

Technology-Mediated Translanguaging for Environmental Meaning-Making in Asynchronous ESP Vocational Discussion Forums

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Abstract: Although studies have explored translanguaging in multilingual classrooms, an investigation into how translanguaging operates in asynchronous digital learning environments, particularly in vocational ESP contexts, is still limited. This study examines how translanguaging practices are applied in English for Specific Purposes (ESP) online discussion forums in vocational agribusiness English courses. The study uses an interpretive approach to explore how multilingual language practices support meaning-making when students engage with environmental issues relevant to their field. The study involved third-year Agribusiness students from a vocational college, and data were collected from excerpts of students' asynchronous discussions related to agribusiness, deforestation, mining activities, and environmental risks in an English course. Of the 24 3rd-semester students who participated in the online discussion forum, 81 comments were analyzed. Notably, data collection coincided with significant flooding in Sumatra, Indonesia, which became a recurring point of reference in student interactions. Using thematic analysis, this study explicitly reveals three interrelated discursive patterns in students' environmental reasoning facilitated by translanguaging: problem identification, causal explanation, and proposed strategies. Findings from the open-ended questionnaire also showed that students considered that using a single language alone was not enough to discuss complex agribusiness topics, so they translanguaged to explain technical concepts, connect ideas, and convey opinions more clearly.

INTRODUCTION

English language learning in vocational education requires not only learning English as a foreign language (EFL) in terms of language structure, but also the ability to convey complex and conceptual ideas. In the context of agribusiness vocational education, students often deal with environmental issues, policies, and field experiences. Therefore, students are not only required to produce grammatically correct sentences but also to demonstrate communicative competence with ideas that others can understand (Berezenko et al., 2022; Cenoz & Gorter, 2020). In the Indonesian context, English instruction is still predominantly characterized by monolingual practices that focus on grammatical accuracy and English-only interaction (Panggabean, 2015; Zein et al., 2020). For vocational students in Indonesia, the use of English as the language of instruction often fails to fully accommodate students' needs for accurately explaining ideas. The monolingual approach is not relevant to the reality of vocational education in Indonesia, as it emphasizes strong technical competencies but has a limited English repertoire. In addition, the vocational work environment is multilingual (Gonçalves, 2020; Veach et al., 2023), practical (Ferm, 2021), and problem-solving oriented (Dahil et al., 2015; Hämäläinen et al., 2015). A monolingual approach will sever the bridge between the technical knowledge mastered in Indonesian. It weakens knowledge transfer. Therefore, a combination of English with other languages, including local languages, is necessary.

The combination of different languages to bridge understanding during learning is called translanguaging. Different language resources build meaning construction in situated interactions (Canagarajah, 2013). A previous study conducted by Parra and Proctor (2021) indicated that translanguaging facilitates students' linguistic analysis. They describe how students establish a connection and compare two languages by exploring alternative syntactic structures. Translanguaging is a powerful approach to help students problematize scientific phenomena. Students shared their reasoning from their investigation, leveraging all linguistic resources associated with the different named languages (Suárez, 2020). It supports scientific reasoning, problematizes phenomena, and broadens explanatory capacity in scientific knowledge (Nightingale & Safont, 2019). It supports scientific reasoning and critical analysis of phenomena, and it expands students' explanatory abilities in science. Thus, the use of translanguaging not only constructs meaning but also critical and logical thinking.

Along with the integration of technology into learning, academic interactions between students are increasingly carried out through online platforms, one of which is discussion forums. Online discussion forums are frequently used in language learning. Online discussion forums are not only a medium for expressing opinions, but also a space where translanguaging occurs naturally. Translanguaging is particularly relevant in asynchronous online discussions because participants have more time to process information and negotiate meaning, enabling them to draw on multilingual resources strategically. Students use various linguistic resources at their disposal to express their opinions. However, previous studies on translanguaging have focused on EMI contexts, classroom interactions, and pedagogical activities in relatively stable instructional settings. Less attention has been paid to how translanguaging operates in asynchronous digital learning environments, particularly in vocational ESP contexts.

Although research on translanguaging has grown significantly, some studies have focused on K-12 education or English for Academic Purposes (EAP), while the context of vocational ESP remains relatively neglected. Therefore, this study focuses on vocational ESP, specifically in agribusiness programs that require mastery of content-based disciplinary discourse. Moreover, limited studies have explored how students mobilize translanguaging when responding to real-time societal events that coincide with the learning period, since most studies treat English learning and translanguaging as static or pre-designed activities and overlook contemporaneous events that may shape the learning atmosphere and content. Thus, this study addresses these gaps by exploring translanguaging practices in an online discussion forum. This paper is guided by the following research question: How do vocational agribusiness students employ translanguaging to construct environmental reasoning in asynchronous ESP discussions?

