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Enhancing ESP Students' Reading Comprehension and Critical Thinking through Research Articles: Students' Perspective

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Abstract

The increasing availability of digital knowledge resources has not been matched by the ability of students to engage effectively with academic texts in English for Specific Purposes (ESP) contexts. This study investigated how the use of research articles as core learning materials supported knowledge construction, enhanced critical thinking, fosters student independence, and examined the role of lecturer feedback as pedagogical scaffolding. Using a qualitative case study design, the research involved 34 second-semester students in a Sharia Economic Law program, with data collected through classroom observations and semi-structured interviews with seven purposively selected participants. Data were analyzed using Reflexive Thematic Analysis. The findings indicated that engagement with English-language research articles facilitates progressive knowledge construction through collaborative and independent learning processes. Group work enhanced idea exchange and comprehension, while individual tasks promoted deeper reflection and autonomy. Lecturer feedback played a crucial role in guiding analytical thinking and improving students' evaluation of academic texts. This study highlighted the importance of integrating authentic materials, structured feedback, and balanced learning approaches to strengthen ESP students' academic literacy and higher-order thinking skills.

A. Introduction

Rapid technological advancement has fundamentally transformed how knowledge is accessed, produced, and disseminated. The proliferation of Open Educational Resources (OER), digital repositories, and online learning platforms has created unprecedented opportunities for students to access academic information beyond traditional classroom boundaries (Adil et al., 2024; Bharti, 2024; Erydani et al., 2025). Simultaneously, higher education is increasingly expected to cultivate learners who can critically engage with complex information rather than merely consume it (Ali et al., 2024; Archila et al., 2025). Yet, a significant paradox persists while access to knowledge has expanded dramatically, students' ability to interpret, evaluate, and construct meaning from academic sources remains uneven.

In contemporary academic environments, where scientific communication, scholarly debates, and reputable publications are predominantly disseminated in English, the ability to engage critically with English-language academic texts has become an essential prerequisite for participation in global knowledge networks (Thohir & Septiadi, 2025; Devaki, 2024; Hyland, 2019). Consequently, digital resources should be viewed not merely as repositories of information but as pedagogical instruments capable of fostering academic literacy, critical thinking, and lifelong learning.

This challenge is particularly evident in English for Specific Purposes (ESP) education. ESP programs are designed to develop discipline-specific language competence and prepare students to participate in specialized academic and professional communities (Syarif et al., 2024; Indrayadi et al., 2024; Kinnear, 2018; Orr, 2015). However, evidence suggests that students continue to experience substantial difficulties in academic reading. The 2022 PISA results indicate that Indonesian students' reading literacy remains below international standards (Kemdikbudristek, 2023).

Previous studies consistently report challenges in vocabulary mastery, identifying main ideas, contextual interpretation, and inferential comprehension (Hilongwa et al., 2023; Shepard & Rose, 2023). Students also struggle to navigate the linguistic complexity, technical terminology, and argumentative structures characteristic of academic texts (Hackemann et al., 2022; Kalyanova, 2021; Yun, 2023), limiting their capacity to engage critically with scholarly knowledge (Kuo & Jian, 2022; Yun, 2021). These findings suggest that improving reading comprehension in ESP involves more than linguistic proficiency; it also requires the development of academic literacy and higher-order thinking skills.

In response to these challenges, various digital learning innovations have been introduced, including online learning platforms, mobile applications, and AI-assisted instructional systems (Rohid et al., 2026; Agung et al., 2025; Han, 2025; Rezaei et al., 2014; Sukumaran & Khair, 2024). While these approaches have contributed to vocabulary development, grammar acquisition, and general reading comprehension, they frequently emphasize lower-order language skills. As a result, students often become better at accessing information without necessarily developing the ability to critically evaluate arguments, synthesize evidence, or construct independent academic judgments. This limitation becomes particularly relevant in relation to the use of research articles as learning materials.

Although previous studies acknowledge the value of authentic materials and encourage students' engagement with scholarly texts (Archila et al., 2025; Gorzycki et al., 2020), the pedagogical use of English-language research articles remains relatively underexplored. Furthermore, digital learning environments are still underutilized in supporting students' analysis of argumentation, text structure, and epistemological dimensions of academic discourse (Mokrova & Savinova, 2020; Rezak & Vikhtenko, 2021).

