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The Effectiveness of Gemini AI on the Development of Pragmatic Competence in Marketing Students

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Abstract Making requests is a basic speech act in professional communication, and being able to do it well is highly important in vocational education, especially in marketing settings. This study investigates the effectiveness of Gemini AI as a technology-mediated learning environment for improving pragmatic competence in request-making among 253 vocational high school students (Sekolah Menengah Kejuruan/SMK) concentrating in marketing. The study employed an explanatory sequential mixed-methods design, incorporating pre-test and post-test discourse completion tasks (DCTs) to evaluate students' performance in request-making, alongside structured interviews to explore learner perceptions and experiences. The quantitative results indicate that both the AI-assisted and traditional training groups showed statistically significant improvements in their ability to make requests. However, no notable differences were observed between the groups. Qualitative insights revealed that students who used Gemini AI reported having better awareness and sensitivity of the context of making requests. These findings suggest that Gemini AI is not a sophisticated instructional replacement but a mediated educational tool that promotes awareness, reflection, and coherence in pragmatic development.

Keywords: *Gemini AI, Pragmatic competence, Vocational school, Marketing students, Speech act*

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1. Introduction

Vocational high schools (SMK) play an important role in preparing students for employment in fields where effective communication is essential for professional success. In sectors such as sales and marketing, employees must manage requests, resolve complaints, establish client trust, and address problems within diverse cultural contexts. These communication demands require practical skills, specifically the ability to use language appropriately according to situational factors such as authority, social

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distance, and the complexity of requests (Canale & Swain, 1980; Taguchi, 2024). Because requests can threaten interpersonal relationships, they must be formulated carefully to maintain both cordiality and professionalism (Brown & Levinson, 1987). However, vocational schools often prioritise technical competencies and neglect the development of adaptable communication skills. This imbalance creates a disconnect between the skills students acquire and the requirements of the workforce, particularly as technological proficiency and cross-cultural competence become increasingly important (Kamaludin et al., 2022).

Recent scholarship on technology-mediated pragmatics presents a more cautious perspective than earlier optimistic accounts. While AI-supported instructional environments may expand opportunities for contextualised interaction, empirical findings often show performance outcomes comparable to traditional instruction, particularly in short-term interventions (González-Lloret, 2022; Tsai, 2012). These mixed results suggest that AI should not be treated as an inherently superior instructional solution. Rather, its pedagogical value appears to depend on mediating conditions such as task authenticity, duration of exposure, quality of feedback, and teacher orchestration. This constraint is especially significant in the cultivation of particular pragmatic abilities, such as making requests, which necessitate an awareness of environmental and interpersonal factors. Research highlights the significance of practical communication skills, which are still not adequately cultivated in vocational education.

Although pragmatic training has received increased attention, several challenges persist. Research indicates that pragmatic development requires contextualised interaction rather than isolated linguistic exercises (Taguchi, 2023). In vocational marketing contexts, pragmatic competence carries specific functional demands that differ from general classroom communication. Workplace discourse research emphasises that service encounters, client negotiation, and complaint management rely heavily on strategic politeness, audience design, and relational work (Brown & Levinson, 1987; Félix-Brasdefer, 2021; Taguchi, 2023). Sales communication, in particular, requires speakers to balance transactional goals with interpersonal sensitivity, as poorly calibrated requests can threaten customer relationships and reduce commercial trust. From a professional discourse perspective, pragmatic competence therefore operates as a form of interactional capital that supports persuasion, customer retention, and conflict mitigation. This functional framework explains why pragmatic development is especially consequential in vocational marketing education.

To measure pragmatic competence, many studies continue to employ discourse completion tasks (DCTs), which may not adequately capture the dynamic negotiation present in authentic conversational exchanges (AlTameemy et al., 2024; Labben, 2016). Sociopragmatic competence is shaped by cultural awareness and authentic exposure, which is often insufficient in vocational courses (Jakupčević & Ćavar Portolan, 2024; Sperlich et al., 2021). Technology-enhanced learning has been proposed as a potential solution. Self-access platforms and AI-assisted simulations can expand learners' exposure and facilitate scalable interaction (González-Lloret, 2022; Sydorenko et al., 2020). However, findings remain inconclusive. This lack of clarity is particularly significant given that vocational students operate under different communicative pressures, including performance orientation, simulated workplace tasks, and early formation of professional identity. These characteristics may shape how pragmatic awareness develops and transfers to authentic interaction. An investigation of AI-mediated pragmatics within this population, therefore, offers a contextually meaningful extension of existing research rather than a matter of sampling convenience. It also enables an examination of whether technology-supported rehearsal environments align with the communicative realities of service-oriented professions.