LITERATURE REVIEW

Translanguaging

The practice of combining different languages is not merely a matter of translating word-for-word, but rather a communicative strategy to clarify meaning and avoid misunderstandings in discussions. This strategy is called translanguaging. Translanguaging refers to the act of accessing different linguistic features to maximize language potentials (Wei, 2018). It entails a meaning-making process in which classroom participation is strategically drawn from multiple linguistic and semiotic repertoires (García & Li, 2014). Meaning-making is a fluid process of translanguaging (Tai, 2025a, 2025b). In the classroom, pedagogical

translanguaging refers to planned strategies that enable students to use their full linguistic repertoires (Cenoz, 2017; Cenoz & Gorter, 2022). It replaces code-mixing, code-meshing, and crossing since it is focused on pedagogical purposes (Wei, 2018). Using translanguage, bilingual learners can flexibly employ multiple languages to support meaning-making and knowledge construction (Song & Cho, 2021). Translanguaging views language as a multilingual, multimodal, and multisensory resource for meaning-making (Tai & Wei, 2025).

Translanguaging supports content learning through scaffolding strategies that help students build communication skills in language- and content-based learning (Feller, 2022). Research conducted by Bao (2025) demonstrates that translanguaging is a cognitive practice, indicating that it is not merely a matter of switching languages but rather supports higher-order thinking, collaborative mediation, conceptual development, and multilingualism as cognitive capital. In the context of EFL, translanguaging supports cognitive scaffolding through strategies such as concept mapping, schema building, comprehension checks, and the development of students' metacognition (Guo & Feng, 2025). Translanguaging serves as cognitive scaffolding, helping students process technical concepts and engage in disciplinary discussions (Mutiaraningrum et al., 2026a). By drawing on a diverse linguistic repertoire, students learn to use terminology and connect field-specific knowledge with contextual experiences (Mutiaraningrum et al., 2026b).

Translanguaging in Online Discussion Forums

Studies examining translanguaging in vocational ESP contexts, particularly asynchronous online discussions, are scarce. Most previous research has focused on general multilingual classrooms or synchronous classroom interactions. In this section, we identify several previous studies related to this study.

Translanguaging in online learning enables a broader repertoire of semiotic resources for meaning-making on asynchronous digital platforms (Ho & Tai, 2024a). Translanguaging in online discussions makes it easier for students to draw on their linguistic repertoire and encourages the use of digitality in language learning (Yüzlü & Dikilitaş, 2022). It provides social space for interaction among multilingual, multimodal, and multisensory repertoires (Tai, 2024a). These forums serve as a space for students to express their opinions, respond to their friends' ideas, and build arguments in writing. Online learning allows students to choose a language that can mediate their linguistic knowledge and skills (Lee, 2016). Unlike verbal

discussions, online discussions are asynchronous and text-based, requiring students to be more mindful of their language choices so their target audience can understand their writing. Online forums enable students to construct meaning collaboratively and strategically, demonstrating the connection between *translanguaging to learn* and *learning to translanguange* (Melo-Pfeifer & Araújo E Sá, 2018). In addition, translanguaging on digital platforms deliberately serves a pragmatic function and provides opportunities for multilingual interaction (Nightingale & Safont, 2019). It can maintain conversation in online learning environments.

Translanguaging provides room for students to maintain the discussion, invites active student engagement, and fosters meaningful knowledge construction (Abdurahman & Mutiaraningrum, 2026). A previous study (Mutiaraningrum et al., 2026a) carried out in a vocational context via an online discussion forum demonstrated that translanguaging helps vocational engineering students develop technological sense-making and connect it to community needs, thereby fostering collaboration among students. Another study (Mutiaraningrum et al., 2026b) expands on these findings by confirming that translanguaging functions as a pedagogical rationality in which each language performs distinct cognitive and communicative roles within an asynchronous environment. In contrast, this study offers a novel perspective by examining how vocational business students use multilingual resources to identify environmental issues and formulate contextual and situational solutions.

METHODS

Research Design

This study uses a qualitative design with an interpretive approach to understand how individuals construct meaning from the experiences and contexts they encounter (Creswell & Poth, 2018). The interpretive approach is most suitable for this study because it can explore in depth how translanguaging practices emerge and function in asynchronous written interactions in online discussion forums. We interpret the language practices that naturally develop during student discussion. We also analyze students' responses from an open-ended questionnaire to support the study's findings.