Existing scholarship has demonstrated that exposure to authentic academic texts can enhance analytical reasoning, logical thinking, and higher-order cognitive skills (Beevi et al., 2019; Cenoz, 2013; Leikin, 2016). Similarly, authentic materials aligned with students' disciplinary needs contribute to stronger motivation, engagement, and knowledge retention (Mede et al., 2018; Talib et al., 2026), while supporting the development of disciplinary literacy and professional identity (Drašler & Podgoršek, 2022; Nurmetov et al., 2025).

However, most previous studies have tended to examine reading comprehension, critical thinking, learner autonomy, or feedback practices as separate constructs. Consequently, the literature still provides a fragmented understanding of how these dimensions interact during students' engagement with research articles in ESP learning. More importantly, research articles are frequently positioned merely as authentic reading materials that facilitate language learning and content acquisition, rather than as pedagogical tools that actively shape how students construct knowledge, develop critical literacy, strengthen learning autonomy, and engage with academic feedback.

This limitation represents an important theoretical and pedagogical gap. While previous studies have established the value of authentic materials in ESP, relatively little attention has been given to understanding research articles as an integrated learning space

where knowledge construction, critical thinking, learner independence, and lecturer feedback operate as interconnected processes. As a result, current scholarship remains limited in explaining how academic literacy is developed through sustained engagement with authentic scholarly texts. Addressing this gap is particularly important in contemporary higher education, where students are increasingly expected not only to access information but also to critically evaluate, synthesize, and apply disciplinary knowledge in increasingly digital and globally connected environments.

Building on this perspective, this study argues that the educational value of research articles extends beyond language learning and content acquisition. Rather than functioning solely as authentic reading materials, research articles may serve as epistemic tools through which students construct disciplinary knowledge, develop critical thinking, strengthen learning autonomy, and engage meaningfully with lecturer feedback. This perspective offers a more integrated understanding of academic literacy development in ESP learning by positioning these dimensions not as isolated outcomes but as mutually reinforcing processes within a single learning experience.

Therefore, this study aims to investigate how engagement with English-language research articles in ESP learning facilitates students' knowledge construction, promotes critical thinking development, supports learner independence, and explores the role of lecturer feedback as pedagogical scaffolding within these interconnected processes. By examining these dimensions simultaneously, the study seeks to contribute a more comprehensive understanding of how authentic academic texts can support the development of academically literate, critically engaged, and autonomous learners in contemporary higher education.

B. Method

This study employed a qualitative case study design (Vries, 2020) to explore how students experienced and interpreted the use of English-language research articles in an English for Specific Purposes (ESP) learning environment. A case study approach was considered appropriate because the study sought to generate an in-depth understanding of a bounded educational context rather than to measure causal relationships or instructional effectiveness.

The study was conducted in an ESP course for second-semester students enrolled in the Sharia Economic Law program at the Faculty of Sharia of a University in Surakarta, Indonesia. The bounded case consisted of 34 students who participated in the

same learning environment over one academic semester (14 meetings). Throughout the study, the researcher acted as both instructor and observer, implementing learning activities that incorporated English-language research articles related to Sharia law and halal studies, including international journal publications such as *Augmenting Halal Food Integrity through Supply Chain Integration* published in *Jurnal Pengurusan*. Learning activities were progressively structured following Bloom's Taxonomy (1956), beginning with guided reading and comprehension, followed by collaborative analysis and discussion, and culminating in presentations that required students to evaluate and communicate their understanding of the assigned articles.

Data were collected through classroom observations and semi-structured interviews. Observations were conducted throughout the semester to document students' engagement, interaction patterns, and responses to the learning activities. To obtain deeper insights into students' experiences, seven participants were selected through purposive sampling for semi-structured interviews. The selection focused on participants who were able to provide rich and relevant information regarding their learning experiences. This approach is consistent with qualitative inquiry, which prioritizes depth and richness of information over numerical representation (Guest et al., 2006). Data collection continued until sufficient information was obtained and thematic saturation was achieved.