Gemini AI offers adaptive feedback tailored to specific scenarios, which enables students to practise request-making in authentic sales contexts that are difficult to replicate through traditional instruction. Research conceptualises AI-mediated simulation as a structured educational tool for scenario-based request-making, with reference to communicative competence theory (Canale & Swain, 1980), politeness theory (Brown & Levinson, 1987), and recent developments in guided pragmatics (Taguchi, 2023). Against this backdrop, the present study conceptualises Gemini AI not as a mechanism that guarantees improvement, but as a mediated learning environment that may support noticing, metapragmatic reflection, and contextual rehearsal. Its potential contribution is expected to emerge

through structured scenario practice and adaptive feedback, rather than through simple technological exposure. Accordingly, the study examines whether AI-assisted simulation produces measurable gains in pragmatic performance and how learners experience its role in developing context-sensitive professional communication. Specifically, this study addresses the following research questions:

1. Does the use of Gemini AI significantly improve students' pragmatic competence in request-making compared with traditional instruction?
2. How do students perceive the role of Gemini AI in developing context-sensitive request-making and broader professional communication skills in vocational sales environments?

2. Theoretical Framework

Pragmatic competence refers to the ability of learners to coordinate language form, communicative function, and contextual variables, rather than merely produce grammatically accurate sentences. This perspective aligns with models of communicative competence that integrate pragmatic appropriateness into a broader communicative capacity (Kentmen et al., 2023). The Common European Framework of Reference (CEFR) also treats pragmatic competence as intrinsic to functional communication, which increases its instructional significance (Kamalvand & Mohammadi, 2024). Pedagogical discussions emphasise the importance of systematically integrating pragmatics into language instruction, rather than treating it as peripheral knowledge (De Zarobe, 2020). Collectively, these perspectives suggest that pragmatic competence is structured, teachable, and measurable within communicative education. From a componential and cognitive perspective, pragmatic competence can be divided into observable subskills such as speech acts, implicature comprehension, and interactional management. Route map models link form, function, cognition, and developmental sequencing, which suggests that pragmatic development occurs in distinct stages (Mao, 2021). Research on speech acts remains fundamental for operationalising pragmatic competence, particularly in the study of refusals, requests, and complaints (Félix-Brasdefer, 2021). Empirical classroom studies frequently assess instructional effectiveness through speech act performance outcomes (Martínez-Flor & Beltrán-Palanques, 2013). Relevance theory further contributes by conceptualising pragmatic interpretation as inferential processing shaped by contextual factors (Marcet, 2024). Collectively, these theoretical perspectives treat pragmatic competence as a coordinated linguistic and cognitive process, rather than an isolated set of skills. Instructional research consistently demonstrates that explicit intervention, rather than mere exposure, enhances pragmatic ability. Reviews indicate that explicit training typically leads to greater improvements in pragmatic awareness and production accuracy (Taguchi, 2011). Studies that focus on refusal strategies report measurable gains after metapragmatic explanation and guided practice (Usó-Juan, 2013). Interventions that emphasise form, such as recasts and elicitation, improve pragmatic realisation during interaction (Tamjid & Noroozi, 2014). Sustained corrective feedback supports pragmatic acquisition over time (Nguyen et al., 2018). Research on instructed pragmatics increasingly reports a recurring pattern in technology-mediated environments. Digital platforms and AI-supported tools often enhance learners' metapragmatic awareness and noticing; however, measurable gains in pragmatic performance remain less consistent. Several studies document improved sensitivity to contextual variables such as politeness, social distance, and communicative intent. However, these cognitive gains do not always translate into statistically significant performance differences in controlled assessments (González-Lloret, 2022; Qi & Chen, 2025; Tsai, 2012). This divergence between awareness and performance has become a central point of debate in contemporary pragmatics research.

In vocational and commercial settings, pragmatic competence holds considerable functional importance. Workplace communication emphasises goal-oriented interaction, audience adaptation, and strategic persuasion (Dey, 2023). A growing body of empirical work suggests that technology-mediated pragmatic instruction produces uneven outcomes, which vary according to implementation conditions. Some studies report modest improvements in speech act realisation after AI-assisted or computer-mediated practice, particularly when feedback remains explicit and sustained. However, other investigations document parity between experimental and traditional groups, particularly in short-duration interventions or when assessment relies on DCTs (Timpe-Laughlin, 2024; Tsai, 2012). These mixed findings indicate that technological mediation alone does not guarantee observable performance

gains. Instead, pragmatic development appears sensitive to exposure length, task authenticity, feedback quality, and opportunities for interactional rehearsal.

