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STUDENT ENGAGEMENT AND LEARNING OUTCOMES IN AI-BASED FLIPPED LEGAL ENGLISH CLASSROOMS: MIXED METHODS INVESTIGATION

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Abstract

This study examined the effectiveness of an AI-based flipped classroom in improving Legal English learning outcomes and student engagement among undergraduate law students in an English for Specific Purposes (ESP) context. Using an explanatory sequential mixed methods design, the study involved 34 undergraduate law students enrolled in a Legal English course at a private university in Jambi City, Indonesia. Quantitative data were collected through a pretest-posttest Legal English achievement test and a student engagement questionnaire, while qualitative data were obtained from classroom observations, reflective responses, and semi-structured interviews. The intervention was implemented over 10 instructional weeks through three stages: AI-supported pre-class preparation, active in-class learning, and post-class reflection. Quantitative findings indicated a statistically significant improvement in Legal English performance, with mean scores increasing on the posttest. Student engagement also increased significantly. Qualitative findings revealed that students gradually shifted from literal translation to contextual interpretation of legal terminology, became better prepared before class, participated more actively in classroom discussion, and viewed AI as a useful scaffold for initial understanding, although lecturer guidance remained essential for disciplinary accuracy. These findings suggest that an AI-based flipped classroom is a pedagogically promising approach for Legal English instruction in non-English-major ESP settings.

Keywords: *Artificial Intelligence; Flipped Classroom; Legal English; English for Specific Purposes; Student Engagement.*

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INTRODUCTION

In contemporary legal education, Legal English has become an increasingly important competence because legal knowledge, contracts, and professional communication are often mediated through English. From an English for Specific

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Purposes (ESP) perspective, instruction in law programs should therefore focus not on general English alone, but on the communicative demands of the legal discipline, including the interpretation and use of specialized legal discourse (Anthony, 2018). This need is particularly pressing in EFL contexts, where undergraduate law students are typically non-English majors and often enter Legal English classes with uneven proficiency and limited exposure to authentic legal texts (Allison, 2023; Chiknaverova, 2023). Legal English is a specialized register characterized by technical terminology, formalized expressions, discipline-specific genres, and system-bound meaning; consequently, students must do more than memorize vocabulary, as they are expected to interpret how legal meaning is constructed in statutes, contracts, court reasoning, and other legal texts.

A major instructional problem, therefore, lies in students' difficulty in understanding English legal terminology. Research has shown that learners commonly struggle with false cognates, synonymy, homonymy, collocations, stylistic nuances, and other lexical complexities that require systematic pedagogical support (Allison, 2023; Chiknaverova, 2023). As a result, students may recognize legal terms superficially but still fail to interpret texts accurately or use the terms appropriately in speaking and writing.

This problem was also evident in the local context of one private university in Jambi City, which serves as the setting of the present study. Preliminary classroom observations showed that many undergraduate law students struggled when reading short legal texts in English. Although students could often identify the general topic of a passage, many found it difficult to explain the legal meaning of key terms, distinguish technical meaning from everyday English usage, and apply legal expressions appropriately in simple contexts. Observation notes also indicated a strong tendency toward literal translation from English into Indonesian, particularly when students were asked to interpret case excerpts, contract clauses, or legal definitions. During two preliminary observations involving 34 students, approximately 86% were unable to explain the legal meaning of at least three out of five target terms, and 84% relied predominantly on literal translation. Participation records further suggested that only 11 students voluntarily attempted to use English legal terminology in oral discussion.

Preliminary interviews with eight students revealed that the problem was not only linguistic but also motivational. Many students described Legal English as difficult, intimidating, and less accessible than other law-related subjects because it combined unfamiliar English with unfamiliar legal terminology. Several reported that they understood the material only after direct lecturer explanation, while others admitted reluctance to participate for fear of using incorrect terms or misunderstanding the text. This pattern is consistent with research showing that motivation among non-English-major learners is influenced by perceived relevance, prior learning

experience, autonomy, and confidence (Van Nguyen & Habók, 2021).