Context

This research is in the context of English for Specific Purposes (ESP), where English is learned for Agribusiness. The learning process is conducted in class, with online discussion forums serving as supplementary activities for students. In online discussion forums, students

are asked to respond to issues and topics related to agribusiness practices and the environment. The discussions are asynchronous and text-based. Asynchronous learning was designed in this study to provide students with the opportunity to compose and revise the language they use to express their opinions. Translanguaging was used to improve students' ability to express ideas and maintain the continuity of interaction. The online discussion forum in this study was hosted on Google Classroom. Figure 1 is a screenshot of a Google Classroom thread. The leading questions in the thread were: (1) How can agribusiness practices (e.g., palm oil plantations) or mining activities contribute to the risk of natural disasters such as flash floods or landslides in tropical regions? What are the causal mechanisms in your opinion (e.g., deforestation, decreased soil absorption capacity, pollution, etc.)? and (2) If you were a local policymaker or agribusiness operator, what strategies would you propose to prevent negative impacts on the environment, especially ensuring that agribusiness production remains safe for nature and communities?

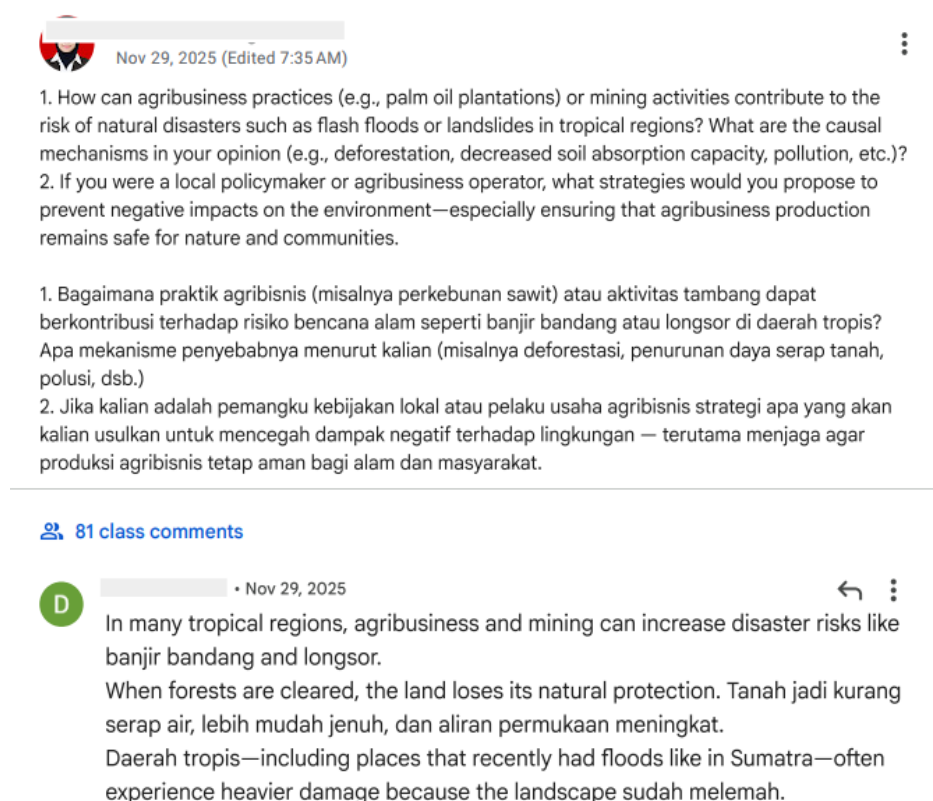


Figure 1. Screenshot of an online discussion thread
(Source: Google Classroom)

During the data collection period, ongoing flooding in Sumatra served as a recurring contextual reference in students' discussions. In this case, the flood became the data context rather than the main point of this paper.

Data Collection

The study involved 24 third-semester vocational agribusiness students enrolled in the ESP course. Prior to data collection, the students were informed about the study's purpose and asked to sign the informed consent form. The research data consists of student posts and responses in online discussion forums, as well as answers to open-ended questions. Eighty-one comments were analyzed in this study. All student contributions were included for analysis as textual data. The data were collected non-interventionally, without modification, to ensure that the language practices that emerged reflected natural language use in the context of asynchronous written discussion. Two questions were asked of students after the discussion to find out the reasons for using translanguaging in online discussion forums: (1) Is using just one language sufficient to address complex agribusiness and environmental topics? Explain your reasons! And (2) In what situations do you feel the need to switch from English to Indonesian or Malay when expressing your opinion?

Data Analysis

Data analysis was conducted inductively through a thematic coding process. We used Braun & Clarke's (2006) thematic analysis procedures. We applied peer debriefing to ensure the trustworthiness of our findings. The initial analysis stage began with rereading all student comments in Google Classroom. Patterns were then identified to determine the language and language practices that emerged. Relevant units were then coded and categorized according to the communicative functions that emerged in the discussions. Through repeated comparison, the study presented themes that showed consistent trends and represented the most relevant aspects of student translanguaging. Only comments directly related to agribusiness discussions were included in the analysis. Repetitive, off-topic, or purely procedural comments were excluded. The interpretative nature of the study and the richness of recurring patterns from 24 participants justified the thematic saturation.