Constructivist viewpoints characterize learning as a cyclical process of meaning construction facilitated by adaptive feedback (Imran et al., 2024). Utilizing Vygotsky's (1978) sociocultural theory, AI-enhanced platforms can be regarded as mediational instruments that foster interaction and learning within learners' Zone of Proximal Development (ZPD), wherein guidance and feedback promote the advancement of higher-order communicative skills. Interactionist frameworks prioritize the negotiation of meaning and feedback loops, both of which AI conversation environments might replicate (Qi & Chen, 2025). Creative pragmatics emphasizes the performative aspect of pragmatic learning and its contextual development, which AI systems might facilitate through iterative scenario-based practice (Shanks et al., 2025). Conversely, post-digital viewpoints warn that AI models may perpetuate existing pragmatic norms, necessitating critical educational intervention (Manna et al., 2025). Together, these approaches support the idea that Gemini AI could help with pragmatic development.

Ishihara and Cohen's (2022) focus on explicit feedback and metapragmatic discourse provides the instructional foundation for the design of AI-mediated pragmatic learning activities and feedback processes in this study. Nguyen et al. (2018) demonstrate that structured feedback and guided analysis enhance pragmatic production and retention. Sociocultural mediation frameworks explain how iterative engagement with AI can improve performance within developmental boundaries (Kakumanu, 2025). Within marketing education, mediated rehearsal may strengthen students' abilities in persuasion, relational stance, and contextual awareness. Therefore, the theoretical model that underpins this study posits that structured engagement with Gemini AI, combined with explicit metapragmatic instruction, can enable marketing students to achieve measurable gains in pragmatic competence. Within this evolving landscape, generative AI platforms introduce new opportunities for simulated interaction, adaptive feedback, and repeated contextual practice. From a sociocultural perspective, such systems can function as mediational tools that support noticing and reflective engagement during pragmatic learning. At the same time, post-digital and critical perspectives caution that AI-mediated language may remain pragmatically superficial if learners engage with it uncritically or without pedagogical scaffolding. Consequently, the role of AI in pragmatic development remains theoretically promising but empirically uncertain, particularly in vocational communication contexts where relational precision is essential.

Taken together, previous research reveals a persistent gap between growing pragmatic awareness in technology-mediated environments and the absence of consistent, statistically significant performance gains. Drawing on the noticing hypothesis (Schmidt, 1990, 2001), Vygotsky's (1978) sociocultural theory and mediation, and stage-based models of pragmatic development (Kasper & Rose, 2002; Taguchi, 2011), the present study treats AI-mediated interaction as a potential facilitative environment rather than an autonomous instructional agent. From this perspective, AI-supported rehearsal may promote noticing of pragmatic features, scaffold learners within their ZPD, and support gradual movement from awareness towards more stable performance. These theoretical lenses inform the interpretive framework used in the analysis of the mixed-method findings.

3. Methodology

3.1. Participants

The study was conducted in two vocational schools that offered marketing as a major (Table 1). To improve coverage and generalisability, one school was selected from a suburban area and the other from an urban location. Grade XI students aged 15 to 16 were selected based on their foundational knowledge of corporate communication and their developing pragmatic abilities. Institutional Review Board (IRB) approval was obtained prior to participant recruitment. Following approval, invitations were distributed to all eligible students across the two schools (School A: N = 120; School B: N = 133; total N = 253). All invited students returned the consent form and completed the initial survey (response rate = 100%). The returned responses were screened for completeness and eligibility, and no cases were excluded, resulting in a final sample of 253 participants.

Participants were randomly assigned to either the experimental group (N = 127), which received AI-assisted instruction using Gemini AI, or the control group (N = 126), which received traditional instruction without AI integration. Nearly equal group sizes ensured baseline comparability and enhanced the study's internal validity. After completion of the pre-test, participants were allocated to either the experimental or control condition through a computerised randomisation procedure in Microsoft Excel. Student identification numbers were listed in a single column and assigned random values using the RAND function. The reordered list was then divided sequentially into two groups to ensure near-equivalent group sizes. This procedure minimised allocation bias and supported internal validity.

Table 1
Demographic Characteristics of Participants (N = 253)

Characteristic	Category	N
Age	15–16 years	253
Educational Level	Grade XI (Vocational High School)	253
Major	Marketing	253
School Location	Urban SMK	127
	Suburban SMK	126
Group Assignment	Experimental (Gemini AI)	127
	Control (Traditional)	126

3.2. Instruments

3.2.1. Discourse Completion Test

A structured pre-test-post-test design was implemented to assess pragmatic competence. The primary instrument, a multiple-choice discourse completion test (DCT), evaluated students' ability to identify contextually appropriate responses in business contexts. The test comprised ten questions that reflected authentic commercial communication scenarios, including resolving complaints, negotiating prices, apologising, scheduling meetings, and providing information. Student responses were evaluated using a three-tier performance scale that measured civility, clarity, and contextual appropriateness. The test was administered to both the experimental and control groups to measure changes in pragmatic performance after the instructional period.

3.2.2. Interview

Qualitative instruments supplemented the quantitative data. Structured interviews were conducted with ten students who represented diverse levels of performance and engagement. The interviews explored students' perceptions of professional communication development, contextual awareness, and emotional regulation (see Appendix). Collectively, these tools facilitated a mixed-method examination of pragmatic development that extended beyond test score comparisons.

