

AI-ENHANCED PRAGMATIC LANGUAGE ACQUISITION IN ESP CONTEXTS: CONNECTING GRAMMAR DEVELOPMENT AND COMMUNICATIVE COMPETENCE. A COMPREHENSIVE FRAMEWORK

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Abstract: *This paper explores the integration of generative artificial intelligence (GenAI) tools in English for Specific Purposes (ESP) language acquisition, with particular emphasis on pragmatics and grammar development. Thus, the study examines how GenAI-empowered approaches can enhance second language acquisition (SLA) by connecting grammatical accuracy and pragmatic competence in professional contexts. Through a comprehensive analysis of current acquisition theories and emerging AI technologies, this research proposes an integrated methodology for facilitating pragmatics-focused language acquisition in ESP environments. The findings suggest that AI-powered tools can significantly accelerate learners' motivation and internalisation of contextual language use, speech acts, and cultural appropriateness in specialised professional domains, without disregarding the possible negatives of this approach, incompletely exploited by practice. This paper contributes to the growing body of research on technology-enhanced language acquisition and offers practical implications for ESP practitioners seeking to develop AI-driven pedagogical approaches that support natural language development processes and specialised language acquisition.*

Keywords: *English for Specific Purposes; pragmatics; artificial intelligence; language acquisition; professional settings; grammar development; communicative competence; technology-enhanced learning.*

1. Introduction

The rapid advancement of artificial intelligence (AI) technologies has created unprecedented opportunities for second language acquisition (SLA), particularly in English for Specific Purposes (ESP) contexts. While modern communicative approaches are effective in developing and assessing linguistic accuracy, both in classroom environments and under exam conditions, they often fail, as observed by Rose and Kasper in 2001, to address the pragmatic dimensions of language use crucial for authentic professional communication, a gap that becomes particularly pronounced in ESP acquisition where learners must internalise complex professional discourse communities requiring not only grammatical correctness but also pragmatic appropriateness. Language acquisition research, as for example observed by Krashen in 1985, has consistently demonstrated that successful second language development requires meaningful exposure to target language use in authentic contexts, yet conventional classroom environments struggle to provide the rich, contextual input necessary for pragmatic competence development in specialised

professional discourse and the activity types described by Levinson in 1979 that characterise real-world professional settings.

The integration of AI technologies in language acquisition has shown promising results in addressing these challenges by creating, according to Chapelle and Sauro in 2017, immersive, contextually complex environments that support natural acquisition processes. Thus, it has already become known that AI-powered tools can provide personalised, contextually appropriate input, simulate authentic communicative contexts, and offer dynamic learning experiences that adapt to individual acquisition patterns. However, the specific application of AI technologies to support pragmatic language acquisition in ESP settings remains underexplored in current literature and even less experimented with.

This paper aims to address this gap by examining how GenAI based scenarios can facilitate pragmatic language acquisition in ESP contexts, without neglecting the grammar component, organically integrated within the suggested scenarios. Subsequently, the research explores not only the theoretical foundations of pragmatics in SLA, but it also investigates current AI applications that support natural language acquisition and nonetheless proposes a comprehensive framework for integrating AI tools in ESP environments with a focus on pragmatic competence development through authentic, contextual learning experiences.

2. Theoretical Background

2.1 Pragmatics in Second Language Acquisition

Pragmatic competence, defined by Bachman in 1990 as the ability to use language appropriately in social contexts, constitutes a crucial component of communicative competence in SLA. Research consistently demonstrates that grammatical proficiency does not automatically translate to pragmatic appropriateness, with pragmatic development following distinct acquisition patterns that differ from morphosyntactic development (Bardovi-Harlig 13-32). Krashen's 'Input Hypothesis' from 1985 suggests that language acquisition occurs through exposure to comprehensible input slightly beyond current proficiency levels. However, pragmatic acquisition requires contextually appropriate input demonstrating relationships between linguistic forms and their social functions, particularly challenging in ESP contexts where learners must acquire both general pragmatic competence and field-specific communicative practices.