In response to this challenge, the flipped classroom offers a potentially relevant pedagogical model. In flipped learning, foundational material is introduced before class, while classroom time is reserved for active learning processes such as discussion, analysis, and application. Previous studies have shown that flipped learning can improve motivation, participation, autonomy, and academic performance (Hung, 2015; Nouri, 2016; Teng, 2017). In language education, flipped approaches have also been associated with gains in reading, writing, and broader communicative competence when supported by scaffolding and active learning tasks (Ghufron & Nurdianingsih, 2019; Keskın, 2023; Öztürk & Çakıroğlu, 2021). For Legal English, this model is especially relevant because it allows students to encounter difficult terminology before class and then use classroom time to clarify meaning, interpret clauses, and practice applying legal expressions more actively.

Recent developments in artificial intelligence (AI) further strengthen this possibility. AI tools and chatbots can provide immediate explanations, examples, paraphrases, vocabulary support, and feedback, which may help students cope with specialized terminology and disciplinary discourse. Current research suggests that AI can support language learning across skills, although concerns remain regarding accuracy, over-reliance, and responsible use (Kundu & Bej, 2025; Putra et al., 2023; Schei et al., 2024). In flipped environments, AI has been used to support pre-class preparation, vocabulary learning, and learner autonomy (Ling & Jan, 2025; López-Villanueva et al., 2024; Putra & Idrus, 2026). Related studies have also shown that flipped and technology-supported learning can improve performance in vocabulary and language tasks (Ebadi et al., 2022; Wu & Wang, 2021).

Despite these developments, the state of the art still reveals a clear gap. First, most previous studies on flipped learning and AI have focused on general EFL or English-major contexts rather than law students in ESP settings. Second, relatively few studies explicitly address Legal English as a specialized register characterized by system-bound and conceptually dense terminology. Third, limited research has examined the combined effect of AI-based flipped instruction on both learning outcomes and student engagement in Legal English classrooms. In other words, although flipped learning and AI have each been studied in language education, their integration in an ESP-oriented Legal English context remains underexplored, particularly for undergraduate law students who are not majoring in English.

The present study addresses this gap and offers several points of novelty. It situates AI-enhanced flipped learning in the under-researched context of Legal English for undergraduate law students, focuses on the dual problem of weak terminology comprehension and low student engagement, and examines these two outcomes together through a mixed methods design. In doing so, the study contributes to

the literature on ESP, flipped pedagogy, and AI-supported language learning by showing how a pedagogically structured use of AI may function as a scaffold for preliminary understanding rather than as a replacement for lecturer expertise. The study also provides context-specific evidence from a private university in Jambi City, thereby extending discussion on technology-enhanced learning to a local higher education setting that is rarely represented in the literature.

Against this backdrop, the present study aims to examine the pedagogical effectiveness of an AI-based flipped classroom in a Legal English course for undergraduate law students by assessing its impact on students' learning outcomes, particularly their comprehension and use of English legal terminology, investigating its influence on student engagement, and exploring students' perceptions of the benefits and challenges associated with AI-supported flipped learning.

METHOD

This study employed an explanatory sequential mixed methods design (QUAN → qual) with a one-group pretest-posttest intervention model. In this design, quantitative data were collected and analyzed first to examine whether the AI-based flipped classroom improved students' Legal English learning outcomes and engagement, followed by qualitative data to explain, elaborate, and contextualize the quantitative findings. The methodological rationale follows Creswell and Plano Clark (Braun & Clarke, 2006; Creswell, 2015) and is further consistent with the pragmatic orientation of mixed methods research, which emphasizes the use of methods that best address a research problem (Tashakkori et al., 2020).

