading through reports, textbooks, and reference books, highlighting a strong engagement with academic texts. Reading emails and manuals or instructions for using goods also shows significant levels of exposure, suggesting that practical and utilitarian reading materials are commonly accessed. In contrast, reading scientific articles, articles in English magazines or newspapers, and advertisements are less frequent activities, with advertisements being the least engaged. Overall, the moderate average score reflects a consistent but varied engagement with different types of reading materials. These findings emphasize the concern of integrating a wider range of reading materials into the ESP curriculum to enhance students' reading skills and ascertain they are well-prepared for both academic and everyday contexts.

d) English Writing Exposure

English Writing Exposure

Category	Value
writing presentations in English	1.43
Writing abstracts/scientific articles in...	1.43
Writing articles in newspapers in English]	1.43
Writing narratives/stories in English	1.43
Write a curriculum vitae/biography in...	1.50
Writing notes in English	1.36
Writing electronic letters in English	1.14
Writing letters in English	1.36

Figure 2. The Frequency of Students' English Writing Exposure

The data reveals that students have the highest exposure to English writing through practical tasks such as composing curriculum vitae or biographies. This suggests a focus on personal and professional documentation. Moderate engagement is observed in writing narratives, stories, articles for newspapers, scientific abstracts, and presentations, indicating some familiarity with academic and creative writing tasks. However, less frequent engagement is seen in writing letters, electronic letters, and notes, pointing to limited use of these more informal writing forms. The overall low average score highlights the need for the ESP curriculum to incorporate more diverse and frequent writing activities, ensuring students develop a well-rounded proficiency and confidence in various English writing contexts.

4.1.1.2 Students' English Performance and Importance and IPA Analysis

Comparing the students' performance in language skills and the importance them, some indicators have been set to measure these variables. There were six items stating the performance and the importance of each skill. Table 1 demonstrates the data of these variables. The gap analysis reveals notable discrepancies in the importance and execution of English language competencies among students in listening, speaking, reading, and writing. In listening, students struggle most with understanding everyday

conversations, subject matter from electronic media, and online English discourse. Speaking skills show considerable gaps in presenting and discussing in English, both online and offline. Reading skills highlight notable deficiencies in comprehending reports, textbooks, reference materials, and graphical information. Writing skills exhibit substantial gaps, particularly in producing booklets, manuals, and descriptive content of graphs, tables, and images. The results demonstrate key areas in which students' academic achievement falls below the expected benchmarks, underscoring the necessity for tailored educational interventions aimed at improving their competence in fundamental English language competencies.

Table 1. The Gap Analisis

Skills	Subskills	Indicators	Importance	Performance	Gap
Listening	understanding everyday conversations	L1	4.00	2.79	-1.2
	understanding the instructions and learning from the lecturer]	L2	3.93	3.14	-0.7
	understanding English songs	L3	3.64	3.21	-0.4
	understanding English films	L4	3.71	3.14	-0.5
	understanding subject matter from electronic media	L5	3.86	3.00	-0.8
	understanding English discourse/speeches/lectures in online meetings	L6	3.79	2.93	-0.8
Speaking	Making converse in everyday English	S1	4.00	2.64	-1.3
	giving a speech/lecture in English	S2	3.86	2.43	-1.4
	telling the story in English	S3	3.86	2.57	-1.2
	presenting in English online	S4	4.00	2.50	-1.5
	presenting in English offline	S5	3.93	2.43	-1.5
	discussing in English	S6	4.00	2.50	-1.5
Reading	understanding reading in the form of stories in English	R1	4.07	3.07	-1.0
	understanding articles in English in newspapers or magazines	R2	3.93	2.93	-1.0
	understanding letters in English	R3	3.86	2.79	-1.0
	understanding booklets or manuals in English	R4	3.93	3.00	-0.9
	understanding reports, textbooks or reference books in English	R5	4.00	2.79	-1.2
	understanding graphic information, tables and pictures in English	R6	4.07	2.86	-1.2
Writing	Writing stories in English]	W1	4.00	3.07	-0.9
	Writing letters in English	W2	3.86	3.07	-0.7
	Writing articles in English	W3	3.86	2.86	-1.0
	Writing booklets or manuals in English	W4	4.07	2.71	-1.3
	Writing reports, textbooks or reference books in English	W5	3.93	3.14	-0.7
	Writing descriptions of graphs, tables and images in English	W6	4.07	3.00	-1.0

To support this idea, an inferential statistical calculation was then applied to examine the significant differences between the performance variables and the importance variable. A pair t-test was applied to compare the variables, as shown in Table 2.