FINDINGS

Translanguaging practice in online discussion forums was not used only as a linguistic strategy but also as a means of building agribusiness expertise. The use of translanguaging is relevant to the agribusiness context, as it often employs agribusiness registers. Thus, translanguaging supports both the understanding of disciplinary content and the use of English for specific purposes.

The research findings are divided into two sections. The first section presents response patterns observed in students' excerpts from Google Classroom. The second section reveals students' responses from open-ended questionnaire analysis.

Students' Response Pattern in the Online Discussion Forum

Analysis of student comments in online discussion forums shows that student responses in ESP online discussions can be classified into three main types: (a) descriptive (problem identification), (b) causal explanation, and (c) proposed strategies. These three types appear repeatedly and consistently, but the depth of elaboration and clarity of logic vary among students.

Descriptive responses for problem identification

Students use translanguaging to express descriptive responses related to problem identification. These descriptive responses involve students briefly mentioning environmental problems without explicitly explaining their causes and effects.

Description of Disaster Conditions and Their Impact. This subtheme emerged from excerpts that describe situations, conditions, or facts without cause-and-effect mechanisms. Excerpts included in this theme do not offer solutions either.

Note: Bahasa, English, *Malay*

- (1) "**So many lives hilang karena bencana banjir**, all caused by human ego dan kurangnya care terhadap alam." – PP (**So many lives lost due to flooding**, all caused by human ego and lack of care for nature.)
- (2) "Menurut saya, **the impacts of cutting down trees to clear land for oil palm plantations** must also be taken into consideration, especially for large-scale land clearing. *kasian hewan pun banjer nye besar ...*". – MM (In my opinion, **the impacts of cutting down trees to clear land for oil palm plantations** must also be taken into consideration, especially for large-scale land clearing. It's a pity for the animals too.)

Students use translanguaging to name events and indicate the existence of problems. The excerpts suggest a tendency for English to be used for general framing, such as “flash flood,” while Bahasa and Malay were more frequently employed to reinforce emotional closeness and local context. To conclude, the function of discourse in this sub-theme is problem identification.

Social Reactions, Empathy, and Situation Evaluation. The students in this study did not provide detailed explanations of the mechanisms behind the problems they raised. In general, students said mining harms the environment. Emotional expressions did not accompany this problem, let alone evaluative ones. However, some students showed emotional expressions, but these were not accompanied by academic elaboration. They showed emotional reactions, empathy, and social judgment.

- (3) “Menurut pendapat saya, **this activity is deeply regrettable**... ‘Alam itu dijaga bukan dimanfaatkan.’” – DJ (In my opinion, **this activity is deeply regrettable**... Nature should be preserved, not exploited.)
- (4) “**Dengan kondisi Sumatra yang kena banjir** recently, semoga semua orang di sana stay safe.” – RF (**With Sumatra recently experiencing flooding, hopefully** everyone there stays safe.)

In addition, we found several phrases that indicate linguistic indicators for this sub-theme, such as “shared grief,” “heartbreaking,” “hopefully,” and “people suffering.” It can be concluded that translanguaging functions interpersonally to express social solidarity.

They also raised the issue of significant flooding in Sumatra that occurred during this research. It demonstrates the students' situational and contextual awareness. They are sensitive to real-time socio-environmental events, as seen from the time references the students use: “recently” and “today.” The mention of the specific location of Sumatra, another island, not where the students live, also indicates that they are processing current national issues in Indonesia and bringing them into academic discussion.

The study shows that diploma-level students were able to identify the main issues raised in the discussion. However, the discussion in this study still appears to be a space for expressing opinions rather than a space for argumentation or analysis. This subtheme is still at the affective-descriptive discussion stage and has not yet entered the cognitive-analytical level.

Cause–Effect Responses

Several students' comments in a Google Classroom thread show their attempts to explain how agribusiness and mining practices trigger natural disasters. Students provide causal explanations in discussions to link agribusiness or mining activities to environmental mechanisms that trigger disasters.