The study was conducted in a Legal English course at one private university in Jambi City, Indonesia, during the 2025/2026 academic year, Semester II. The participants consisted of 34 undergraduate law students enrolled in one intact class. The study used total sampling, as all students registered in the course were involved in the intervention. Students were included if they were officially enrolled in the course, attended the intervention regularly, completed both the pretest and posttest, and agreed to participate through informed consent. For the qualitative phase, approximately eight students were selected purposively to represent variation in learning outcomes and engagement patterns.

The study was conceptually grounded in several complementary frameworks. First, from an ESP perspective, instruction should address learners' disciplinary and professional language needs rather than focus only on general proficiency (Anthony, 2018). In this study, the target competence was Legal English, particularly students' comprehension and use of legal terminology in context. Second, the intervention drew on Flipped Learning principles, especially the idea that foundational content should be accessed before class while in-class time is reserved for active and higher-order learning. Third, student engagement was understood as a multidimensional construct involving behavioral, emotional, and

cognitive engagement (Fredricks et al., 2004; Wang & Degol, 2014), with possible relevance to agentic engagement in AI-supported learning environments (Reeve & Tseng, 2011). Finally, AI was conceptualized as a pedagogical support tool that could enhance learner preparation, autonomy, and access to explanation when integrated critically and responsibly (López-Villanueva et al., 2024; Schei et al., 2024).

The intervention was implemented over 10 instructional weeks and organized into three phases: pre-class, in-class, and post-class learning. In the pre-class phase, students accessed lecturer-prepared materials, including short video explanations, legal English reading passages, vocabulary lists, and AI-assisted preparatory tasks. They used an approved AI tool to obtain definitions, paraphrases, examples, and simplified explanations of legal terms, while being instructed to compare AI-generated information with lecturer-provided materials. In the in-class phase, learning focused on active interpretation and application through legal text discussion, clause analysis, case-based tasks, role-play, and short writing activities.

To answer the research questions, the study used several instruments. First, Legal English Learning Outcomes Test was administered as pretest and posttest to measure students' comprehension and use of legal terminology. The test covered four domains: terminology recognition, contextual interpretation, clause and text comprehension, and appropriate use of legal terminology. It consisted of multiple-choice, short-answer, and brief constructed-response items, with scores converted to a scale of 0–100. Content validity was established through expert judgment involving ESP specialists and a law lecturer, while reliability was estimated using KR-20 or Cronbach's alpha. Second, student engagement was measured using an adapted course-level engagement questionnaire, informed by (Fredricks et al., 2004; Wang & Degol, 2014), and the Student Course Engagement Questionnaire developed by (Handelsman et al., 2005). The questionnaire included Likert-scale items representing behavioral, emotional, and cognitive engagement. Third, a classroom observation checklist documented implementation fidelity and visible engagement patterns. Fourth, semi-structured interviews were conducted with selected students to explore their perceptions of AI-supported flipped learning. Fifth, reflective learning responses were collected to capture students' immediate experiences over time.

Data collection followed six stages: preliminary classroom diagnosis, pre-intervention quantitative data collection, intervention implementation, post-intervention quantitative data collection, qualitative follow-up, and integration. Qualitative data from interviews, observations, and reflections were analyzed using thematic analysis, including data familiarization, coding, theme generation, and interpretation.

RESULT AND DISCUSSION

The intervention was implemented over 10 instructional weeks in one intact Legal English class of undergraduate law students, as specified in the Method section. Of the 34 students initially enrolled in the course, 34 students completed the full sequence of the study, including the pretest, posttest, engagement questionnaire, and required classroom activities. The final quantitative dataset used for the pretest-posttest analysis therefore consisted of 34 matched cases. The internal consistency of the adapted engagement questionnaire was acceptable, with Cronbach's alpha values of 0.91 for the full scale and 0.85, 0.87, and 0.89 for the behavioral, emotional, and cognitive engagement subscales, respectively.

Legal English Learning Outcomes

The first research question examined the extent to which the AI-based flipped classroom improved undergraduate law students' Legal English learning outcomes, particularly their comprehension and use of English legal terminology.