Table 2. Paired Sample Test between Importance and Performance

| | | | Paired Differences | | | | | | | Significance | |
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | One-Sided p | Two-Sided p |
					Lower	Upper				
Pair 1	IMPORTANCE - PERFORMANCE	1.06917	.29463	.06014	.94475	1.19358	17.778	23	<.001	<.001

The results of the paired t-test exhibit a highly significant difference between the perceived importance and actual performance of students' English language skills, with performance significantly lagging behind importance. These findings underline the need for targeted educational interventions to fill this gap and enhance students' proficiency in the notable English language skills.

An Importance Performance Analysis (IPA) is also applied to see which subskills need to be stressed when designing the teaching framework. Based on SPSS calculations, four graphs of IPA results describe the IPA of four language skills. In the Kurtosis diagram, the top-left quadrant (Concentrate Here) are skills that are important but currently underperforming. These are critical areas that need immediate attention and improvement. Top-right quadrant (Keep Up the Good Work) are skills that are important and are performing well. Bottom-Left Quadrant (Low Priority) are Skills that are not very important and are underperforming. Bottom-Right Quadrant (Possible Overkill) are skills that are not very important but are performing well.
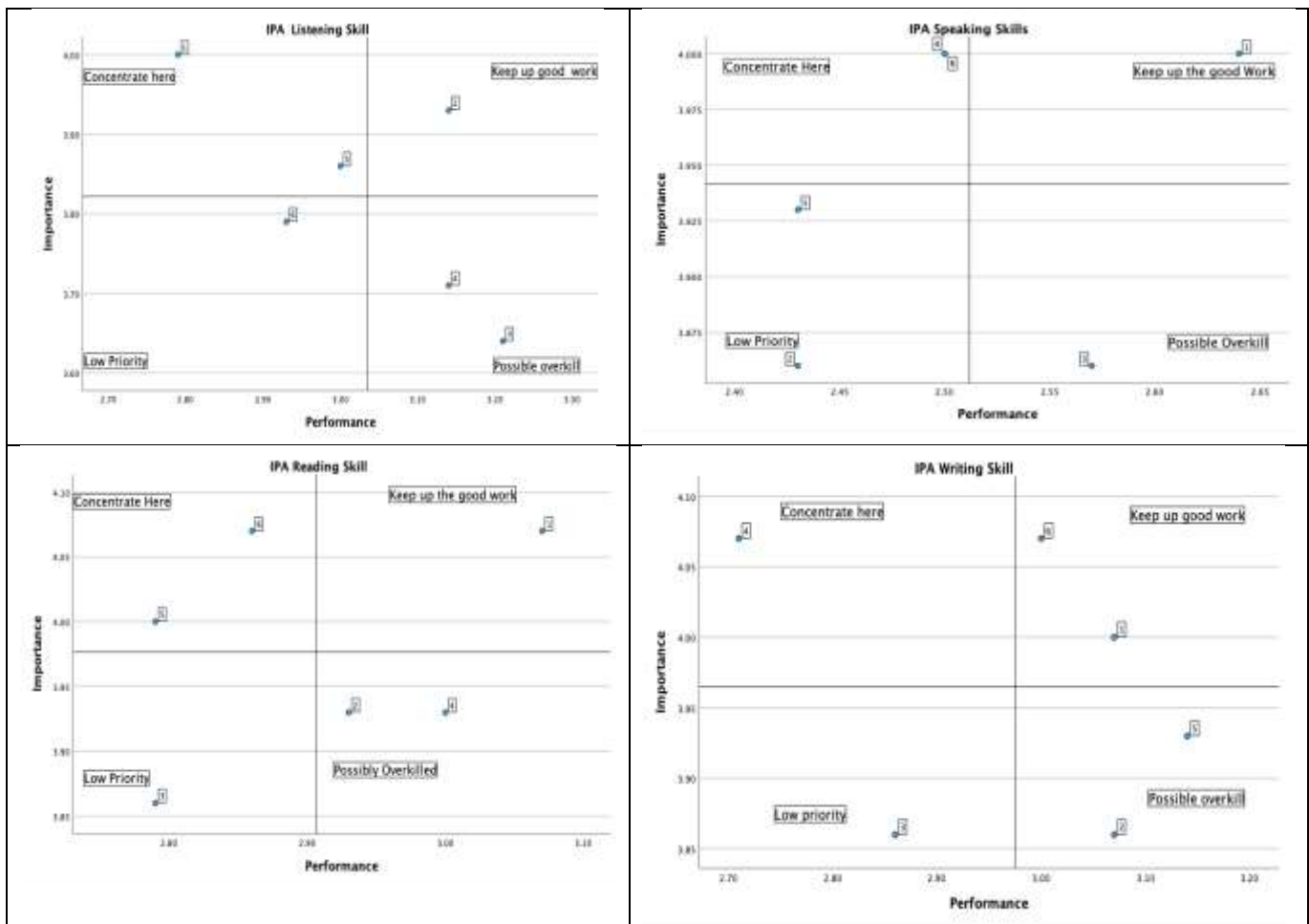
Figure 3. IPA of the Four Language Skills