Deforestation and Environmental Degradation. This sub-theme is drawn from explicit statements linking human activity and increased disaster risk. Students in this study focused on the theme of reduced soil absorption due to deforestation and river sedimentation. Students demonstrated the ability to construct coherent causal reasoning. Generally, student responses were still at the stage of explaining linear cause-and-effect patterns. Some students expressed chained cause-and-effect reasoning, but still in a simple form:

- (5) “Agribusiness seperti palm oil plantations dan mining bisa increase the risk of floods and landslides karena deforestation dan kurangnya daya serap tanah.” – AL (Agribusinesses such as palm oil plantations and mining can increase the risk of floods and landslides due to deforestation and reduced soil absorption capacity.)
- (6) “Once ekosistem rusak, disasters become more frequent.” – DD (Once the ecosystem is damaged, disasters become more frequent.)
- (7) “Karena deforestation dan damage pada watershed memang bikin lingkungan lose its natural ability to absorb water.” – JS (Because deforestation and damage to watersheds cause the environment to lose its natural ability to absorb water.)

Physical Mechanisms. These sub-themes are derived from how deforestation works physically. They explain the process, not just mention its impact. Ecological mechanisms are explained through translanguaging. Translanguaging enables scientific processes to be explained so that the excerpts in these sub-themes fall into the analytical–explanatory level.

- (8) “When forests are cleared, the land loses its natural protection. Tanah jadi kurang serap air, lebih mudah jenuh, dan aliran permukaan meningkat.” – DJ (When forests are cleared, the land loses its natural protection. The soil becomes less absorbent, more prone to saturation, and surface runoff increases.)
- (9) “Sediment dari tambang juga masuk sungai dan bikin river dangkal. And once the river is shallow, banjir bandang bisa terjadi cuma karena hujan moderate saja.” – DR (Sediment from the mine also enters the river and causes it to become shallow. And once the river is shallow, flash floods can occur even with only moderate rainfall.)
- (10) “Deforestation cuts the root network, so the soil loses grip. Water infiltration drops. Hujan jadi lari di permukaan.” – AL (Deforestation cuts the root

network so the soil loses grip. Water infiltration drops. Rain runs off the surface.)

- (11) **“When forests are cleared (deforestation), the soil loses its natural support.** No strong roots = tanah mudah runtuh → landslide.” – RR (When forests are cut down (deforestation), the soil loses its natural support. No strong roots = soil easily slides → landslides.)

Students established a direct causal relationship between deforestation and disasters. Technical terms also academicize the discourse. The conceptualization of cause and effect was built from a series of students’ explanations. Several words and phrases that refer to this theme include “because of deforestation,” “damaged forest,” and “watershed degradation.”

Human Role and Governance. The excerpt shows that students position disasters as artificial disasters. They express this idea through criticism of human behavior and policies that do not support nature conservation. The discourse on cause and effect is expanded from ecological aspects to socio-political aspects. Indonesian is used for normative criticism, and English for academic legitimacy.

- (12) “This problem akibat government yang kurang tegas take action.” – IP (This problem is caused by the government’s lack of decisive action.)
- (13) **“Human greed for self-interest** that the forests are the victims. Once a disaster has occurred, they still blame extreme weather, haha.” - KL (**Human greed for personal gain** has made the forest its victim.)

The explanations of the causal relationships in the two excerpts lack empirical evidence or data that could strengthen students’ arguments. Students still rely on their general knowledge and local experience in asynchronous online discussions.

Solution-Oriented Responses

In this study, students also proposed preventive strategies to address environmental problems caused by unsustainable palm oil plantations or mining activities. They discussed strategies to mitigate environmental impacts from the perspectives of policymakers and agribusiness actors. An interesting aspect of vocational students is their tendency to provide practical and normative solutions.

The students’ solutions were diverse, with one quote highlighting both ecological and technical solutions. The students positioned themselves as policy thinkers. They demonstrated their ability to solve regulatory problems.

- (14) “**If I were a local policymaker, I would push for balanced** development — produksi tetap jalan tapi lingkungan tetap aman. I would create **buffer zones** of natural vegetation near rivers and steep slopes. Ini penting untuk stabilin tanah dan kurangi run-off. I’d also make **rules for controlled land clearing**, bukan tebang habis. Maybe use **a mosaic planting system** supaya landscape tidak monoton dan lebih tahan erosi.” – DD (If I were a local policymaker, I would promote balanced development—production continues but the environment remains safe. I would create natural vegetation buffer zones near rivers and steep slopes. This is important for stabilizing the soil and reducing surface water runoff. I would also establish rules for controlled land clearing, rather than clear-cutting. Perhaps a mosaic planting system could be used to prevent a monotonous landscape and increase erosion resistance.)
- (15) “If I were a policymaker, I’d promote **sustainable practices like replanting trees, better drainage, and limiting heavy machines in rainy season**. I’d also push for monitoring and involve local people. So production tetap jalan, but nature and community stay safe.” – AL (If I were a policymaker, I would encourage sustainable practices such as tree replanting, improved drainage systems, and restrictions on the use of heavy equipment during the rainy season. I would also encourage monitoring and involving local communities. This way, production can continue, but nature and communities remain safe.)