The study was informed by a constructivist perspective that views learning as an active and socially mediated process of meaning construction (Vagele-Kricina, 2021). Accordingly, the investigation focused on four interconnected dimensions: knowledge construction in ESP learning, critical thinking development, learner independence, and lecturer feedback as pedagogical scaffolding.

The collected data were analyzed using Reflexive Thematic Analysis (RTA) proposed by Braun and Clarke (2019). The analysis involved repeated reading of observation notes and interview transcripts to achieve data familiarization, followed by systematic coding of meaningful data segments. The codes were subsequently organized into potential themes, which were reviewed, refined, and defined through an iterative process. The final themes were then interpreted and presented as a coherent narrative supported by representative participant quotations.

Participation in this study was voluntary, and all participants provided informed consent prior to data collection. Participants were informed about the purpose of the study, their right to withdraw at any stage, and the confidential treatment of their

responses. To protect privacy, all participant identities were anonymized and reported using respondent codes. Permission to conduct the study was obtained from the relevant academic authority, and all research procedures were carried out in accordance with established ethical principles for educational research.

C. Results and Discussion

Researchers grouped their findings into four main dimensions: knowledge construction in ESP learning, improving critical thinking, improving independence in language learning and the role of lecturer's feedback. These four dimensions are interrelated and serve as a central focus in the dynamics of classroom learning activities, with each aspect contributing to a more reflective, active learning process oriented toward holistic student competency development.

1. Results

a. Knowledge construction in ESP learning

Knowledge construction in reading English texts was effectively facilitated through collaborative discussion, which functioned as an initial stage for comprehension prior to deeper individual analysis. During group activities, students were tasked with identifying research problems from the assigned texts. This process enabled them to exchange perspectives, clarify meanings, and negotiate interpretations collectively before engaging in independent critical reading. A key finding of this study highlights the perceived benefits of group work in the learning process. Most participants reported that collaborative learning created a richer and more supportive environment compared to working individually. Through peer interaction, students were able to refine their understanding, validate ideas, and develop greater confidence in interpreting academic texts. One respondent expressed:

> *"Collaborating in a group enabled me to be exposed to different ideas that I might not have thought of otherwise."* (Interview with Respondent 1, 2025).

This statement indicates that group work provides a space for the exchange of diverse ideas. Respondents felt that through discussion and interaction with other group members, they were able to gain new perspectives that might not have been previously considered. This underscores the important role of collaborative work in fostering critical thinking and broadening students' horizons. Furthermore, during the independent analysis of an English-language research article, respondents encountered a variety of

challenges, including the challenge of understanding the structure and content without collaborative discussion. This is reflected in the following response from one respondent:

> *"Having completed an independent analysis of a provided article, I appreciated the challenges that came with identifying the key sections in the absence of shared discussions."* (Interview with Respondent 1, 2025).

This statement demonstrates that reading and analyzing English-language research articles independently can be a challenging experience, especially when there's no forum for exchanging opinions or validating understanding. The absence of group discussion makes the process of identifying key points more complex and requires deeper reflection from each participant. However, it was different with one of the respondents. Respondent 2, who seemed to be busy with the translator on his cellphone, revealed something interesting as follows.

> "*I was confused initially, but after reading a number of articles, I was more assured in identifying major research determinants.*" (Interview with Respondent 2, 2025).

The statement revealed a gradual learning process in understanding the essential elements of a research article. Initially, he felt confused when it came to identifying the main determinants in a study. However, after reading several other articles for comparison, his confidence in identifying these essential components increased. This demonstrates that exposure to a variety of reading sources can help strengthen students' understanding of the structure and essential elements of scientific articles. Repeated reading and comparison between articles are an effective strategy for developing analytical sensitivity to key elements of scientific papers. Furthermore, this experience illustrates the importance of independent learning and literature exploration as part of strengthening academic competency. Besides facing challenges in understanding article structure, he noted the benefits in terms of vocabulary development. As Respondent 2 expressed it:

> *"I got a lot of new words, some of which I often hear but only just found out the context."* (Interview with Respondent 2, 2025).