3.3. Procedure

3.3.1. Data Collection

The study was conducted in two SMKs and involved 253 Grade XI marketing students. The experiment was conducted entirely in Indonesian, encompassing classroom instruction, DCT items, Gemini AI prompts, student replies, teacher evaluation, and classroom discussions. The study utilized Indonesian to examine students' sociopragmatic competency within the framework of corporate communication in Indonesia. English terminology was employed solely where it manifested as prevalent business or marketing lexicon within the program.

Initially, all participants undertook a pre-test utilizing the multiple-choice DCT to evaluate their foundational pragmatic ability in corporate communication contexts. Subsequent to the pre-test, students were randomly allocated to either the experimental group, which underwent Gemini AI-

assisted instruction, or the control group, which received conventional training devoid of AI integration. The random assignment guaranteed that both groups possessed equivalent initial conditions before the intervention. The experimental condition used Gemini AI as a scaffolded simulation partner within structured classroom activities in the Business Communication course, which was part of the Grade XI marketing curriculum at both participating SMKs. All 253 students enrolled in this course were selected as participants and subsequently divided into two groups: the experimental group (n = 127), which received Gemini AI-assisted instruction, and the control group (n = 126), which received traditional instruction without AI integration. Random assignment was carried out after the pre-test using a computerized randomization procedure in Microsoft Excel. The intervention aimed to support pragmatic noticing, contextual rehearsal, and reflective refinement rather than autonomous AI use. Throughout the six-week treatment period, students engaged in guided business communication scenarios aligned with the marketing curriculum. For instance, students in the experimental group participated in AI-powered simulations of customer complaints, negotiations, meetings, and other workplace scenarios. During simulation activities, students interacted with Gemini AI through structured workplace prompts. For example, one task required students to respond to a dissatisfied customer who requested a refund after a delayed shipment. Students first generated their own response and then compared it with AI-generated alternatives. The teacher guided a discussion that focused on politeness strategies, tone calibration, and contextual appropriateness. This comparison-refinement cycle was repeated across scenarios to encourage metapragmatic reflection rather than passive reliance on AI. Interaction logs from Gemini AI during classroom role-play exercises were also collected to provide evidence of the use of pragmatic strategies in simulated business scenarios. After the intervention, all students completed a post-test using the same DCT format.

3.3.2. Data Analysis

Quantitative data were analysed using inferential statistics to examine changes in students' pragmatic performance in request-making. Paired-sample t-tests were conducted to assess within-group differences between pre-test and post-test scores for both the experimental and control groups. To evaluate group comparability and the effect of the intervention, independent-samples t-tests were conducted. Specifically, pre-test scores were compared to establish baseline equivalence between the experimental and control groups, while post-test scores were compared to determine whether the use of Gemini AI resulted in significantly different learning outcomes compared with traditional instruction. Effect sizes (Cohen's d) were calculated to assess the magnitude of observed differences.

Qualitative data from structured interviews were analysed using thematic analysis, following the procedures outlined by Braun and Clarke (2006). The analysis involved several stages: (1) familiarisation with the data through repeated reading of interview transcripts, (2) generation of initial codes related to pragmatic awareness, request-making strategies, and communication practices, (3) grouping codes into broader themes, (4) reviewing and refining themes for coherence and consistency, and (5) defining and naming the final themes. In addition, selected AI interaction logs from the experimental group were analysed as supplementary qualitative data to illustrate patterns of pragmatic strategy use during simulated business communication tasks. Consistent with the explanatory sequential mixed-methods design, qualitative findings were used to explain and contextualise the quantitative results, particularly in understanding the relationship between measurable performance outcomes and the development of metapragmatic awareness.

4. Results

The purpose of this research was to assess the effectiveness of Gemini AI in improving the pragmatic competence of vocational marketing students from the two SMKs. A quantitative evaluation of students' pre-test and post-test scores was conducted. Structured interviews were also conducted with 10 students from both institutions to gather qualitative data on their experiences of skill acquisition.

4.1. Quantitative Data Analysis

This study involved 253 SMK marketing students who were randomly assigned to two groups to evaluate the impact of AI technology integration through Gemini AI on pragmatic competence. The experimental

group (n = 127) received Gemini AI-based learning interventions, but the control group (n = 126) followed conventional learning methods without the use of AI technology. Pragmatic competence was assessed through pre-test and post-test instruments that used a structured assessment scale. To assess baseline equivalence between the two groups, an independent-samples t-test was conducted on pre-test scores (Table 2). The result indicated no statistically significant difference between the experimental (M = 91.67) and control (M = 88.41) groups (t(251) = 1.78, p = .076), confirming that both groups were comparable prior to the intervention and that random assignment was successful.