In addition, some students propose strategic prevention from a regulatory perspective. They propose rules, controls, and sanctions.

- (16) “The government also needs to **tighten oversight of business permits, impose sanctions for violations, and involve communities in environmental management**. With these measures, agribusiness activities can continue to operate without damaging the environment and remain safe for surrounding communities” – KL (The government also needs to tighten supervision of business licenses, impose sanctions for violations, and involve the community in environmental management. With these measures, agribusiness activities can continue to operate without damaging the environment and remain safe for the surrounding community.)
- (17) If I were a local policymaker, I would push **simple but strict rules**. Protect **river buffer zones**. **No burning**. **Replant fast after land clearing**. **Use cheap sensors to track soil moisture**. Mining must restore slopes or kena sanksi. Agribusiness can still jalan, but the land must stay stable so masyarakat aman. – AL (If I were a local policymaker, I would push for simple but strict rules. Protect river buffer zones. No burning. Replant quickly after land clearing. Use inexpensive sensors to track soil moisture. Mining companies must restore slopes or face sanctions. Agribusiness can still operate, but the land must remain stable so that the community is safe.)
- (18) “... and **there must also be a policy from the government** for the continuous opening of oil palm plantations.” – MM (and there must also be government policies for the sustainable development of oil palm plantations.)

The excerpts mentioned describe the community's role. Some of them focus on community-based solutions drawn from statements emphasizing community participation. In this discussion, the solutions are cultural. Translanguaging is used for persuasion and to align with moral values. They use translanguaging to reinforce normative messages, making them more acceptable to readers.

- (19) “ ... **involve local communities** so they can report issues early. This way, production tetap jalan, but environment and masyarakat tetap aman. 🙏 ”. – DS
(Involve local communities so they can report issues early. This way, production continues, but the environment and community remain safe.)
- (20) “**Kita perlu collective awareness untuk menjaga hutan and lingkungan.**” – PP
(We need collective awareness to protect forests and the environment.)

Students still provide solutions at a general level. They do not provide explanations about the actual implementation stages that can be carried out to overcome the problem. It shows that students can propose preventive measures to preserve the environment, but are still at the conceptual stage. The pedagogical framework of the findings is visualized in Figure 2.

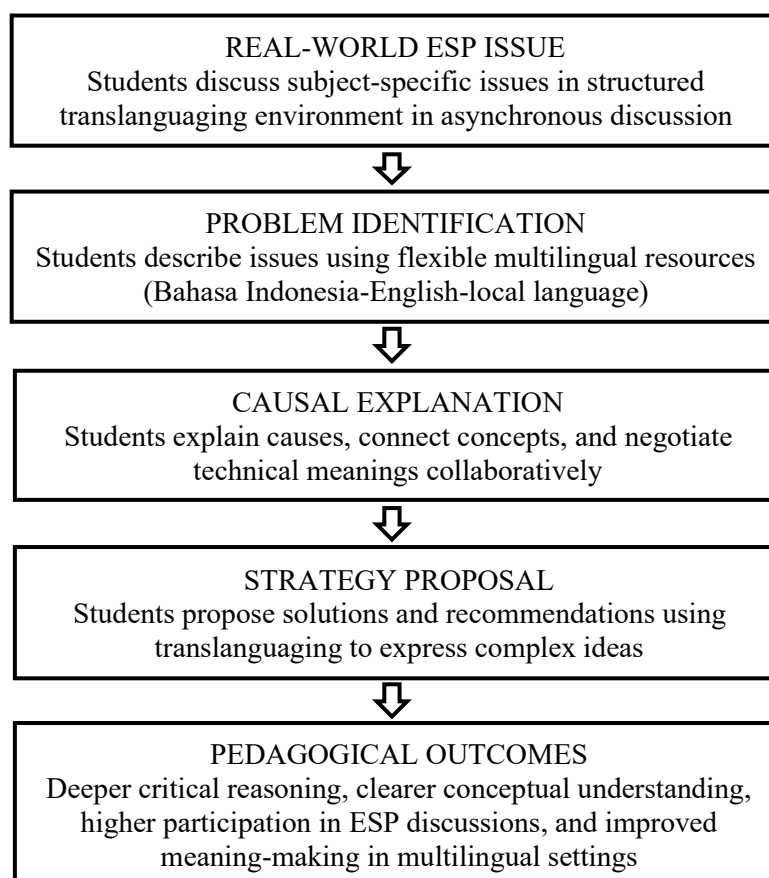


Figure 2. Pedagogical framework for translanguaging in asynchronous ESP discussions

Figure 2 illustrates a pedagogical framework for implementing translanguaging in asynchronous ESP discussions. The figure presents interconnected stages. First, students identify issues related to their vocational subject by mobilizing flexible multilingual resources. Second, they collaboratively construct causal reasoning and negotiate technical terms and meanings across languages. In the final stage, they propose solutions and recommendations and use translanguaging to convey complex ideas. This framework serves as a practical guide for lecturers, teachers, and instructors in multilingual vocational contexts to encourage deeper reasoning and participation in online discussions.