This statement, supported by observational data showing a similar learning attitude among participants, indicates that the process of in-depth reading not only strengthens understanding of the article's content but also enhances language proficiency, particularly in understanding the meaning of words based on context. This suggests that academic

text analysis can be an effective tool for developing vocabulary and critical reading skills, especially for students of English as a foreign language.

Next statement indicated a broader understanding of the halal concept. It's not limited to the ingredients used in food or beverage products. Respondents also recognized that halal encompasses other aspects, such as the production process, distribution, and even the business ethics of the producer.

> *"I understand that halal is not only about the ingredients, but there are other aspects that we need to know."* (Interview with Respondent 3, 2025).

This demonstrates growing consumer awareness of the holistic dimensions of halal principles, which extend beyond technical aspects to encompass moral and spiritual values. Therefore, this understanding can influence consumer preferences in selecting products and services and encourage businesses to implement halal principles throughout their production chains.

b. Improving critical thinking

The findings indicated that students' engagement with research articles contributed significantly to the development of their critical thinking skills. Specifically, students demonstrated improved ability to analyze concepts, evaluate interpretations, and understand the structure of academic arguments. Engagement with scholarly texts enabled students to move beyond surface-level comprehension toward more analytical and reflective reading practices. The first statement reflects an expansion of conceptual understanding:

> *"I began to understand that the concept of halal is not only about ingredients, but also involves production processes, distribution, and broader ethical aspects."* (Interview with Respondent 3, 2025).

This statement demonstrates the student's ability to move beyond surface-level understanding toward a more comprehensive and multidimensional interpretation of the concept. It indicates the development of analytical thinking, where the student integrates multiple dimensions of knowledge rather than relying on simplistic definitions. The second statement highlights interpretative awareness and evaluative thinking:

> *"I know that some aspects of materials are considered halal based on the provisions in the Qur'an and Hadith. However, what is interesting is that many people interpret them differently."* (Interview with Respondent 3, 2025).

This response shows the student's growing awareness of multiple perspectives and the complexity of interpretation. It reflects critical thinking through the recognition that knowledge is not always absolute, but subject to interpretation, thereby encouraging evaluative judgment and openness to alternative viewpoints. The third statement illustrates an understanding of the epistemological nature of research:

> "*I realized that research articles are not merely one-sided claims, but they have strong justifications for why the research is conducted.*" (Interview with Respondent 4, 2025).

This indicates a shift from naive reading toward critical academic literacy. The student begins to recognize that research is grounded in systematic reasoning and evidence, demonstrating the ability to evaluate the credibility and purpose of academic texts. The fourth statement emphasizes evaluative and reflective thinking:

> "*Research does not only report findings, but also provides thoughtful recommendations.*" (Interview with Respondent 5, 2025).

The findings indicate that students were able to recognize the broader function of research beyond merely presenting results. Their responses demonstrate an understanding of how research contributes to problem-solving and informed decision-making, reflecting the development of higher-order thinking. Classroom observations further show that students' comprehension improved when learning was supported by higher-order thinking skills (HOTS) questions, which encouraged deeper analysis and reflection.

c. Improving independence in language learning

The findings revealed that learner independence developed as a direct outcome of students' acquisition and internalization of linguistic knowledge. As students gained a deeper understanding of the subject matter, they became more capable of regulating their own learning processes, making informed decisions, and engaging with learning materials autonomously. This pattern was clearly illustrated in the experience of Respondent 4, who reported that an improved understanding of the material significantly enhanced their ability to learn independently. As their comprehension increased, they became more confident and self-reliant in completing academic tasks. This is reflected in Respondent 4's statement below:

> "*I was also hesitant to explain an article on my own at first, but afterwards I realized that I could understand the concepts better if I did it myself.*" (Interview with Respondent 4, 2025).

This statement illustrates the transition from dependence on external assistance to intellectual independence. Initially, the respondent felt unsure about explaining the content of the article individually, but over time, he realized that the independent learning process actually helped him understand the concepts better. This demonstrates that independent learning can strengthen understanding through active engagement and personal reflection, which are at the heart of student-centered learning practices.