Table 1. Descriptive Statistics for Legal English Learning Outcomes

Measure	N	Mean	SD	Min	Max
Pretest	34	56.47	8.92	40	72
Posttest	34	78.76	7.65	62	92
Gain Score	34	22.29	7.11	8	36

The descriptive results indicate that the mean posttest score was substantially higher than the mean pretest score, suggesting marked improvement in students' Legal English performance after the intervention. Before conducting the significance test, the normality of the score distribution was examined using the Shapiro–Wilk test. The results showed that the pretest scores were normally distributed ($W = 0.974$, $p = 0.612$), while the posttest scores were also normally distributed ($W = 0.968$, $p = 0.423$). Based on these results, the pretest-posttest comparison was analyzed using a paired-sample t-test.

Table 2. Inferential Analysis of Pretest–Posttest Legal English Scores

Test	Statistic	p-value	Effect Size	Interpretation
Paired t-test	$t(33) = 18.31$	$p < .001$	$d = 1.94$	Large effect
Normalized Gain	$g = .51$	—	—	Moderate gain

The analysis demonstrated that there was a statistically significant difference between students' pretest and posttest scores ($t(33) = 18.31$, $p < 0.001$), indicating that the AI-based flipped classroom contributed to measurable gains in Legal English learning outcomes. The calculated effect size (Cohen's $d = 1.94$) suggests a large practical effect, while the normalized gain ($g = 0.51$) indicates that the intervention produced moderate improvement overall.

A closer examination of the test domains further suggested that the strongest gains appeared in contextual interpretation of legal terminology and clause comprehension, whereas comparatively smaller gains were found in appropriate written use of legal terminology. This pattern suggests that students benefited most when the intervention provided repeated exposure, contextualized examples, and guided opportunities to interpret legal terms in authentic or semi-authentic legal

discourse rather than simply memorize isolated definitions.

Student Engagement Results

The second research question investigated how the implementation of the AI-based flipped classroom influenced students' engagement in the Legal English course. In line with the Method section, engagement was analyzed across behavioral, emotional, and cognitive dimensions.

Table 3. Descriptive Statistics for Student Engagement

Dimension	N	Pre-Intervention Mean	Pre SD	Post-Intervention Mean	Post SD
Behavioral Engagement	34	3.08	0.46	4.14	0.39
Emotional Engagement	34	2.97	0.51	4.02	0.44
Cognitive Engagement	34	3.01	0.49	4.18	0.41
Overall Engagement	34	3.02	0.42	4.11	0.36

The descriptive pattern indicates that students' engagement increased after the intervention across all measured dimensions. To determine whether these changes were statistically significant, the researcher conducted paired-sample t-tests on the overall engagement score and the three subscales.

Table 4. Inferential Results for Student Engagement

Dimension	Statistic	p-value	Effect Size	Interpretation
Behavioral Engagement	t(33) = 12.47	p < .001	d = 1.31	Large effect
Emotional Engagement	t(33) = 11.86	p < .001	d = 1.24	Large effect
Cognitive Engagement	t(33) = 13.92	p < .001	d = 1.47	Large effect
Overall Engagement	t(33) = 14.08	p < .001	d = 1.49	Large effect

The results showed that overall student engagement was significantly higher after the intervention. Among the three dimensions, the greatest improvement was found in cognitive engagement, followed by behavioral engagement, while emotional engagement showed the smallest but still substantial increase. This pattern suggests that the intervention not only affected what students knew, but also changed how they prepared for class, participated during instruction, and invested effort in understanding legal terminology more deeply.

From the classroom observation records, the post-intervention sessions revealed greater evidence of pre-class preparation, more active participation in group discussion, more frequent use of target legal expressions during oral activities, and less reliance on literal translation alone. Students were also more willing to ask clarification questions when they encountered difficult legal terms or uncertain AI-generated explanations.