The Importance Performance Analysis (IPA) conducted to inform the design of a Flipped-TPACK model for teaching English to Animal Husbandry students reveals critical insights into the prioritization of various language skills. The analysis identifies key areas where attention should be focused to enhance student learning outcomes effectively. For listening skills, understanding everyday

conversations and subject matter from electronic media are high-priority areas requiring concentrated efforts. Additionally, ensuring the comprehension of instructions and learning from lecturers is performing well and should be maintained. In speaking, priority should be given to presenting in English online and discussing in English, while everyday conversational skills should be preserved. Conversely, tasks such as understanding English films and songs and telling stories in English are deemed less critical, suggesting a potential reallocation of resources to more pressing needs.

For reading, the analysis highlights the importance of understanding reports, textbooks, reference books, and graphic information, which are vital for academic success. Reading stories in English is well-managed and should continue to be supported. Lower priority is assigned to understanding letters, and possible overkill is noted in comprehending articles in newspapers and magazines, as well as booklets or manuals in English. In writing, creating booklets or manuals and describing graphs, tables, and images are crucial areas needing focused improvement, while writing stories is effectively managed and should be maintained. Writing articles, letters, and reports is considered a lower priority. This structured approach to prioritizing language skills ensures that the Flipped-TPACK model can be optimized to meet the specific linguistic and contextual needs of Animal Husbandry students, fostering more relevant and effective ESP instruction.

4.1.1.3 Students' Preferences for Learning Method

The preferences indicated in Table 3 have several implications for educators and institutions seeking to optimize their teaching strategies and resources. Firstly, the strong preference for offline and discussion-based learning methods underscores the continued benefit of face-to-face interactions. This argues that while digital tools and online resources are beneficial, they should equip rather than replace traditional classroom experiences. Educators should thus focus on creating engaging, interactive offline environments while integrating online elements to support and enhance learning.

Secondly, the high average scores and positive perceptions of classical approaches and pair work suggest that students value structured and collaborative learning settings. Institutions might consider incorporating more collaborative projects and structured teaching methods into their curricula to meet these preferences. Additionally, given the favorable reception of media tools like whiteboards and LCD projectors, it is essential to ensure these resources are readily available and utilized effectively in classrooms.

Table 3. Students' Preferences for Learning Methods

Components	Types	Average Score on Likert Scale (Max 5)	Students on Positive Perception (%)
Form	Online only	3.42	50
	Offline only	4.43	100
	Blended/flipped/combination of online and offline	4.14	78.6
Approach/ Method	Individual (self-study)	3.36	50
	Classical Approach	4.29	92.9
	Lecturing	3.50	50
	work in pairs	4.07	78.6
	discussion	4.64	100
Media	Whiteboard	4.64	92.9
	LCD projector	4.43	100
	social media: Facebook/ Instagram/ YouTube etc.	4.43	85.7
Learning/ Resources	textbooks	4.36	100
	e-book	4.07	85.7
	Social media like Facebook, Instagram, Twitter	4.07	85.7
	material from internet like YouTube	4.14	78.6

The moderate preference for individual self-study and lecturing highlights the need for a balanced approach that combines direct instruction with opportunities for independent learning. This can be accomplished by giving students access to spacious online resources, such as e-books and educational content on social media platforms, which can promote self-directed learning outside the classroom.