However, not all students immediately felt comfortable with independent learning. For some participants, the absence of a group actually created uncertainty and confusion when evaluating their analysis. Respondent 5 expressed this sentiment:

> "*Without my team, I regularly felt lost and wondering if my analysis was correct.*" (Interview with Respondent 5, 2025).

This statement indicates that group work serves not only as a forum for exchanging ideas but also as a source of validation and confidence in the analysis process. When having to work alone, respondents felt disoriented and doubted the accuracy of their interpretation of the text. This indicates that social support in collaborative learning plays a significant role in fostering self-confidence and certainty in understanding the material. Therefore, a combination of individual and collaborative learning can be a balanced approach to optimally support the development of critical thinking.

Despite initially relying on group work, over time some students began to show significant cognitive development through open discussion. This change is reflected in respondent 5's statement:

> "*I once relied on group discussions to understand difficult concepts; however, I now find myself better able to handle these difficulties on my own.*" (Interview with Respondent 5, 2025).

This statement indicates a process of adaptation and growth in the respondent's learning style. While group discussions were previously the primary source of learning for understanding difficult concepts, they now feel more capable of tackling these challenges independently. This suggests that individual learning experiences can strengthen problem-solving skills and intellectual confidence. In other words, while group work remains an important contribution, independent learning plays a significant role in fostering academic independence and deeper conceptual mastery.

d. The role of lecture's feedback

In developing critical thinking skills, lecturer feedback played a crucial role as a reflective guide that helped students identify weaknesses in their thinking and argumentation. Constructive feedback provided through question-and-answer sessions and open discussions not only offers direction but also encourages students to engage in conscious and purposeful improvement. This is clearly reflected in the following statement from Respondent 6:

> "*Your feedback helped me to understand where my arguments were unclear and how I can strengthen my critical analysis.*" (Interview with Respondent 6, 2025).

This statement confirms that feedback from lecturers provides respondents with new insights in assessing the clarity and strength of their arguments. This feedback encourages students to not only improve the content of their writing but also to enhance the quality of their thinking by considering logic, evidence, and clarity in conveying ideas. Thus, feedback serves as an effective learning tool in fostering critical awareness and continuously improving analytical skills.

Furthermore, the role of lecturers extends beyond providing material, to facilitating critical thinking, helping students deeply evaluate their thinking. Feedback focused on fundamental aspects of analysis can stimulate students to go beyond superficial understanding of the text and explore its deeper meaning. This is reflected in Respondent 7's experience:

> *"After the lecturer pointed out loopholes in my analysis, I began to critically examine my fundamental assumptions and sought more profound interpretations instead of merely repeating the article."* (Interview with Respondent 7, 2025).

This statement demonstrates that the lecturer's criticism of the analysis' weaknesses prompted respondents to deeply reflect on their underlying assumptions. Respondents began shifting from passive practices such as repeating the article's content to active efforts to explore deeper meanings and develop more critical interpretations. This illustrates how lecturer feedback can serve as a catalyst for transforming students' thinking, from simply reproducing information to more incisive and meaningful analysis.

In addition to demonstrating the importance of feedback from lecturers, student experiences also highlight the dynamic between group work and individual learning in shaping depth of thinking. Respondent 7 expressed how the two approaches had different impacts on his learning process:

"*Group work makes me learn faster, yet solo work makes me think more.*" (Interview with Respondent 7, 2025).

This statement indicates that group work accelerates understanding due to interaction and the exchange of ideas, but individual learning provides greater space for reflection and critical thinking exploration. In this context, lecturer feedback becomes increasingly important, especially when students work independently, as it can replace the validation and guidance typically provided by group discussions. Thus, a combination of lecturer feedback and both solo and collaborative learning experiences can enrich students' thinking processes in a balanced way, quick in understanding, yet deep in analysis.

