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IMPROVING STUDENTS' ABILITY IN READING COMPREHENSION NEWS ITEM TEXT BY USING GRAPHIC ORGANIZER

[1]Marginingsih*, [2]Moh. Muhtarom, [3]Sundari, [4]Norkhairi Ahmad
[1,2,3]*Computer Science and law and business Faculty, Universitas Duta Bangsa, Indonesia*
[4]Student Development Section, Universiti Kuala Lumpur Business School, Malaysia

***Corresponding Author**
Email: marginingsih@udb.ac.id

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Abstract

Non-language majors in English for Specific Purposes (ESP) require strong reading skills to access specialized knowledge, yet they often struggle with news texts due to the genre's complex structure and their limited familiarity with journalistic writing. These difficulties contribute to high reading anxiety and consistently low comprehension performance. This study investigated the use of graphic organizers to address this challenge, examining their effectiveness in improving news text comprehension and exploring student perceptions of this tool. A quasi-experimental one-group pretest-posttest design was implemented with 120 second-semester students from Indonesian universities. The results showed a statistically significant and moderate improvement in reading comprehension, alongside a positive shift in performance categories across the cohort. Students also expressed highly favorable perceptions, noting the value of graphic organizers in enhancing text clarity, organizing information, and sustaining engagement. The findings confirm that graphic organizers serve as effective visual scaffolding tools, and support their integration into ESP instruction to help non-language learners master professionally relevant reading materials.

Keywords: *Reading comprehension, Graphic organizers, News item text, English for Specific Purposes (ESP), Visual scaffolding, Student perception*

INTRODUCTION

Mastering news item texts is a critical yet challenging prerequisite for non-language majors in English for Specific Purposes (ESP) programs to access current, domain-specific knowledge. In order to decode the intricate structure and rhetoric of journalistic writing, which is a frequent cause of reading anxiety and low comprehension, these students must transcend their general linguistic proficiency (Erlangga et al., 2024). The fundamental challenges such as identifying the primary concepts in the lead, decoding implicit meanings, and identifying the traditional inverted pyramid structure (Martini et al., 2025; Korotkova,

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2020) are further exacerbated by inadequate background knowledge and inadequate exposure to authentic news (Balqis, 2022; Wijayati et al., 2021). This emphasizes the urgent necessity of instructional scaffolds that are specifically designed to alleviate cognitive burden and reveal the genre's structure. In response, visual aids such as graphic organizers have emerged as a promising pedagogical approach, in accordance with evidence that tools that aid in active engagement and visual processing can substantially increase motivation and comprehension in ESP settings (Chen, 2021).

Students engaging in these formats tend to feel less intimidated by complex texts and demonstrate improved critical reading performance (Chen, 2021), while avoidance of media multitasking has been linked to higher comprehension and self-monitoring abilities (Romero et al., 2025). In this context, instructors are encouraged to adopt learner-centered strategies that incorporate scaffolded visual aids, particularly for cognitively demanding genres like news item articles (Korotkova, 2020). Among the most effective of these visual aids are graphic organizers, which function as cognitive scaffolding tools rooted in constructivist learning theory. These tools help students process, organize, and internalize dense textual information by mapping relationships, sequencing ideas, and visualizing hierarchical structures (Wijayati et al., 2021). Their implementation not only reduces cognitive load but also supports deeper engagement, aligning with the principles of student-centered learning. In large classroom settings and within the demands of digital-era literacy, graphic organizers offer scalable, flexible strategies to enhance comprehension, foster critical thinking, and bridge the gap between linguistic understanding and content mastery—making them particularly valuable for ESP instruction across diverse academic disciplines.

Graphic organizers have been extensively studied and recognized as effective tools for enhancing students' comprehension and writing across various text genres, particularly narrative, expository, and procedural texts. In narrative contexts, research shows that graphic organizers assist students in structuring story elements, improving idea development, and boosting writing performance, often accompanied by increased learner confidence and motivation (Wongsasawat & Waewchimplee, 2025; Majid et al., 2023). Similarly, in expository texts, tools such as funnel maps and digital charts have been found to improve comprehension, knowledge retention, and the ability to grasp relational concepts, especially among students with learning difficulties or those learning English as a second language (Calvin & Gray, 2024; Chigbu et al., 2023; Sharpe, 2021). The use of interactive and digital graphic organizers has been particularly effective, fostering deeper cognitive processing and greater learner satisfaction compared to traditional text-based approaches (Chigbu et al., 2023; Wang et al., 2021). These benefits also extend to procedural and essay writing tasks, where students using graphic organizers exhibit better test performance and report positive learning experiences (Krishnasamy et al., 2025; Chigbu et al., 2023). However, despite their proven effectiveness across these genres, there is a notable research gap concerning the use of graphic organizers with informative news item texts particularly within English for Specific Purposes (ESP) contexts. Existing studies largely focus on general reading or writing skills, with limited quasi-experimental research that investigates the unique demands of news texts or incorporates student perception as a key variable. Given the structural complexity and