4.1.1.4 Results Based on English Lectures' Interviews

The interview results provide a comprehensive overview of the structure and content of the English course tailored for students in the field of animal husbandry. The objectives are clearly aligned with practical applications, ensuring that students not only learn English but can also use it effectively within their specific field of study. The intermediate proficiency level indicates that the course is designed for students who already have a basic understanding of English but need to refine and expand their skills.

Table 4. Data Based on Lecturers' Interviews

Component	Details
Course Objectives	Understand spoken and written English; express opinions orally and in writing related to animal husbandry.
Student Proficiency Level	Intermediate
Taught Dialects	American, British, Australian
Types of Materials	Textbooks, YouTube links, Wikipedia articles (No specific book titles provided)
Skills Taught	Listening, Speaking, Reading, Writing
Teaching Media	Laptops, LCD projectors, Internet
Language Context	Formal and Informal
Language Genre	Agriculture, Animal Husbandry
Teaching Models	Lectures, Reading sessions, Discussions, Presentations
Teaching Modes	Offline (in-person), Online (distance learning)
Time Allocation	2 x 50 minutes per session

The inclusion of multiple English dialects (American, British, Australian) prepares students for a global context, reflecting the diverse sources of knowledge and international communication in agriculture and animal husbandry. The use of various teaching materials, including digital resources, caters to different learning preferences and enhances engagement. However, the absence of specific textbooks suggests a flexible approach to learning resources, possibly allowing for the integration of the most current and relevant information available online. The comprehensive teaching of all four language skills ensures a balanced approach to language acquisition. The use of modern teaching media like laptops and the Internet indicates an up-to-date and tech-savvy teaching environment. Addressing both formal and informal contexts of English prepares students for a wide range of real-life situations.

Focusing on agriculture and animal husbandry genres ensures that the language skills learned are directly applicable to the students' field, enhancing the relevance and practicality of the course content. The variety of teaching models caters to different learning styles, promoting active learning and critical thinking. The combination of offline and online teaching modes provides flexibility and accessibility, catering to the diverse needs of students. Overall, the thematic analysis underscores a well-rounded and practical approach to teaching English in a specialized context, aimed at equipping students with the necessary language skills to excel in their academic and professional endeavors in the field of animal husbandry.

4.1.2 Model of Flipped-TPACK Model Design for English for Animal Husbandry

Based on the findings from the needs analysis, the following are the special needs of students in the Animal Husbandry program concerning English language skills:

1. Listening Skills: Students need more exposure to everyday English conversations to improve their understanding of casual interactions. Enhanced listening activities using digital resources are essential for comprehending subject matter from electronic media. Additionally, focused listening exercises that simulate classroom and lecture scenarios will help students follow instructions and learn effectively from their lecturers.
2. Speaking Skills: Students require opportunities to practice delivering presentations both online and offline to build confidence in public speaking. Structured activities that encourage interactive and meaningful discussions are necessary to enhance their speaking skills. Regular practice sessions for casual conversations will also help improve their fluency and confidence in informal settings.
3. Reading Skills: To improve reading skills, students need targeted strategies for understanding complex academic materials such as reports, textbooks, and reference books. Exercises focusing on interpreting graphical data and visual information are also important. Exposure to scientific literature and technical manuals relevant to animal husbandry will further enhance their reading proficiency.
4. Writing Skills: Students need training in drafting technical documents, such as booklets and manuals, specific to the field of animal husbandry. Practice in writing descriptions and interpretations of graphs, tables, and images will improve their ability

to convey visual data. Additionally, guidance on composing professional documents, such as CVs and biographies, is necessary to prepare them for academic and career success.

Based on the findings of needs analysis, the researchers then figured out a framework for teaching English for Animal Husbandry through a flipped-TPACK Model.