2. Discussion

The findings of this study suggest that the educational value of research articles in English for Specific Purposes (ESP) extends beyond their conventional function as authentic reading materials. More fundamentally, research articles operate as epistemic tools through which students construct disciplinary knowledge, develop critical thinking, strengthen learning autonomy, and engage in reflective dialogue through lecturer feedback. This finding is significant because much of the ESP literature has traditionally emphasized language acquisition, vocabulary development, and reading comprehension as primary instructional outcomes (Hutchinson & Waters, 2005; Hyland, 2019; Orr, 2015). While these dimensions remain important, the present study demonstrates that engagement with research articles creates a broader learning ecology in which students learn not only language, but also how knowledge is generated, justified, contested, and communicated within academic communities.

The findings indicate that knowledge construction emerged through students' active interaction with authentic scholarly texts. Exposure to research articles enabled students to move beyond surface-level understanding toward a more sophisticated engagement with disciplinary concepts, research methodologies, and academic argumentation. This finding reinforces the argument that ESP instruction should not be limited to linguistic competence alone but should facilitate learners' participation in disciplinary discourse communities (Kinnear, 2018; Hyland, 2019; Qamariah & Hercz, 2025). However, the present study extends this perspective by showing that the value of authentic materials lies not merely in exposing students to specialized vocabulary or

genre conventions. Rather, research articles provide access to the epistemological foundations of a discipline, enabling learners to understand how knowledge claims are supported by evidence, theoretical frameworks, and methodological procedures. In this sense, academic literacy becomes inseparable from knowledge construction itself.

An important aspect of this process was the role of collaborative engagement. Students initially experienced difficulties when encountering unfamiliar terminology, complex research structures, and abstract disciplinary concepts. Rather than viewing these difficulties as barriers to learning, the findings suggest that such challenges functioned as productive cognitive tensions that stimulated deeper engagement with the texts. This observation is consistent with constructivist perspectives that view learning as an active process of negotiating meaning between prior knowledge and new information (Michelena, 2016; Vagele-Kricina, 2021; Indrayadi et al., 2024; Adli et al., 2025). Yet the present findings indicate that this process was strengthened through peer interaction. Collaborative discussion enabled students to compare interpretations, question assumptions, and collectively refine their understanding. Therefore, the effectiveness of research articles as learning resources cannot be explained solely by their authenticity. Their educational impact emerges from the interaction between authentic texts, collaborative inquiry, and reflective engagement. This interpretation expands the arguments of Breen (1985) and Hyland (2019), who emphasize authenticity and interaction in language learning, by demonstrating how these elements jointly contribute to disciplinary knowledge construction.

The findings also reveal that engagement with research articles contributed substantially to the development of critical thinking. Students gradually moved from viewing texts as repositories of information toward understanding them as structured arguments that require interpretation, evaluation, and judgment. This shift is academically significant because it suggests that critical thinking develops not as a separate instructional objective but as an integral outcome of meaningful engagement with scholarly discourse. Previous studies have shown that research-based learning can strengthen analytical reasoning and higher-order cognitive skills (Beevi et al., 2019; Leikin, 2016). However, the present findings provide a more nuanced understanding of how this process occurs. Students developed critical thinking because research articles exposed them to competing perspectives, methodological choices, and evidence-based reasoning (Jing et al., 2019; Rizqi, 2023). Consequently, reading became an intellectual activity that required learners to evaluate credibility, identify assumptions, and assess the strength of arguments rather than simply comprehend content.

This development is particularly evident in students' growing awareness that disciplinary concepts often possess multiple interpretations. Their recognition that academic knowledge is neither fixed nor absolute reflects the emergence of epistemic cognition, whereby learners begin questioning the certainty and authority of knowledge claims (Tekel et al., 2025; Qamariah & Hercz, 2025; Thorne & Tasker, 2023). Such awareness represents an important shift from naïve understandings of knowledge toward a more sophisticated appreciation of scholarly inquiry. In this regard, the findings contribute to ongoing discussions concerning disciplinary literacy. As Hyland (2005) argues, academic texts are inherently persuasive and shaped by rhetorical, methodological, and evidential choices. The present study demonstrates that students gradually became aware of these dimensions, suggesting that critical reading in ESP involves understanding not only what a text says but also how and why particular knowledge claims are constructed. This finding expands the work of Claravall et al., (2024) by highlighting the importance of critical engagement with multiple perspectives in developing academic literacy.