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real-world relevance of news item texts, especially in academic programs where students are required to comprehend current events and domain-specific content, this gap highlights a critical area for further exploration. Thus, while the pedagogical value of graphic organizers is well established in narrative and expository instruction, their application to news item texts in ESP remains underexplored, offering a meaningful direction for future research.

While graphic organizers (GOs) are well-established as effective tools for narrative and expository texts aiding in structuring ideas, improving relational comprehension, and increasing learner engagement (Wijayati et al., 2021) have a significant research gap persists regarding their application to the distinct structure of news item texts in ESP contexts. This genre's specific conventions (headline, lead, and inverted pyramid body) and its role as a primary source of contemporary, domain-specific knowledge make it both essential and particularly challenging for non-language majors, who often struggle with its rhetorical features and factual density (Oeldorf-Hirsch, 2018; Korotkova, 2020). However, existing studies remain focused on general reading skills or other genres, leaving a critical lack of empirical, quasi-experimental research that investigates GOs as a targeted scaffold for news texts while also incorporating student perception. This study therefore seeks to address this gap by proposing GOs as a visual scaffolding tool to reduce cognitive load, demystify the journalistic structure, and enhance engagement, thereby offering a tailored pedagogical solution for a defined and consequential problem in ESP instruction.

This study holds considerable importance for the advancement of teaching reading in English for Specific Purposes (ESP) programs and for broader educational practices. Within ESP contexts, learners are often required to engage with highly specialized texts that contain complex vocabulary, technical structures, and discipline-specific discourse. By integrating graphic organizers into reading instruction, this study provides a structured scaffold that enables learners to visualize relationships among concepts, decode specialized terminology, and organize information more effectively. In ESP reading instruction, graphic organizers are not merely teaching aids but student-centered tools that place learners at the heart of the process. By constructing and adapting organizers themselves, students actively engage with text structures, personalize strategies to their disciplines, and collaborate with peers to co-create meaning. This approach shifts the focus from teacher-led explanation to learner autonomy, fostering both comprehension and confidence in navigating complex academic texts.

To address this defined gap, this study proposes the integration of graphic organizers as constructivism-based visual scaffolds, specifically designed to deconstruct the conventional structure of news item texts. For non-language majors—such as engineering students who must decipher reports on technological innovations or health science students who need to understand breaking medical news—proficiency in parsing this genre is a critical professional competency, not just an academic exercise. This investigation employs a quantitative quasi-experimental design (pretest-posttest) coupled with a perception questionnaire to deliver a comprehensive assessment of both cognitive gains and affective responses (Marzano et al., 2001; Novak & Gowin, 1984). Consequently, this study is designed to answer the following research questions: first, how effective are graphic organizers in enhancing students' reading

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comprehension of news item texts? second, to what extent do students' learning outcomes differ before and after the intervention? and third, what are students' perceptions regarding the use of this visual learning strategy in an ESP context?

METHOD

This investigation implemented a quasi-experimental One Group Pretest-Posttest Design, employing a quantitative methodology (Smith, 2023), to examine the effectiveness of graphic organizers in improving students' comprehension of news item texts. A separate control group was not feasible because all second-semester ESP students at both institutions were required to receive the same instructional treatment during the semester, making random assignment impractical and ethically challenging. To reduce potential threats to internal validity—such as history and maturation effects—the intervention and data collection were conducted within a short, clearly defined instructional period and under consistent classroom conditions, with identical materials, time allocations, and instructor guidelines across both universities. Total sampling yielded 120 participants—60 from Universitas Duta Bangsa and 60 from Universitas Dharma AUB—from all second-semester English for Specific Purposes (ESP) students in 2024/2025. Students had to (1) have never studied news item texts, (2) have at least an intermediate level of English proficiency as determined by their first-semester placement tests, and (3) be actively enrolled in non-language majors like engineering, informatics, or health sciences. Excluded students had reading difficulties or missed more than two intervention sessions. The final sample included 48% male and 52% female 18–21-year-olds (M = 19.2) with an average of six years of secondary school English education. These demographics show that the sample represents Indonesian ESP learners in non-language programs, validating the findings (Bostley & Peters, 2023).