Table 2
Between-Group Comparison (Pre-Tests)

Comparison	Experimental Mean	Control Mean	Mean Difference	t-value	df	p-value
Pre-Test	91.67	88.41	3.26	1.78	251	.076

To compare the within-group changes, another pair of t-tests was run. Table 3 shows the within-group statistical comparison of pre-test and post-test scores for the control and experimental groups.

Table 3
Statistical Comparison of Pre-Test and Post-Test Scores for the Control and Experimental Groups

Group	N	Pre-Test Mean	Post-Test Mean	Mean Difference	SD	t-value	df	p-value	Cohen's d
Control	126	88.41	91.45	3.04	13.93	2.45	125	.016	0.22
Experimental	127	91.67	93.62	1.95	9.27	2.37	126	.019	0.21

Both groups showed statistically significant within-group improvement from pre-test to post-test. The control group increased by 3.04 points (t(125) = 2.45, p = .016, Cohen's d = 0.22), while the experimental group increased by 1.95 points (t(126) = 2.37, p = .019, Cohen's d = 0.21). The effect sizes were small in both groups. Effect size analyses substantiate these findings, with both groups yielding small yet consistent effects (control: d = 0.22; experimental: d = 0.21). Considering the constrained duration of the intervention, the magnitude of these effects is noteworthy and suggests a degree of instructional efficacy that warrants further investigation. The convergence of effect sizes across conditions indicates that Gemini AI-assisted instruction achieved performance outcomes commensurate with those of traditional teaching, while additionally affording learners adaptive feedback mechanisms and contextually situated practice that conventional instructional frameworks are structurally less equipped to provide.

Following the six-week intervention, an independent-samples t-test was conducted on post-test scores to determine whether Gemini AI-assisted instruction produced significantly different outcomes relative to traditional instruction (Table 4). The experimental group obtained a higher mean score (M = 93.62) than the control group (M = 91.45), with a mean difference of 2.17 points. However, the independent-samples t-test showed that this difference was not statistically significant (t(251) = 1.42, p = .157). This result indicates that although students in the Gemini AI-assisted instruction group achieved slightly higher post-test scores, the improvement was not strong enough to confirm a significant advantage over traditional instruction.

Table 4
Between-Group Comparison

Comparison	Experimental Mean	Control Mean	Mean Difference	t-value	df	p-value
Post-Test	93.62	91.45	2.17	1.42	251	.157

4.2. Qualitative Data Analysis

Qualitative analysis of structured interviews was conducted using thematic analysis (Braun & Clarke, 2006), which resulted in six interrelated themes that describe the development of pragmatic competence

among students in professional communication contexts (Table 5). The findings are interpreted with caution as indicators of students' development of pragmatic awareness and strategic communication tendencies rather than as direct evidence of measurable pragmatic competence. Given the established distinction between metapragmatic awareness and performance realisation, the themes reported below are understood as process-level developments that may precede stable behavioural change.

Table 5
Extracted Themes

No.	Theme	Participant frequency	Representative participant	Group relevance
1	Continuous Improvement and Professional Adaptability	2	ST2, ST3	Both groups
2	Contextual Intelligence in Communication	3	ST1, ST3, ST5	Both groups
3	Strategic De-escalation and Problem Resolution	3	ST1, ST2, ST4	Both groups
4	Contextual Application in Real-World Scenarios	3	ST1, ST3, ST4	Both groups
5	Technology-Enhanced Communication Development	2	ST1, ST4	Experimental group
6	AI-Enhanced Collaborative Learning and Adaptive Problem-solving	3	ST2, ST4, ST5	Experimental group

Theme 1: Continuous Improvement and Professional Adaptability

The students demonstrated an active commitment to developing professional communication skills, which moved beyond the perception of pragmatic competence as a purely academic requirement towards recognising it as a lifelong professional asset. This orientation was evident in deliberate practice and self-monitoring behaviours. Several students reported that they consciously practised polite and professional language through classroom role-plays and through observation of real-world professional interactions: *"I practice polite and professional language during role-playing activities at school, and I make a conscious effort to listen to the way professionals speak in real-life scenarios to learn from them"* (ST2). The students also described refinement of their linguistic choices to align more closely with business norms: *"I've learnt to avoid overly casual expressions and to frame my language in a way that aligns with business etiquette"* (ST3). These accounts suggest the emergence of metacognitive awareness, as the students described monitoring and adjusting their communication choices in increasingly deliberate ways.

Theme 2: Contextual Intelligence in Communication

Participants demonstrated an increasing ability to adapt their communication according to audience, purpose, and situational demands. Rather than relying on fixed rules, students described flexible decision-making processes when selecting tone and level of formality. One student emphasised the value of beginning interactions with a conservative approach and adjusting as required: *"My approach is to start with a more formal tone and adjust based on how the other person responds"* (ST5). Other participants highlighted purpose-driven adaptation across contexts: *"For formal meetings, I keep a professional tone. If the context is more relaxed, like a team brainstorming session, I adjust to a more friendly tone"* (ST3). Students also demonstrated sensitivity to the audience, particularly in educational settings: *"While explaining to my peers, I used casual language, but switched to a formal tone when addressing the teacher"* (ST1). These responses may reflect the development of internal frameworks that support contextual decision-making; however, they should not be interpreted as evidence of fully established pragmatic competence.