Table 5. Framework of the Flipped-TPACK Model for

No	Components	Details
1	Course Name	English for Animal Husbandry
2	Course Objective	To enhance students' English proficiency and prepare them for professional success in the field of a husbandry.
3	Model	Flipped (online and offline)
4	Approach	Active Learning : group/peer discussion
5	Method	group discussions, problem-solving sessions, and peer teaching
6.	Media	multimedia instructions (videos, interactive simulations)
7	Resources	Online ressources : YouTube,
8	Assesssment	quizzes, polls, and reflection journals
9	Content	specific to animal husbandry, including vocabulary, terminologies, and context-related scenarios
10	Language Skills	activities that integrate listening, speaking, reading, and writing skills within the context of animal h
11	Activities	Develop learning activities that are contextually relevant to animal husbandry, such as case studies, plays, and project-based learning
12	Pre-Class Activities	Content Delivery: Provide students with pre-recorded video lectures, reading materials, and multim resources related to animal husbandry. Preparatory Assignments: Assign preparatory tasks such as watching videos, reading articles, and co online quizzes
13	In-Class Activities	Interactive Discussions: Facilitate interactive discussions and debates on topics related to animal hu Group Work and Projects: Engage students in group work and projects that require collaboration ar practical application of English skills in animal husbandry contexts.
14	Post-Class Activities	Reflection and Feedback: Encourage students Supplementary Resources:
15	Assessment and Evaluation	Formative Assessments: Use formative assessments throughout the learning process. Summative Assessments: Conduct summative assessments such as exams, presentations, and proje

4.2. Discussion

The needs analysis conducted in this study provides critical insights into the specific linguistic and contextual requirements of students in the Animal Husbandry program at Universitas Muhammadiyah Parepare. The analysis reveals that while students demonstrate proficiency in basic English, there is a significant gap between their current performance and the linguistic demands of their specialized field. This gap is particularly evident in the areas of listening, speaking, reading, and writing skills, which are crucial for comprehending and producing technical and scientific content related to animal husbandry.

Listening Skills: The study found that students have the highest exposure to English through listening to music and electronic media, indicating a preference for engaging with English in more casual contexts. However, there is significantly less exposure to live conversations and formal public speeches, which are essential for professional interactions. This highlights the need for an ESP curriculum that integrates diverse audio-visual materials to enhance listening skills in more formal and technical contexts.

The finding is consistent with findings from (Park et al., 2021), which highlight the preference of students for engaging with English through digital platforms and entertainment media. However, (Arias-Contreras & Moore, 2022) argue that for agricultural technicians, there is a critical need for exposure to more formal and technical listening contexts. Our study supports this by identifying the need for an ESP curriculum that incorporates diverse audio-visual materials to enhance listening skills in professional settings.

Speaking Skills: Informal peer interactions are the most common contexts for practicing spoken English, suggesting a preference for casual conversations. There is limited engagement in formal speaking activities, such as talking to lecturers and delivering

speeches, indicating a need for more structured speaking opportunities. This can be addressed by incorporating activities that encourage interactive and meaningful discussions, both online and offline.

The limited engagement in formal speaking activities, such as delivering speeches or talking to lecturers, contrasts with the findings of (Syafitri et al., 2024), who observed that Economics students preferred structured speaking opportunities. This suggests a broader trend across disciplines where formal speaking skills are underdeveloped. Our findings expand on this by highlighting the necessity for more interactive and meaningful discussion activities tailored to the specific context of animal husbandry.

Reading Skills: The analysis indicates that students' reading activities are dominated by academic texts, such as reports, textbooks, and reference books. Practical materials like emails and manuals also see significant use, while scientific articles and advertisements are less frequently read. This suggests a need to integrate more diverse reading materials into the ESP curriculum to enhance students' reading skills in both academic and everyday contexts.

Our analysis indicates that reading activities are primarily focused on academic texts, with less frequent engagement in reading scientific articles and advertisements. This finding aligns with (Basturkmen, 2021), who noted that ESP learners often prioritize reading materials directly related to their field of study. However, our study expands on this by emphasizing the need to integrate a wider range of reading materials, reflecting Octaberlina & Anggiani (2021) suggestion for varied and extensive reading opportunities to enhance overall reading proficiency.