Schmidt's (129-158) 'Noticing Hypothesis' provides crucial insights, suggesting that learners must consciously attend to pragmatic features in input for acquisition to occur. This presents unique challenges for ESP acquisition,

as pragmatic features are often subtle and require explicit guidance, studies showing how pragmatic errors can be more detrimental than grammatical errors, potentially causing misunderstandings, offense, or negative social judgments (Thomas 91-112). Niezgoda and Röver (63-79) found that learners' pragmatic acquisition is significantly influenced by their learning environment, with second language contexts showing greater pragmatic development than foreign language settings, highlighting the importance of authentic, contextual exposure.

2.2 AI Applications in Language Acquisition

AI integration in SLA has gained momentum, with research demonstrating AI's capacity to create optimal conditions for natural language development (VanLehn 197-221). Unlike traditional approaches, AI-powered environments provide complex, diverse, contextually appropriate input essential for successful professional language development, Intelligent Tutoring Systems (ITS) proving effective by providing tailored, adaptive input that tracks acquisition progress, identifies learner inclinations, and provides appropriately graded input supporting natural acquisition processes (Anderson et al. 167-207).

Natural Language Processing (NLP) technologies enable sophisticated applications that generate comprehensible input, engage learners meaningfully, and create authentic practice opportunities (Burstein et al. 27-36), while technology-enhanced pragmatic instruction includes digital games, virtual and augmented reality applications which create immersive contexts for pragmatic learning and simulate rich linguistic environments that provide focused attention, enhance pragmatic development (Christou et al. 1-28) and allow learners to experience consequences of linguistic choices in safe environments (Sykes, Cohen 91-106). Conversational AI systems, including chatbots and virtual assistants, create contextual environments for pragmatic development by placing learners in meaningful interactions recreating naturalistic acquisition conditions (Fryer & Carpenter, 2006). Technology-enhanced environments can accelerate development by providing learners with opportunities for meaningful interaction with authentic input that may be difficult to access in traditional settings (Chapelle, 2001), a benefit particularly valuable for ESP acquisition which requires extensive engagement with specialised professional discourses.

Gamification contributes significantly to SLA, as minutely described by Săftoiu et al., in 2022 (200-206) and by Nechifor et al., in 2023, based on Werbach and Hunter theories from 2015 and 2020, proving intensely successful in ESP classes (Nechifor 348-371) by activating specialised vocabulary. Corpus linguistics tools expose learners to authentic pragmatic

language use examples, enabling direct observation of politeness patterns, hedging, and other pragmatic phenomena in real-world discourse (Flowerdew 8-14), learners being able to use software like BootCaT to build specialised, domain-specific corpora and AntConc to analyse them and to investigate specific pragmatic conventions, discovering how speech acts are phrased, how hedging expresses caution, and what politeness strategies are employed in professional communication.

2.3 Theoretical Framework Integration

This study adopts a pragmatic grammar approach viewing grammatical structures as resources for meaning-making in specific contexts, aligning with functional grammar theories emphasising form-function relationships, as analysed by Halliday and Matthiessen, in 2014. The framework draws on four foundational perspectives: ‘Speech Act Theory’, developed by Austin in 1962 and refined by Searle in 1969, which suggests that language performs functions through illocutionary force and perlocutionary effects, having the grammatical structures serve as tools for enacting social intentions; ‘Politeness Theory’ developed by Brown and Levinson in 1987, which explores how speakers use linguistic strategies to manage face threatening acts, develop face saving strategies and to navigate social hierarchies, by identifying universal principles that define polite behaviour across cultures; ‘Activity Theory’, rooted in Vygotsky’s work from 1978, which provides a sociocultural lens emphasising cognitive development through culturally mediated social interaction, highlighting the ‘Zone of Proximal Development’ and building roles in linguistic competence acquisition; and Levinson’s ‘Activity Types’ (365-399), which refer to structured, goal-oriented interactions, thus defining language roles within specific contexts by establishing systematic constraints which govern language functions, in particular social and professional activities.