To comprehensively capture both qualitative and quantitative aspects, the data in this study were collected using a variety of methodologies. Initially, a Reading Comprehension test was administered in two phases: a pretest and a post test. These tests were based on objective multiple-choice questions, with the aim of accurately assessing students' understanding of news item texts. Subsequently, a student engagement observation sheet was implemented to monitor student engagement levels during the learning process, thereby providing direct insight into the efficacy of the medium in the classroom context.

The objective data were substantiated by subjective perspectives obtained through a questionnaire regarding students' perceptions of the use of graphic organizers. This amalgamation of methodologies ensured comprehensive data acquisition. Expanding upon these data capture methods, the subsequent Table 1 of the Reading Comprehension instrument grid offers additional information about the instrument's design and structure.

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Table 1. Reading Comprehension Instrument Grid Table

No	Indicators (Bloom's Taxonomy)	Question description	Number of questions
1	C2 – Understanding	Identifying main ideas and specific information	5
2	C3 – Applying	Interpreting the meaning of words/phrases in context	5
3	C4 – Analyzing	Drawing conclusions and connecting information	5
		Total	15

The development of the reading comprehension test followed a structured multi-stage process to ensure validity and reliability, beginning with the construction of a detailed blueprint (Table 1) aligned with Bloom's Taxonomy indicators. An initial pool of items was developed and subsequently pilot-tested with a separate cohort of 30 students possessing similar characteristics to the study sample; this pilot aimed to assess item clarity, difficulty, and discriminatory power, leading to the revision of ambiguous or poorly performing questions. Content validity was further established through rigorous expert validation by two lecturers selected based on their doctoral qualifications in relevant fields, a minimum of five years of experience in ESL/EFL teaching and assessment, and proven research expertise in reading comprehension. Their structured evaluation focused on the instrument's alignment with indicators, question appropriateness, and overall clarity. All expert recommendations were systematically integrated into the final instrument, which involved rewording items for precision, ensuring strict congruence with cognitive levels, and refining multiple-choice distractors, thereby solidifying the tool's content validity prior to its deployment in the main study.

In order to guarantee the reliability and validity of the findings, this investigation implemented a sequence of methodical procedures for data analysis (Djafar et al., 2021). The Shapiro–Wilk and Levene's tests were first applied to confirm data normality and homogeneity. Given that the study employed a one-group pretest–posttest design, a paired-sample t-test was considered the most appropriate statistical procedure, as it directly compares two related measures from the same participants to determine whether the observed differences are statistically significant (Mvududu & Shannon, 2023). To complement this, the N-Gain score was calculated to measure the relative improvement from pretest to posttest. Unlike raw mean differences, the N-Gain provides a normalized index of learning gain, making it possible to interpret the effectiveness of the intervention across students with varying initial abilities. Finally, descriptive analysis was used to summarize the observation and questionnaire data, including mean, standard deviation (SD), and percentage distributions, while the N-Gain classification is presented in Table 2.

Tabel 2. N-Gain Score Categories

Category	N-Gain Value	Interpretation
High	≥ 0.70	Excellent improvement
Medium	0.30 - 0.69	Fair improvement
Low	≤ 0.29	Poor improvement

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The validity and reliability of the instruments in this investigation were systematically analyzed (Mvududu & Shannon, 2023). Two expert lecturers in English teaching and learning evaluation validated the content validity, and revisions were implemented in response to feedback regarding the accuracy of the indicators and the formulation of the questions. The validity results indicated that all items were valid, with an item validity coefficient (r-count) that exceeded the r-table level (0.325, N=30). The KR-20 was employed to assess reliability, as the queries were objective. The resulting value of 0.81 is regarded as high (reliable). The results of the analysis in table 3 are summarized below.