Theme 3: Strategic De-escalation and Problem Resolution

Students reported the use of emotional regulation and strategic communication techniques when they handled challenging interactions, particularly in customer service contexts. They frequently emphasised

the importance of maintaining composure and demonstrating empathy: *"I try to stay calm and composed when handling customer complaints"* (ST2). Students also highlighted the importance of clarifying problems prior to responding: *"I don't hesitate to ask clarifying questions so that I fully understand the problem"* (ST4). A solution-oriented approach was reported consistently: *"Acknowledging the problem and offering practical steps reassures the customer"* (ST1). These accounts reflect the integration of emotional intelligence with pragmatic problem-solving strategies. While these reports indicate increased strategic attention during challenging interactions, they represent self-reported tendencies rather than direct measures of performance.

Theme 4: Contextual Application in Real-World Scenarios

The students described the transfer of classroom learning to authentic professional contexts, including internships and group projects. They emphasised how contextual understanding shaped their communication choices. One student explained how they adapted email communication during an internship: *"During my internship, I had to email a supplier about a delay in shipment"* (ST1). Others highlighted interpersonal problem-solving in collaborative tasks: *"In a group project, I realised that a teammate didn't understand the instructions, so I adjusted how I explained them"* (ST3). Trust building through contextual sensitivity was also emphasised: *"I apologised first and listened to their concerns before explaining the solution"* (ST4). These experiences suggest a potential transfer of pragmatic awareness to authentic contexts. However, the extent of sustained behavioural change cannot be determined from the present qualitative data alone.

Theme 5: Technology-Enhanced Communication Development

The students described the use of Gemini AI as a personalised practice environment for the development of pragmatic skills. AI-supported simulations enabled students to experiment with tone, politeness, and response strategies. Participants reported improved contextual awareness: *"Gemini AI taught me how to adjust my tone depending on the situation"* (ST1). Others noted improvements in active listening and confidence: *"Practising with AI helped me feel more confident in real situations"* (ST4). These perceptions indicate that Gemini AI may function as a rehearsal scaffold that supports the development of awareness, rather than as definitive evidence of improved pragmatic performance.

Theme 6: AI-Enhanced Collaborative Learning and Adaptive Problem-solving

Students critically engaged with AI tools, recognising both their benefits and limitations. Rather than accepting AI output passively, they described how they filtered and adapted suggestions through collaborative processes. One student highlighted collaborative ideation: *"We used Gemini AI to brainstorm ideas and then selected which fit our project goals"* (ST2). Others emphasised contextual adaptation: *"We adapted the AI responses to fit local expectations"* (ST4). Students also reported that they sought clarification when AI feedback proved insufficient: *"I used follow-up questions to get more detailed explanations"* (ST5). These practices reflect emerging hybrid human-AI problem-solving competencies. They also indicate the development of collaborative human-AI strategies, although their direct impact on measurable pragmatic outcomes requires further longitudinal investigation.

The six themes identified through thematic analysis collectively address the second research question regarding students' perceptions of Gemini AI in developing context-sensitive request-making and professional communication skills. Themes 1 through 4, namely continuous improvement and professional adaptability, contextual intelligence in communication, strategic de-escalation and problem resolution, and contextual application in real-world scenarios, reflect the development of pragmatic awareness and strategic communication tendencies that emerged across both groups. Themes 5 and 6, namely technology-enhanced communication development and AI-enhanced collaborative learning and adaptive problem-solving, are specific to the experimental group and indicate that Gemini AI functioned primarily as a rehearsal scaffold that supported noticing, metapragmatic reflection, and contextual sensitivity rather than as a direct driver of measurable performance gains. These qualitative developments are interpreted as process-level outcomes that precede stable behavioural change, consistent with stage-based models of pragmatic development (Kasper & Rose, 2002; Taguchi, 2011) and the noticing hypothesis (Schmidt, 1990, 2001).

5. Discussion

This study examined the degree to which Gemini AI facilitates the enhancement of students' pragmatic skills in making requests within vocational sales and business communication settings. The discourse is structured around two research inquiries. The initial inquiry is whether Gemini AI markedly enhances students' pragmatic ability in comparison to conventional training. The second pertains to students' perceptions of Gemini AI in cultivating context-sensitive request-making and enhancing broader professional communication abilities.