Findings from Students' Open-Ended Questionnaire Responses

While discourse analysis of students' forums sheds light on how translanguaging emerges in actual online interactions, data from students' voices are necessary to understand their perspectives on language choices during online discussions. To complement the data, we thematically analyzed student responses regarding their use of Indonesian, English, and Malay when discussing environmental topics. Table 1 presents the results of a thematic analysis of students' responses on whether a single language is sufficient to explain complex ideas in the field of agribusiness. Furthermore, thematic analysis was also conducted to determine when students decided to translanguange.

Students in this study stated that using a single language is insufficient to express their ideas, given the complexity of concepts involving scientific terms and social and local contexts. They emphasized the importance of combining English, Indonesian, and Malay in academic discussions. English is often used to convey textual terms or scientific concepts, while Indonesian and Malay are considered more effective for explaining concrete examples and field conditions related to agribusiness practices.

The situation that drives students to translanguange during discussions is their limited English vocabulary. Indonesian and Malay are more natural for expressing opinions, emotions, and criticism. They use the language they are most fluent in to ensure the message is clear and understandable to the audience. These findings demonstrate that translanguaging serves as a communicative strategy that helps students build understanding and communicate ideas.

Table 1. Themes derived from students' open-ended responses on translanguageing in ESP

Topic	Theme	Sub-theme	Quotes from Respondents
Single-Language Sufficiency for Complex Topics	The complexity of topics requires more than one language.	Scientific and technical topics are difficult to explain in one language.	"It's not enough, because the topic is complex and requires clear explanations, especially in the local context." - (AF)
	Integration of global scientific terms and local context.	Technical terms are often used in English.	"Most of the knowledge in journals uses English terms as a global vocabulary for the material." - (EF)
	The use of mixed languages for understanding.	The use of different languages facilitates understanding.	"Languages should be mixed, including English, Indonesian, and Malay, as long as they're polite and easy to understand." - (DR)
	Local languages to explain field realities.	A mix of English, Indonesian, and Malay helps better understand Indonesian/Malay in local contexts.	"Local conditions, field examples, and farmers' experiences are clearer when using Indonesian or Malay." - (DJ)
	Accessibility for students.	Not all students understand English.	"Not all students can understand English well." - (RF)
Situations Triggering Language Switching	Limited English vocabulary.	They don't know or forget English vocabulary.	"When I forget vocabulary or don't know English." - (EF)
	Explaining complex concepts.	Local language helps explain complex ideas.	"I switch languages when explaining complex concepts to make them easier to understand." - (JM)
	Explaining local context and field experiences.	Discussion of farmer practices and local conditions.	"For example, discussing farming practices, traditional market systems, subsidy policies, or local wisdom." - (KK)
	Expression of emotions, opinions, and personal experiences.	Local language feels more natural.	"When discussing emotions, personal experiences in the field, or sensitive policy criticism." - (DS)
	Clarifying the message to the audience.	Avoiding misinterpretations in discussions.	"This way, my opinions can be conveyed more clearly and avoid misinterpretation." - (JM)

(Source: Thematic analysis, 2026)

Students utilize translanguageing as a clarification mechanism, not merely as a literal translation. The clarification mechanism refers to the way students secure meaning after writing in English. Translanguageing serves as an emphasis strategy, ensuring the main idea is not lost amid the limitations of English. Thus, translanguageing is used as a strategy to mitigate meaning errors. In addition, language choice is guided by audience orientation rather than solely by the writer's ability. Students consider readers' or interlocutors' comprehension. Students are aware of the diversity of English proficiency among participants in online discussion forums; therefore, they add explanations in the language most accessible to the audience. It is not to show off their language proficiency, but to ensure collective engagement in the discussion.

DISCUSSION

This study aims to explore how agribusiness students utilize translanguaging in online discussion forums on environmental sustainability. Translanguaging was found to serve as cognitive scaffolding, enabling students to express causal relationships even in non-standard language. It aligns with Parra and Proctor (2021), who argue that translanguaging facilitates descriptive reasoning, causal reasoning, and strategic pedagogy that reflect cognitive engagement. Cognitive activities were evident when students made sense of and resolved problems (Wei, 2018). Students took a critical stance toward those they believed responsible for environmental damage, using evaluative and normative language to criticize policies and law enforcement. It supports Rivera and Mazak (2017) that comprehension, analysis, and reasoning cannot occur solely in L2. The flexible use of linguistic resources promotes deep and critical thinking (Robillos, 2023, 2025). This corroborates Dimitrijević (2020), who found that translanguaging facilitates analogical reasoning. It reflects that translanguaging functions not as a compensatory strategy, but as a semiotic resource for constructing meaning in discussions of complex environmental issues.