Another notable finding concerns the development of learner autonomy. Although students initially relied heavily on collaborative learning and lecturer guidance, they gradually became more confident in independently accessing, evaluating, and interpreting scholarly sources. This progression reflects a shift from dependence toward self-regulated learning, which is widely recognized as a key objective of contemporary higher education (Jeong, 2022; Vishwakarma & Tyagi, 2023; Mulyadi et al., 2025). Importantly, the findings challenge simplistic understandings of autonomy as learning without support. Instead, learner independence emerged through a gradual process in which collaborative activities and instructional scaffolding created the conditions necessary for autonomous engagement. Students developed confidence not because support was removed, but because support was strategically provided and progressively internalized.

The role of research articles in this process deserves particular attention. Independent engagement with scholarly literature required students to identify relevant information, evaluate source credibility, monitor their own understanding, and adopt appropriate reading strategies. These activities correspond closely to metacognitive processes associated with self-regulated learning (Vishwakarma & Tyagi, 2023; Zou et al., 2023). The findings therefore support the argument that authentic academic texts can function as catalysts for learner autonomy. Consistent with the observations of Sarsekeyeva et al., (2019), Thiem et al., (2023), and Emelyanova (2020), students who actively engaged with research literature demonstrated greater responsibility for their learning and stronger analytical abilities.

However, the present study extends these findings by illustrating how autonomy develops through the integration of disciplinary literacy, digital literacy, and critical reading practices. Learner independence should be understood not merely as an individual characteristic but as an outcome of sustained participation in authentic academic practices (Fatma & Sujito, 2025; Zou et al., 2023).

Equally important was the role of lecturer feedback in facilitating this developmental process. The findings suggest that feedback functioned as more than a corrective mechanism. Instead, it served as an intellectual scaffold that guided students toward deeper levels of understanding and critical reflection. This interpretation aligns with socio-constructivist perspectives, particularly Vygotsky's (1978) concept of the Zone of Proximal Development, where learning occurs through guided interaction with more knowledgeable individuals. Lecturer feedback helped students identify weaknesses in their reasoning, reconsider assumptions, and strengthen their interpretations. Consequently, feedback became a mechanism for knowledge refinement rather than simple error correction.

The developmental nature of feedback is further supported by metacognitive and reflective learning perspectives. Through feedback, students were encouraged to evaluate their own thinking processes, identify limitations in their interpretations, and revise their understanding accordingly (Hattie & Timperley, 2007; Janiuniene et al., 2024; Arbain Nurdin et al., 2024). This process contributed not only to improved academic performance but also to the development of reflective habits essential for lifelong learning. The findings therefore support the argument of Wambsganss et al., (2022) and Alqefari (2022) that feedback can transform learners from passive recipients of information into active participants in knowledge construction. Importantly, this transformation occurred because feedback was embedded within a learning environment that combined authentic texts, collaborative inquiry, and independent analysis.

Taken together, these findings suggest that research articles create a pedagogical space where knowledge construction, critical thinking, learner autonomy, and feedback interact dynamically rather than functioning as separate educational outcomes. This integrated perspective constitutes an important contribution to ESP scholarship. Existing studies frequently examine these dimensions independently, whereas the present study demonstrates their interconnected nature within authentic academic learning environments. The findings therefore support a shift from language-centered ESP instruction toward a more holistic model that integrates linguistic development, disciplinary literacy, critical inquiry, and autonomous learning.

Beyond their pedagogical significance, the findings also have broader implications for higher education in an increasingly digital and knowledge-intensive world. Contemporary graduates are expected not only to access information but also to critically evaluate evidence, navigate competing knowledge claims, and participate in global academic and professional communities (Ali et al., 2024; Ismail et al., 2025). The competencies developed through engagement with research articles are therefore directly relevant to these expectations. In particular, the findings resonate with international efforts to strengthen academic literacy, critical thinking, and lifelong learning in higher education. By positioning students as active constructors of knowledge rather than passive consumers of information, the instructional approach examined in this study contributes to the development of graduates capable of engaging productively with complex global challenges.