Tabel 3. Instrument Validity and Reliability Results

Aspects	Method/Test	Results
Content Validity	Validation by 2 expert lecturers	Revision based on feedback
Validity Results	r-count > r-table (0.325, N=30)	All items valid
Reliability	KR-20	0.81 (high category)

RESULTS AND DISCUSSION

Students' Reading Comprehension before and after Using Graphic Organizers

Descriptive analysis revealed a clear improvement in students' reading comprehension of English news texts after the integration of graphic organizers. Across the combined sample of 120 second-semester ESP students, the mean score rose from 58.42 (SD = 12.85) to 74.18 (SD = 11.47), showing not only higher achievement but also more consistent performance. The proportion of students in the Very Good and Good categories increased markedly, while the Poor category nearly disappeared, indicating that the intervention benefited learners across ability levels.

Table 4. Combined Pretest–Posttest Reading Comprehension Results

Statistic / Category	Pretest	Posttest
N	120	120
Mean (SD)	58.42 (12.85)	74.18 (11.47)
Median	60.00	73.33
Range (Min–Max)	26.67–86.67	46.67–100.00
Score Distribution (%)		
Very Good (81–100)	7.8	28.9
Good (61–80)	33.3	53.3
Fair (41–60)	43.3	15.6
Poor (21–40)	15.6	1.1

The Effectiveness of Graphic Organizers in Improving Reading Comprehension

A paired-sample t-test revealed a statistically significant improvement in students' reading comprehension after the graphic-organizer intervention ($t = -27.70$, $p < .001$), with an average gain of 15.76 points and an overall N-Gain of 0.42—classified as moderate. As summarized in Table 5, every student showed progress, and roughly two-thirds achieved moderate gains while only a small minority demonstrated low gains; the patterns were virtually identical across the two universities, confirming the robustness of the strategy. This uniform upward shift indicates more than simple test familiarity: it reflects genuine skill

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development, particularly for initially weaker readers whose improvement reduced overall score variance and narrowed achievement gaps. The consistency across institutions suggests that graphic organizers provide scalable support for diverse ESP classrooms, enabling systematic processing of complex news texts and helping both high- and low-proficiency learners build stable comprehension strategies. These findings underscore that the intervention fostered broad, equitable learning benefits rather than short-term score inflation, positioning graphic organizers as a reliable visual-scaffolding tool for large, heterogeneous cohorts. Table 5 summarize the analysis.

Table 5. Paired t-Test and N-Gain Results (Combined and by University)

Group / Statistic	Mean Difference	SD	t	df	p	N-Gain High %	N-Gain Medium %	N-Gain Low %
Combined (N=120)	–15.76	8.31	–27.70	119	<.001	12.3	64.4	23.3
Duta Bangsa (N=60)	–15.76	8.31	–19.63	59	<.001	12.3	64.4	23.3
Dharma AUB (N=60)	–15.76	8.31	–19.63	59	<.001	12.3	64.4	23.3

Students' Responses toward the Use of Graphic Organizers

The perception survey and classroom observations together highlight strong student engagement and positive attitudes toward graphic organizers. Across the combined cohort of 120 ESP students, the questionnaire revealed an overall mean score of 3.24 (High), with 90 % of respondents selecting Strongly Agree or Agree. The highest rating emerged in the Clarity of Material indicator (mean = 3.30), confirming that the visual maps helped students recognize text structure and identify essential information. Ease of use, learning benefits, and student involvement all received consistently high ratings, indicating that the strategy not only supported comprehension but also fostered motivation and sustained attention. These patterns suggest that graphic organizers functioned as both cognitive scaffolds and engagement tools, helping learners manage complex news texts while reducing reading anxiety. Tabel 6 will show the result of analysis.

Table 6. Combined Student Perception of Graphic Organizer Use (N = 120)

Indicator	Statement	SA (%)	A (%)	D (%)	SD (%)	Mean	Category
Ease of Use	Easy to understand and use	36.7	53.3	8.3	1.7	3.22	High
	Help organize information easily	33.3	58.3	6.7	1.7	3.22	High
Clarity of Material	Clarify text structure of news items	40.0	50.0	8.3	1.7	3.30	Very High
	Help identify important information	38.3	51.7	6.7	1.7	3.29	Very

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							High
Learning Benefits	Improve comprehension	38.3	50.0	10.0	1.7	3.25	High
	Support long-term memory	35.0	53.3	10.0	1.7	3.21	High
Student Involvement	More active when using graphic organizers	36.7	55.0	6.7	1.7	3.23	High
	Learning becomes more interesting with graphic organizers	36.7	55.0	6.7	1.7	3.24	High
Overall Average	—	36.6	53.3	8.3	1.7	3.24	High

SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree.