The quantitative data of the initial research question reveal that Gemini AI did not yield a statistically significant benefit compared to traditional training in enhancing students' pragmatic competence in request-making. Following the intervention, an independent-samples t-test on post-test scores revealed no statistically significant between-group difference between the experimental group and the control group. This indicates that students who underwent Gemini AI-assisted training exhibited progress post-intervention; nevertheless, their advancement was not markedly superior to that of students who received conventional instruction. However, the within-group analyses revealed that both the experimental group and the control group demonstrated statistically significant but modest improvements from pre-test to post-test. This convergence suggests that both Gemini AI-assisted and traditional instruction were comparably effective in facilitating measurable pragmatic gains over the six-week intervention, though the modest effect sizes indicate that short-term pragmatic development remains limited regardless of instructional approach. Critically, the comparable within-group improvements challenge the assumption that technology integration automatically yields superior outcomes, reinforcing that pedagogical quality and mediated interaction, whether through AI or traditional means, remain the fundamental drivers of pragmatic development, consistent with sociocultural theory (Vygotsky, 1978) and the noticing hypothesis (Schmidt, 1990, 2001).

Various constraints may elucidate why the quantitative improvements were limited. The intervention duration may have been insufficient for pragmatic awareness to evolve into consistent pragmatic performance. The assessment tool may lack sufficient sensitivity to detect nuanced pragmatic development. Timpe-Laughlin (2024) and Jakupčević and Ćavar Portolan (2024) warn that DCT-based pragmatic evaluations may possess validity constraints, especially in assessing context-sensitive interactions. Third, students' competence levels may have impacted the efficacy of their utilization of AI-generated input. Students with superior language skills may have been more adept at assessing, modifying, and assimilating AI comments compared to those with lesser proficiency.

This discovery remains pedagogically significant. The lack of a substantial between-group difference does not inherently imply that Gemini AI lacked educational value. This may indicate that pragmatic competence, especially in making requests, necessitates extended exposure before consistent performance differences are evident. This explanation aligns with Schmidt's (1990, 2001) noticing hypothesis and sociocultural mediation theories (Vygotsky's, 1978), which propose that mediated interaction frequently affects learners' consciousness prior to observable improvements in performance. In this study, Gemini AI seems to have primarily served as a framework for awareness. It assisted students in recognizing tone, civility, clarity, and contextual appropriateness; nevertheless, these advancements were insufficient to yield a statistically significant difference in post-test results between groups. The findings correspond with earlier research indicating that technology-enhanced pragmatic education can elevate pragmatic awareness without yielding significant performance improvements in short-term interventions (González-Lloret, 2022; O'Grady, 2023; Qi & Chen, 2025; Tsai, 2012). From a developmental standpoint, pragmatic competence often progresses from awareness to regulated application, and then to more instinctive and contextually suitable expression. The current findings may signify this intermediary phase. Students started to understand how to modify demands in professional contexts; nevertheless, this understanding had not yet fully translated into consistently improved performance.

The qualitative findings further illuminate these patterns by revealing four themes that emerged across both instructional conditions (i.e., continuous improvement and professional adaptability, contextual intelligence in communication, strategic de-escalation and problem resolution, and contextual

application in real-world scenarios), indicating that both AI-assisted and traditional instruction supported foundational pragmatic developments independent of technological mediation. Students across both groups demonstrated active commitment to developing professional communication skills through deliberate practice and self-monitoring, flexible adaptation of tone and formality based on contextual demands, strategic emotional regulation in challenging customer interactions, and transfer of classroom learning to authentic professional contexts such as internships. The emergence of these themes across both conditions reinforces that foundational pragmatic competencies develop through well-designed communicative tasks, teacher guidance, and reflective practice, regardless of AI integration, consistent with sociocultural perspectives on vocational learning (Vygotsky, 1978; Taguchi, 2023). These findings suggest that the value of Gemini AI lies not in replacing traditional instruction but in supplementing it through additional practice and feedback, though such supplementary benefits did not translate into qualitatively different developmental outcomes within the six-week intervention.

Concerning the second research question, the qualitative data (specifically themes 5 and 6) indicate that students saw Gemini AI as beneficial for enhancing context-sensitive request-making and overall professional communication abilities. Participants in the experimental group indicated that Gemini AI enhanced their awareness of tone, politeness, word selection, and clarity while crafting requests in simulated sales scenarios. The AI-generated responses were seen as effective exemplars for enhancing the politeness, professionalism, and appropriateness of workplace communication demands. The replies indicate that Gemini AI facilitated students' metapragmatic reflection, particularly when they contrasted direct, informal, or ambiguous phrases with more contextually suitable alternatives. The students' perceptions align with Hu's (2014) politeness paradigm and Taguchi's (2012) analysis of pragmatic processing. Request formulation in sales contexts necessitates more than mere grammatical precision. Students must evaluate the customer's stance, the business connection, the degree of formality, and the potentially face-threatening implications of the request. Gemini AI emerged to assist students in explicitly identifying these environmental elements. The technology facilitated both language output and professional acumen. Students recognized that successful business communication relies on empathy, smart tone modulation, and cultural relevance.