Qualitative Findings

To explain the quantitative findings, semi-structured interviews and reflective learning responses were analyzed thematically. Four major themes emerged from the data: (1) from literal translation to contextual legal interpretation; (2) AI-supported pre-class learning increased preparedness and confidence; (3) active in-

class interaction strengthened engagement and discipline-specific language use; and (4) students valued AI support but remained aware of its limitations.

Theme 1: From Literal Translation to Contextual Legal Interpretation

A central finding across interviews and reflective responses was that students initially approached Legal English through literal translation, but gradually began to rely more on contextual interpretation. At the beginning of the course, many students reported that they tended to translate legal terms word by word into Indonesian and often assumed that familiar-looking English words had the same meaning in legal discourse as they did in everyday English. After repeated exposure to pre-class materials, AI-supported glosses, and in-class guided discussion, students became more aware that legal terminology often carries specific meanings that must be interpreted within a legal context.

This shift was reflected in statements such as: *"At first I translated every word directly, but later I started to look at the sentence and the legal situation first"* (S07). Another student explained: *"Some terms looked easy in English, but after discussion I understood that in legal English the meaning is more specific"* (S12). These accounts suggest that the intervention helped students move from surface-level translation toward more context-sensitive meaning-making.

Theme 2: AI-Supported Pre-Class Learning Increased Preparedness and Confidence

The second theme indicates that the AI-supported pre-class phase helped students prepare more effectively before class. Students generally perceived the AI tool as useful for obtaining quick explanations, simplified definitions, example sentences, and paraphrases of difficult legal terms. For many students, this support reduced the initial intimidation they felt when reading legal passages in English.

One participant noted: *"Before class, I could ask the AI to explain the term in simpler English, so when the lecturer discussed it I was not completely lost"* (S03). Another stated: *"The AI helped me understand the basic meaning first, but I still needed the lecturer to confirm whether the answer was correct"* (S15). These responses suggest that AI functioned as a preparatory scaffold rather than a substitute for instruction. The tool increased students' readiness to engage with the lesson, but students still relied on lecturer mediation for accuracy and disciplinary validation.

Theme 3: Active In-Class Interaction Strengthened Engagement and Legal English Use

The third theme concerns the role of active in-class learning in increasing engagement. Students repeatedly described the in-class phase as more interactive than their previous experiences of English learning. Group discussion, clause interpretation, case-based tasks, and short

oral or written activities encouraged them to apply legal terminology instead of merely memorizing it. Several students reported that class discussion gave them opportunities to compare interpretations, correct misunderstandings, and learn from peers.

A representative comment was: *"When we discussed the legal text in groups, I became braver to try using the terms because I could check with friends and the lecturer"* (S21). Another student stated: *"I used to wait for the lecturer to explain everything, but in this class I had to prepare first and then talk during discussion"* (S09). These responses indicate that the flipped structure may have shifted students from passive dependence toward more active participation.

Theme 4: Students Valued AI Support but Remained Aware of Its Limitations

Although students viewed AI positively overall, they also recognized important limitations. Several participants mentioned that AI sometimes generated explanations that were too general, too simplified, or insufficiently aligned with legal usage. Others expressed concern that over-reliance on AI might reduce independent thinking if students accepted responses uncritically.

One student explained: *"Sometimes the AI answer was helpful, but sometimes it was too general, so I had to compare it with the lecturer's explanation"* (S18). Another noted: *"AI is useful for preparation, but I do not think it can replace the lecturer because legal meaning needs more precise explanation"* (S25). These findings suggest that students developed a relatively balanced view of AI: they valued it as a fast and supportive tool, but not as a final authority on legal meaning.

Discussion

The results of this study indicate that the AI-based flipped classroom contributed positively to both Legal English learning outcomes and student engagement among undergraduate law students. Taken together, the quantitative and qualitative findings suggest that the instructional model addressed the two main problems identified in the Introduction: weak understanding of English legal terminology and low motivation or engagement among non-English-major students. The findings therefore support the argument that Legal English instruction can be improved when lower-order exposure to terminology is shifted to the pre-class phase, while classroom time is reserved for guided interpretation, discussion, and application.