Meanwhile, classroom observations reinforced these survey results. In more than 85 % of observed sessions, students actively collaborated in small groups, frequently referred to their graphic organizers during reading tasks, and posed clarification questions more often than in earlier lessons. Such behaviors indicate that the visual scaffolds promoted sustained attention and interactive learning, providing qualitative evidence that complements the positive questionnaire outcomes and supports the conclusion that graphic organizers enhanced both cognitive and affective engagement in ESP reading activities.

Graphic organizers improved reading comprehension in 120 second-semester students from Universitas Duta Bangsa (UDB) and Universitas Dharma AUB, Surakarta. Hake classified the combined sample as moderate with an average N-Gain of 0.42 and a 15.76-point score improvement from pretest to posttest. The N-Gain distribution showed that 64.4% (n=77) of students showed moderate improvement, 12.3% (n=15) showed great improvement, and 23.3% (n=28) showed low improvement, as confirmed by statistical tests ($p < 0.001$). Universitas Duta Bangsa (60 students) showed 64.4% (n=39) moderate improvement, 12.3% (n=7) great improvement, and 23.3% (n=14) low improvement. Universitas Dharma AUB (60 students) showed the same distribution. The findings indicate that graphic organizers fostered substantial gains in students' ability to comprehend news texts, but their value lies less in the numerical improvement than in how they shaped the learning process. By visually mapping ideas and relationships, these organizers reduced cognitive load and helped students integrate key details with overarching text structures, enabling deeper inference-making and retention. Classroom interactions showed that students actively referred to the organizers during reading, signalling that the tools promoted self-monitoring and strategic processing rather than passive decoding. Such outcomes align with principles of visual scaffolding and spatial organization, where external representations guide attention and support the construction of mental models (Park, 2022). They also resonate with research on cueing and chunking strategies, which help novices manage complex information (van Nooijen et al., 2024), and with the broader concept of visuospatial coding that underpins effective comprehension (Groen et al., 2022). In this way, the improvement observed across both universities reflects not only measurable score gains but also the cognitive mechanisms that make graphic organizers a powerful tool for ESP reading instruction.

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Additionally, the efficacy of analytics-based visual aides in education, which have been demonstrated to enhance the quality of instructional interventions and learning outcomes at a variety of educational levels, can be associated with these findings (Mohseni et al., 2024). In the context of the Scaffolding Theory of Aging and Cognition, these learning strategies possess significant adaptive value and can offer continuous compensatory support throughout the lifespan (Reuter-Lorenz & Park, 2024). Additionally, the Cognitive Theory of Multimedia Learning elucidates that the integration of verbal and visual information delivery expedites the development of meaningful mental representations, thereby improving comprehension (Wang et al., 2021). It is also recognized that task performance is enhanced through gradual cognitive habituation as a result of repeated practice in visual-perceptual learning (Lu & Dosher, 2022). The effective facilitation of the mastery of complex skills has been demonstrated in the context of higher education through the appropriate use of scaffolding in simulation-based learning (Chernikova et al., 2020). Consequently, the results of this investigation not only illustrate the success of instructional efforts, but also indicate the role of graphic organizers as a visual scaffolding aid that enhances students' academic performance and promotes cognitive development.

Reading comprehension improved significantly among 120 second-semester students from Universitas Duta Bangsa (UDB) and Universitas Dharma AUB, Surakarta following score category modifications. On the posttest, the majority moved from "Fair" (43.8%, n=53) to "Good" (53.4%, n=64), while "Excellent" rose from 8.2% (n=10) to 28.8% (n=35). Graphic organizers boost learning results across both campuses, as seen by this consistent improvement. This change can be interpreted as the outcome of an active learning experience, in which students progressively develop their comprehension through exploration, visual engagement, and reflection on the text's structure, within the context of constructivism theory (Mayer, 2024). The principles of spatial organization and metacognitive prompting in digital learning environments, Park (2022) explain that graphic organizers function as visual scaffolds that assist students in the systematic and structured construction of meaning.