The qualitative findings indicate that Gemini AI facilitated students' integration of classroom learning with vocational sales scenarios. Students practiced queries pertaining to product offerings, addressing client needs, seeking confirmation, and sustaining professional rapport through simulated conversations. Pragmatic competency is crucial in vocational education as it directly influences workplace preparedness. A student may possess the appropriate vocabulary for sales communication yet still lack politeness, persuasiveness, or professional appropriateness. Gemini AI may mitigate this disparity by offering numerous instances of workplace-related language applications. However, students' favorable perceptions must be evaluated with caution. Gemini AI ought not to be regarded as an independent solution for practical instruction. The efficacy is contingent upon instructor direction, task formulation, and cultural customization. In our study, participants were required to modify AI-generated responses to align with Indonesian business etiquette, reinforcing Mestre-Mestre and Díez-Bedmar's (2022) assertion that technology-assisted language acquisition necessitates culturally sensitive adaptation. In the absence of instructor intervention, AI-generated language may replicate generalized norms that do not consistently align with local professional contexts. This issue aligns with the findings of Lenchuk and Ahmed (2019) and Bardis et al. (2021), who underscore the significance of instructional mediation in technology-enhanced pragmatic learning.

The observable distinction between the quantitative and qualitative findings should not be regarded as a contradiction. It indicates that Gemini AI impacted students' pragmatic development regarding awareness and perception prior to demonstrating a distinct quantitative advantage in performance. The quantitative statistics address the initial research question by demonstrating that Gemini AI did not significantly surpass traditional training in the near run. The qualitative findings address the second research question by demonstrating that students regarded Gemini AI as advantageous for cultivating courteous, clear, sympathetic, and context-sensitive request-making in vocational sales communication.

The findings indicate that Gemini AI possesses pedagogical promise as a scaffolded simulation tool for pragmatic training in vocational education. Its primary contribution resides in facilitating observation, contemplation, tonal modification, and professional cognizance. Nonetheless, its effect on quantifiable pragmatic performance may necessitate extended intervention durations, more genuine assessment tasks, and tighter interaction with instructor-led teaching. Future research ought to employ longitudinal designs, proficiency-stratified analyses, and enhanced interaction-based pragmatic assessments to investigate the timing and mechanisms via which AI-mediated training yields superior and more enduring learning results.

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Data Availability

The datasets generated and/or analysed during the current study are not publicly available due to the protection of participant privacy, but are available from the corresponding author on reasonable request.

Ethics Declaration

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Universitas Widy Gama Mahakam Samarinda 28/10/2024. Consent was obtained from all individual participants included in the study.

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Appendix

Interview Questions

1. Handling a Complaint

Situation: A customer tells you they are unhappy with the product they bought.

Customer: "This product isn't what I expected. I'm really disappointed."

Question: How would you respond to the customer in a polite and professional way? What did you consider when responding to the customer or client?

2. Offering a Solution

Situation: A customer says the item they want is out of stock.

Customer: "I wanted to buy this item, but it's not available."

Question: How would you politely suggest an alternative solution? Which situation was the most difficult for you? Why?

3. Scheduling a Meeting
Situation: A client suggests a time for a meeting, but you are not available.
Client: “Can we meet at 3 PM on Thursday?”
Question: How would you politely ask for a different time? How did you decide whether your response was polite or professional?

4. Apologizing for a Mistake
Situation: You accidentally sent the wrong product to a customer.
Customer: “I received the wrong product. Can you fix this?”
Question: How would you apologize and offer a solution? Did the activity help you understand workplace communication better? How?

5. Responding to a Price Negotiation
Situation: A client asks for a discount on a large order.
Client: “Can you give me a discount if I order in bulk?”
Question: How would you professionally respond to their request? What expression helped you respond professionally?

6. Following Up on Late Payment
Situation: A client hasn’t paid their invoice, and it’s now overdue by two weeks.
Question: How would you politely remind them about the overdue payment? What expressions or strategies did you learn from the activity?

7. Rescheduling a Meeting
Situation: You need to reschedule a meeting due to an urgent matter.
Question: How would you politely ask to change the meeting time? How did you manage emotions when responding to complaints or problems?

8. Responding to Praise
Situation: A client compliments your team’s work on a project.
Client: “Your team did a fantastic job!”
Question: How would you respond? What challenges did you face in choosing appropriate English expressions?

9. Offering a Solution
Situation: A customer asks for a product that is no longer available.
Customer: “Can I still order this product?”
Question: How would you respond? How did you decide which alternative product to recommend?

10. Offering a Discount
Situation: A loyal customer asks for a special price.
Question: How would you respond to their request? Was this situation easy or difficult for you? Why?