The findings are also relevant to the achievement of Sustainable Development Goal 4 (Quality Education), which emphasizes inclusive, equitable, and high-quality learning opportunities for all. The development of critical thinking, self-regulated learning, academic literacy, and evidence-based reasoning identified in this study reflects competencies that are increasingly recognized as essential for sustainable educational development in higher education (Jeong, 2022; Zou et al., 2023; Basri et al., 2024). Furthermore, by enabling students to engage with international scholarship, critically evaluate scientific knowledge, and participate in broader academic networks, ESP learning can contribute to strengthening educational quality and reducing barriers to participation in global knowledge communities (Archila et al., 2025; Simanjuntak et al., 2025; Thiem et al., 2023). In this regard, the significance of research articles extends beyond classroom instruction and supports the broader goal of preparing learners for meaningful participation in an increasingly interconnected and knowledge-driven world.

Despite its contributions, this study has several limitations. First, it was conducted within a single ESP course and institutional context, which may limit the transferability of the findings to other disciplinary or educational settings. Second, the qualitative case study design emphasizes in-depth understanding rather than broad generalization. Third, the study captured students' experiences during one semester of instruction and therefore did not examine the long-term effects of research article engagement on academic literacy, critical thinking, or professional development. These limitations do not reduce the significance of the findings but highlight the contextual nature of the study and provide important directions for future research.

D. Conclusion

This study demonstrates that the integration of English-language research articles within technology-enhanced ESP learning creates a meaningful pedagogical environment that supports the simultaneous development of knowledge construction, critical thinking, learner autonomy, and academic engagement. Rather than functioning merely as authentic reading materials, research articles serve as epistemic tools that enable students to engage with disciplinary knowledge, evaluate evidence, and participate more actively in academic meaning-making processes. The findings suggest that students' academic development is strengthened not only through exposure to scholarly texts but also through the interaction of collaborative learning, independent inquiry, and constructive lecturer feedback.

The study contributes to ESP scholarship by offering a more integrated understanding of academic literacy development. Existing discussions often examine reading comprehension, critical thinking, learner autonomy, and feedback practices as separate educational outcomes. In contrast, the findings indicate that these dimensions operate as interconnected processes within authentic academic learning environments. This perspective expands the role of research articles in ESP pedagogy from language-learning resources to instruments for fostering disciplinary literacy, intellectual independence, and higher-order thinking. Practically, the findings support the strategic integration of authentic scholarly texts into ESP curricula as a means of preparing students to engage with increasingly complex academic and professional knowledge environments.

The implications of this study extend beyond the immediate instructional context. In an era characterized by rapid information growth and expanding digital access, higher education institutions are increasingly expected to cultivate learners who can critically evaluate information, navigate diverse perspectives, and participate in global knowledge communities. The competencies developed through engagement with research articles—including critical thinking, self-directed learning, and evidence-based reasoning—are therefore highly relevant to contemporary educational goals and contribute to broader efforts to promote quality education and lifelong learning.

Given the contextual nature of this study, future research should examine the applicability of this instructional approach across different disciplinary fields, institutional settings, and cultural contexts. Longitudinal investigations may also provide deeper insights into the sustained impact of research article engagement on students' academic literacy, critical thinking development, and professional readiness over time.

This study demonstrates that research articles should not be viewed merely as sources of information but as epistemic tools that enable students to construct knowledge, develop critical thinking, and cultivate the autonomy required for meaningful participation in academic and professional communities. When integrated into ESP learning through purposeful pedagogy and supported by constructive feedback, authentic scholarly texts can transform language learning into a process of academic empowerment, disciplinary engagement, and lifelong intellectual development.

Declaration of Competing Interest

The authors declare that there are no conflicts of interest regarding the research, authorship, and publication of this article. The authors confirm that the study was conducted independently and that no financial, professional, or personal relationships influenced the design, implementation, analysis, interpretation, or reporting of the research findings.

Declaration of Generative AI

The authors declare that AI-assisted tools were used solely for limited language editing and writing support to improve clarity, grammar, and readability. All intellectual content, research design, data collection, data analysis, interpretation of findings, and final decisions regarding the manuscript remain the sole responsibility of the authors.

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