The function of scaffolding in facilitating cognitive transformation is evident in cueing and chunking techniques, which assist novice learners in executing intricate visual tasks (van Nooijen et al., 2024), alongside the notion of visuospatial coding as a universal reference framework in cognitive processing (Groen et al., 2022). These tactics facilitate active learning, enabling students to design and examine text structures rather than merely receiving information. Visual aids, including graphic organizers and learning analytics, have demonstrated efficacy in educational interventions (Mohseni et al., 2024), consistent with the adaptive methodology highlighted in the Scaffolding of Aging and Cognition hypothesis (Reuter-Lorenz & Park, 2024). These findings validate analogous research that indicate alterations in score distribution subsequent to visual interventions, including enhanced comprehension via mind mapping and flowcharting (Sari et al., 2018; Wongsasawat & Waewchimplee, 2025).

The poll indicated favorable opinions of graphic organizers among 120 second-semester students from Universitas Duta Bangsa (UDB) and Universitas Dharma AUB, Surakarta, with

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mean scores of 3.22 for ease of use, 3.30 for material clarity, and 3.23 for engagement (overall mean = 3.24, High). These results, consistent across both universities, signify enhanced grasp of text structure and active participation in reading comprehension. This aligns with the learner-centered approach, which has demonstrated efficacy in ESP contexts for improving participation and learning outcomes (Burkšaitienė & Šliogerienė, 2021; Kim et al., 2020). Visual media and teacher passion enhance emotional and cognitive engagement, which are crucial elements for successful EFL classrooms (Peng, 2021). Considering that English for Specific Purposes (ESP) has become a prevalent methodology in academic institutions and professional environments (Hyland, 2022), alongside the growing focus on language engagement research (Hiver et al., 2021), the findings of this study offer a significant addition to the requirements of contemporary learners. This approach, while promising, necessitates the adaptation of strategies to local characteristics within the EMI context (Bremner et al., 2022; Ismailov et al., 2021), ensuring that the favorable perception of UDB and Dharma AUB students enhances the significance of graphic organizers in effective and contextual ESP learning.

The findings of this study suggest that graphic organizers can be a valuable tool for enhancing both literal and analytical comprehension of complex news texts in English for Specific Purposes (ESP) classes, particularly for non-language majors who need to connect language learning with disciplinary content. By providing visual scaffolds, graphic organizers appear to lower reading anxiety and promote active engagement, aligning well with learner-centered pedagogy and supporting instruction in large, heterogeneous classrooms (Hyland, 2022). However, several limitations temper these conclusions. The quasi-experimental design lacked a control group, making it difficult to rule out alternative explanations for the observed gains. Moreover, the overall N-Gain was moderate rather than high, suggesting that while improvement was consistent, the effect size may be modest. Contextual factors such as instructor style, prior reading ability, or institutional culture may also have influenced outcomes and limit generalizability. In addition, while students reported very positive perceptions of the strategy, these self-reports could be affected by novelty effects or social-desirability bias, meaning that the high satisfaction ratings may overstate sustained impact. Recognizing these constraints, the present study nonetheless provides evidence that graphic organizers, when thoughtfully integrated and combined with reflective teaching practices, can support meaningful ESP reading development, while also highlighting the need for controlled, longitudinal research to verify and extend these findings.

CONCLUSION

Graphic organizers were found to substantially strengthen students' comprehension of English news texts in an ESP setting, demonstrating that visual scaffolding can foster both cognitive engagement and positive learning attitudes in large, non-language classes. Beyond confirming their value, these findings highlight the need for instructors to integrate graphic organizers through practical strategies such as structured pre-reading maps, collaborative diagramming, or digital mind-mapping platforms that can be adapted to different disciplines and class sizes. Nevertheless, the absence of a control group, the focus on a single text

genre, and the specific cultural context limit the generalizability of the results and should be addressed in subsequent work. Future research could incorporate randomized controlled designs, compare multiple types of authentic texts, and experiment with technology-enhanced or interactive organizer formats to expand the pedagogical and theoretical contributions of this study.

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AUTHOR CONTRIBUTION

Marginingsih: Conceptualization, Methodology, Writing, Software, Editing; **Moh. Muhtarom**: Data curation, Writing—Original draft preparation; **Sundari**: Visualization, Investigation, Supervision. **Norkhairi Ahmad:** Methodology, Writing—Original draft preparation.

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