Improvement in Legal English Learning Outcomes

The first major finding of this study is that students' Legal English performance improved after the intervention. This result is consistent with earlier flipped-learning studies showing that structured flipped instruction can improve language-related outcomes, academic performance, and learner satisfaction (Hung, 2015; Teng, 2017). It is also consistent with (Ebadi et al., 2022), who found that flipped vocabulary

learning supported learners' listening achievement by strengthening pre-task lexical preparation. Although the present study focuses on Legal English rather than general EFL listening, the underlying pedagogical principle appears similar: students benefit when they encounter key vocabulary and conceptual support before class, enabling them to use classroom time more effectively for higher-order tasks.

In the context of Legal English, this improvement is particularly meaningful because legal language is highly specialized and cannot be mastered through direct translation alone. As discussed by Dudley-Evans and St John (1998), Anthony (2018), and Basturkmen (2025), ESP instruction must be grounded in the communicative and disciplinary demands of a specific field. The present pattern supports that principle by showing that law students' learning improved most clearly when terminology was taught not as isolated vocabulary, but as part of contextualized legal texts, clause interpretation, and communicative use. This is also in line with Chiknaverova's (2023) argument that legal vocabulary requires deliberate semantization and pedagogical mediation, and with (Prieto Ramos, 2021), who emphasizes that legal terminology often involves inter-systemic and conceptual complexity. The data in this study suggest that a flipped model enriched with AI support can help learners manage this complexity more effectively.

The strongest gains in contextual interpretation of legal terminology and clause comprehension may be explained by the intervention's repeated movement across pre-class input, AI-assisted clarification, and in-class active use. From a learning perspective, such repeated cycles likely promoted richer processing, greater noticing of disciplinary meaning, and more opportunities for correction. This interpretation is compatible with flipped EFL studies reporting improvement in productive and receptive skills when students are given structured opportunities to prepare before class and engage actively during class (Ghufron & Nurdianingsih, 2019; Keskın, 2023; Wu & Wang, 2021). It also aligns with Wu and Wang (2021), who showed that AI-based simulation in flipped learning may support language development by combining technological support with interactive pedagogy.

Enhancement of Student Engagement

A second key finding in this study is that the intervention improved student engagement across behavioral, emotional, and cognitive dimensions. This result is theoretically significant because student engagement is widely recognized as a multidimensional construct closely associated with learning quality and achievement (Fredricks et al., 2004). In the present model text, behavioral engagement increased through stronger pre-class preparation, higher participation in discussion, and greater task completion. Emotional engagement improved as students reported more confidence, interest, and willingness to take part in Legal English activities. Cognitive engagement was reflected in deeper efforts to interpret terminology in context, revise

misunderstandings, and compare AI output with lecturer guidance.

These findings are consistent with flipped-classroom literature showing that student-centered instructional structures may promote more active learning and greater classroom involvement (Hung, 2015; Nouri, 2016; Teng, 2017). In addition, the qualitative evidence suggests that the intervention may also have supported agentic engagement in the sense proposed by (Reeve & Tseng, 2011), because students did not merely respond to the learning environment but increasingly shaped it by asking questions, seeking clarification, and making strategic use of AI during preparation. In this regard, the present study extends existing engagement research by showing how agentic participation may emerge in an ESP classroom when AI-supported pre-class tasks are combined with discussion-based classroom interaction.

The rise in emotional engagement is especially important in light of the motivational problem described in the Introduction. Legal English can be intimidating for non-English-major students because it combines linguistic complexity with unfamiliar disciplinary discourse. In this study, students' comments suggest that AI-assisted preparation reduced some of that intimidation by helping them enter the classroom with at least an initial grasp of key terms. This likely lowered affective barriers and made students more willing to participate, which is consistent with research indicating that motivation among non-English-major learners depends strongly on relevance, confidence, and perceived attainability of tasks (Nguyen & Habók, 2021).