Writing Skills: Students are most familiar with writing tasks related to personal and professional documentation, such as composing curriculum vitae or biographies. There is moderate engagement in academic and creative writing tasks, while less frequent writing occurs in informal tasks like letters and notes. This highlights the necessity for the ESP curriculum to provide more diverse and frequent writing opportunities to improve students' proficiency in various English writing contexts.

The predominance of writing tasks related to personal and professional documentation is consistent with the findings of (Malicka et al., 2019), who observed that vocational students frequently engage in practical writing tasks. However, the limited engagement in informal writing tasks, such as letters and notes, contrasts with the recommendations of Kong (2018), who advocated for a balanced approach to writing instruction. Our study supports this by highlighting the need for more diverse writing activities to improve students' proficiency in various English writing contexts.

The comprehensive needs analysis underscores the importance of developing an ESP curriculum that aligns with the specific linguistic and contextual requirements of Animal Husbandry students. By addressing these needs, the curriculum can significantly enhance students' English proficiency and their ability to apply it effectively in their specialized field.

The findings of this study support the existing literature on the importance of needs analysis in ESP curriculum development. As highlighted by Dou et al. (2023) and Balatska & Vyslobodska (2020), a thorough needs analysis is crucial for identifying specific linguistic requirements and informing the design of effective teaching materials. Our study confirms the necessity of this approach by demonstrating significant gaps between students' current performance and the linguistic demands of their specialized field.

The limited preference for formal speaking activities among animal husbandry students challenges the findings of previous studies that emphasize the importance of structured speaking opportunities. This suggests that while formal speaking skills are essential, there may be a need for alternative methods to engage students in these activities tailored to their specific context and preferences.

This study expands the existing knowledge by providing a detailed analysis of the specific linguistic and contextual needs of animal husbandry students. Previous research, such as that by (Park et al., 2021). and (Arias-Contreras & Moore, 2022) have generally focused on broader applications of ESP across various disciplines. Our study contributes to this by offering insights specific to animal husbandry, highlighting the need for a tailored approach to ESP instruction that addresses the unique challenges and requirements of this field.

4.2.1 Impact
The findings of this study strongly support the theoretical foundation laid by scholars such as Dou et al. (2023) and Balatska & Vyslobodska (2020), who emphasize the critical role of needs analysis in ESP curriculum development. The detailed needs analysis conducted in this study aligns with their argument that understanding learners' specific linguistic and contextual needs is essential for creating effective instructional materials. By demonstrating significant gaps between students' current performance and the linguistic demands of their field, this study validates the necessity of needs analysis as a fundamental step in ESP curriculum design. The integration of the Flipped Classroom model in this study supports existing theories on active learning and student

engagement. Studies by Sams & Bergmann (2012) have shown that the Flipped Classroom model enhances student engagement and learning outcomes by allowing more time for interactive and hands-on activities during class.

The limited preference for formal speaking activities among Animal Husbandry students challenges existing theories that emphasize the importance of structured speaking opportunities in ESP instruction. Studies by Syafitri et al. (2024)and (Park et al., 2021) have highlighted the benefits of formal speaking exercises in developing students' language proficiency. However, our findings suggest that these activities may not be as effective for all student populations, particularly those in vocational fields like Animal Husbandry. This challenges the assumption that formal speaking tasks are universally beneficial and suggests the need for alternative, context-specific approaches to enhance speaking skills.

This research contributes to the development of theory in ESP by providing empirical evidence on the specific linguistic and contextual needs of Animal Husbandry students. Previous studies have often generalized the application of ESP across various disciplines without delving into the unique requirements of specific fields. By focusing on Animal Husbandry, this study expands the theoretical framework of ESP to include more nuanced and specialized approaches, thus enhancing the overall understanding of how to tailor ESP instruction to different vocational contexts.

The study introduces and validates the Flipped-TPACK model as an innovative approach to ESP instruction. By combining the Flipped Classroom and TPACK frameworks, this research demonstrates a practical application that enhances student engagement and learning outcomes. This integrated model contributes to theory development by providing a robust framework that can be adapted and applied to other specialized fields, thus broadening the scope and applicability of both the Flipped Classroom and TPACK theories.