Translanguaging practice helps bridge communication gaps (Lin & He, 2017). It allows students to engage with ideas by using all the languages they know to deepen their conceptual understanding (Tai, 2024a, 2024b). Students use familiar linguistic resources to facilitate participants (Allard, 2017). Students in this study were able to formulate and share ideas using a tapestry of vocabulary in their entire linguistic repertoire (Mgijima & Makalela, 2016). When language learners encounter a new linguistic problem, they will use background information to generate a causal explanation (Dimitrijević, 2020), which is processed through cross-language knowledge activities. It is a natural and spontaneous mechanism in learning to relate new information and something we have in mind (ibid, 2020). In addition, the use of translanguaging in classroom discussions reduces barriers to participation and helps students communicate more effectively (Sari & Syafryadin, 2024). Students discuss using a combination of different languages to ensure shared understanding (Ramadhan et al., 2022). Since language choice depends on negotiation among speakers (Lin, 2020), it is not based solely on individual considerations. These findings highlight that language choice during translanguaging practice is a dynamic negotiation between speakers, with a level of mutual understanding for the sake of the interaction's social context.

The nature of vocational education, which emphasizes applied knowledge, is compatible with online discussion forums as digital infrastructure that functions as an enabling environment for discourse and ecological awareness. Students construct, negotiate, and contest knowledge through performative translinguaging in online comments (Ho & Tai, 2024). The asynchronous affordances of online discussion forums allow for more articulated expressions of environmental concern, making responses to environmental concerns not merely reactive but also informed by information and reflection. Translinguaging is used to reformulate, clarify, and respond to unexpected responses (Tai, 2024b). Students were able to compare and identify patterns to map translinguaging structure (Parra & Proctor, 2021). The diversity of language styles and references to current events that lecturers do not require shows that many responses are authentic. It potentially explains why online discussion forums are not merely performative spaces but also social and personal spaces.

Students demonstrated knowledge of real-time disaster narratives, demonstrating authentic engagement. They linked the discussion to actual events. It confirms studies (Cenoz & Gorter, 2020; Tai, 2025a, 2025b) that translinguaging practices are shaped by speakers' social context and lived experience. Wei (2011) describes that a translinguaging space is built on the speaker's personal history, experience, and environment for meaningful performance. It reinforces the idea that ESP learning became meaningful when students were given space to bring their experiences and knowledge into academic discourse.

Furthermore, the use of translinguaging strengthens the professional orientation and ESP of vocational students. Through flexible, multilingual practices, students position themselves as knowledgeable participants (Jiang & Zhang, 2023; Poza, 2019) capable of discussing environmental and agricultural issues relevant to their future professions. It reveals how participation in ESP discussions resembles authentic professional communication practices.

However, implementing translinguaging in the vocational context requires explicit scaffolding. In several instances, students appeared to rely on familiar linguistic resources when expressing complex concepts. It suggests that translinguaging should be pedagogically guided rather than treated as unrestricted practice.

CONCLUSION

Translinguaging plays a crucial role in scaffolding vocational students' meaning-making in an asynchronous learning environment. Students in this study identify problems in

environmental issues, explain the cause-and-effect relationships of natural disasters, and design socially acceptable solutions, even if only at the conceptual stage. They use translanguaging as a tool for thinking and reasoning, not merely as a strategy to overcome limitations in English. They build their identities as rational and responsible future agribusiness practitioners.

Since the discussion was situated in a specific environmental context, the findings should be interpreted as context-dependent. It is not generalizable across all ESP settings. Nevertheless, the study offers transferable insights into multilingual meaning-making in asynchronous vocational ESP discussions. It should be noted again that this study focuses on student language, discursive functions, and the ESP learning process without criticizing existing policies. The issues raised in this study are solely intended to provide relevant material that invites active student participation and are not related to who is at fault, who is responsible, or which policies have failed.

LIMITATIONS AND STUDY FORWARD

This study has several limitations, including the absence of multimodal analysis, which could enrich the analysis and help highlight how students rely on linguistic and textual resources in responding to environmental issues. Future studies may examine translanguaging across different vocational disciplines, examine multimodal interaction across various digital platforms, or employ a longitudinal design to examine students' multilingual meaning-making over time.

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