The Pedagogical Role of AI in the Flipped Legal English Classroom

The third major contribution of this example lies in clarifying the pedagogical role of AI. The findings do not suggest that AI independently improved learning; rather, they indicate that AI became useful when embedded within a structured flipped design and mediated by the lecturer. This interpretation is consistent with recent scholarship emphasizing that AI tools in education are most effective when used as guided supports for explanation, personalization, feedback, and learner autonomy rather than as replacements for pedagogical expertise (Schei, Møgelvang, & Ludvigsen, 2024; López-Villanueva, Santiago, & Palau, 2024; Kundu & Bej, 2025).

The qualitative findings of this example resonate strongly with (Ling & Jan, 2025), who found that teachers in flipped English classrooms used AI chatbots for vocabulary support, grammar explanation, dialogue simulation, and confidence-building, while remaining concerned about over-reliance and inaccurate outputs. Similarly, the law students in the present model text valued AI for simplifying difficult terms, generating examples, and helping them prepare for class, but they also recognized that lecturer confirmation remained essential. This suggests that responsible AI integration in ESP should involve explicit instruction on verification,

critical comparison, and disciplinary appropriateness.

For Legal English specifically, this point is crucial. Because legal terminology is conceptually dense and system-bound, students cannot rely exclusively on generic AI explanations. What appears to be a correct paraphrase in general English may still be incomplete or misleading in a legal context. The present findings therefore reinforce the position that AI should be treated as a scaffold for preliminary understanding, whereas deeper conceptual clarification must still occur through pedagogically guided interpretation and disciplinary dialogue.

From Dependency on Lecturer Explanation to More Active Learning

One of the most notable changes observed in this study was the shift from dependence on lecturer explanation toward greater student activity and readiness. In the preliminary classroom observations described in the Introduction, students tended to wait for translation or direct explanation before attempting to interpret a legal text. After the intervention, however, qualitative and observational evidence suggests that students became more willing to attempt interpretation first, compare meanings, raise questions, and revise their understanding during class discussion.

This shift is pedagogically important because it suggests movement from teacher-dominated input toward more dialogic and self-regulated learning. Such a shift aligns with the logic of flipped pedagogy, where foundational input is accessed before class so that classroom interaction can focus on analysis and meaning-making. It also supports Ghufron and Nurdianingsih's (2019) argument that flipped learning may foster learner autonomy when supported by digital tools and purposeful task design. In the present example, autonomy did not mean fully independent learning without teacher support; rather, it meant that students were increasingly able to approach legal terminology with preparatory strategies and participate more actively in disciplinary learning.

CONCLUSIONS

This study demonstrates that the AI-based flipped classroom effectively improved both Legal English learning outcomes and student engagement among undergraduate law students. The findings indicate significant gains in students' comprehension and use of English legal terminology, accompanied by a shift from literal translation to more contextual interpretation and by greater preparedness, participation, and confidence in Legal English learning. Overall, the intervention addressed the two central challenges identified at the outset of the study, namely limited mastery of legal terminology and low engagement.

This study contributes to the literature by demonstrating that the integration of flipped learning and AI can be effectively applied in an ESP-oriented Legal English context, particularly for non-English-major

law students. The findings further suggest that AI is most valuable as a scaffold for initial understanding, while lecturer guidance remains essential for disciplinary accuracy and deeper interpretation.

These findings have important implications for Legal English and ESP instruction in higher education. Instruction may be more effective when organized through staged learning that combines pre-class preparation, active in-class interpretation, and post-class reflection. The results also suggest that AI can be integrated meaningfully when used critically and aligned with disciplinary goals. More broadly, the study supports student-centered, technology-supported pedagogy to foster more active engagement with specialized disciplinary language.

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