The findings of this study have significant implications for existing theories in ESP, active learning, and technology integration in education. By supporting the theoretical foundations of needs analysis, the Flipped Classroom approach, and the TPACK framework, this research validates and reinforces these concepts. At the same time, it challenges certain assumptions about formal speaking activities, suggesting the need for more context-specific approaches. Overall, this study contributes to theory development by providing a tailored and integrated model for ESP instruction in the field of Animal Husbandry, offering valuable insights and expanding the theoretical framework of ESP education.

4.2.2 Practical Applications of Research Results
The practical implications of this research are profound and extend across various domains, notably education and industrial policy. In the educational sector, the integration of a comprehensive needs analysis into curriculum design processes for ESP programs ensures that curricula are precisely tailored to the linguistic and contextual needs of students, thereby enhancing learning outcomes and professional readiness. The adoption of the Flipped-TPACK model in teaching English for specialized fields like Animal Husbandry fosters an engaging and effective learning environment by combining flipped classroom strategies with the TPACK framework. This model encourages the use of active learning techniques, diverse multimedia resources, and formative assessments to monitor and improve student progress. Furthermore, professional development opportunities for educators to master the TPACK and flipped classroom models can significantly enhance their ability to integrate technology into their teaching practices, creating more interactive and student-centered classrooms.

4.2.3 Limitations
Despite the valuable insights gained from this research, several limitations must be acknowledged to ensure transparency and provide a comprehensive context for readers to assess the validity and reliability of the findings. First, the sample size of the study was relatively small, comprising only 14 students from a single university's Animal Husbandry program. This limited sample may not fully represent the diverse population of students in similar programs across different institutions or regions, potentially affecting the generalizability of the findings. Future studies should consider larger and more diverse samples to validate and extend the applicability of the results.

Second, the study relied heavily on self-reported data from surveys and interviews, which can be subject to biases such as social desirability bias and inaccurate self-assessment. Participants might have overestimated or underestimated their skills and preferences, influencing the study's outcomes. To mitigate this, future research could incorporate additional data collection methods, such as direct observation, performance assessments, and longitudinal studies, to triangulate the findings and enhance their robustness.

4.2.3 Recommendation for future research
Future research should expand on this study by including a larger and more diverse sample of students from multiple institutions and regions to enhance the generalizability of the findings. A mixed-methods approach combining quantitative and qualitative data, such as direct observations and performance assessments, can provide more objective measures and richer insights.

Longitudinal studies are recommended to evaluate the long-term impact of the Flipped-TPACK model on students' proficiency and career readiness. Investigating the model's adaptability to varying technological contexts and exploring emerging technologies can offer innovative ways to enhance learning. Comparative studies with other instructional models and research on professional development for educators can further refine and validate the effectiveness of the Flipped-TPACK model in ESP instruction.

5. Conclusion
The findings of this study underscore the critical importance of tailoring English for Specific Purposes (ESP) curricula to the unique linguistic and contextual needs of Animal Husbandry students. The findings are:

1. The comprehensive needs analysis conducted in this study reveals significant gaps between the current English proficiency of Animal Husbandry students and the specific linguistic demands of their field. The analysis highlights a strong preference for engaging with English through digital and entertainment media, while exposure to formal and technical contexts remains limited. This finding underscores the necessity of incorporating diverse audio-visual materials and context-specific activities into the ESP curriculum to enhance students' listening, speaking, reading, and writing skills. By tailoring the curriculum to meet these unique needs, educational institutions can better prepare students for professional success in animal husbandry.
2. The implementation of the Flipped-TPACK model, which integrates the flipped classroom approach with the TPACK framework, demonstrates a significant improvement in student engagement and learning outcomes. This model effectively leverages technology to support active learning techniques, diverse multimedia resources, and contextually relevant content. The findings suggest that the Flipped-TPACK model addresses the specific linguistic and contextual needs of Animal Husbandry students more effectively than traditional instructional methods. Consequently, this model provides a robust framework for developing ESP teaching materials that enhance English proficiency and professional readiness in specialized vocational fields. Future research should continue to refine and validate this model across different contexts and disciplines.

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