The AI-enhanced pedagogical model integrates technologies within a pragmatics-infused framework which draws on educational technology and applied linguistics developments. Central elements include contextual learning through AI tools creating immersive scenarios that simulate real-world use (Erdogan, Kitson 115-130), adaptive feedback that deliver personalised responses and address linguistic form, communicative function, and different levels of motivation (Burbea et al. 3-20; Trajkovski, Hayes 89-104), scaffolded practice using AI-powered activities aligned with Vygotsky’s ‘Zone of Proximal Development’ from 1978, as well as with studies by Denison, in 2024, and Spencer, in 2023, and cultural awareness exposing learners to diverse communicative norms and intercultural scenarios, as described in 2016 (99-108) and 2020 (287-304) by Nechifor and Borca, in

2021 (83-100) and 2024 (354-375) by Nechifor and Dimulescu, in 2024 by Godwin-Jones, and in 2025 (229-247) by Nechifor.

3. Methodology

This study employs a mixed-methods approach combining theoretical analysis with practical application development, aligning with contemporary AI-enhanced language acquisition research. The methodology comprises four integrated phases addressing different aspects of AI-enhanced pragmatic grammar instruction in ESP contexts.

The first phase involves systematic literature review of current research on pragmatics, ESP instruction, and AI applications in language learning. Reviews by Crompton et al. from 2023 and Kundu and Bej from 2025 highlight AI's transformative potential in English language acquisition, particularly in enhancing pragmatic competence and personalised instruction. Building on these insights, the second phase focuses on theoretical model construction for AI-enhanced pragmatic grammar instruction, based on Povey (20-35) and Ribeiro-Flucht et al. (978-987) foundational models integrating AI tools with communicative grammar development, with an emphasis on learner-centred and proficiency-aligned design. The third phase encompasses AI-integrated learning task development for ESP contexts, starting from studies by Ellederová (4059-4068) and Mansor (92-112) demonstrating how tools like ChatGPT or Claude and adaptive platforms support technical vocabulary acquisition, intercultural competence, and autonomous learning in specialised domains. While the fourth phase includes framework analysis examining implementations in criminology ESP scenarios, observing insights from 2021, by Marín Pliego et al., and from 2016, by Pielmuș (15-32), who underscore needs analysis and contextualised instruction importance in law enforcement education.

AI-powered learning scenarios could deliver nuanced evaluations extending beyond grammatical accuracy to include pragmatic appropriateness, analysing contextual speech act suitability using frameworks such as Grice's 'Cooperative Principle' and 'Relevance Theory' (Eragamreddy 169-189), could evaluate politeness strategies and register choices, detecting face-threatening acts and stylistic appropriateness based on Leech's maxims of politeness developed in 1983 – tact, generosity, approbation, modesty, agreement, and sympathy, or could assess discourse organisation using large language models like GPT-4 to analyse coherence, cohesion, and rhetorical structure, often matching human interpretation consistency (Naismith et al. 394-403), while providing culturally informed improvement suggestions incorporating diverse linguistic data, as mentioned by Stanford HAI, in 2024.

Contextual learning environments utilise Virtual Reality simulations to offer immersive platforms for practicing communication skills in realistic scenarios – conflict resolution, leadership, cross-cultural negotiation – enhancing empathy, confidence, and precision, according to MIT Horizon, in 2024, and to Christou et al. (1-28), while domain-specific conversational AI enables multi-turn dialogues reflecting professional conventions, which are fine-tuned on professional data to replicate discourse patterns and provide personalised feedback, as rendered by Shalaby et al. in 2019 and by Thorat, in 2025 (55-78). In the same line, gamified platforms integrate AI-driven feedback mechanisms presenting pragmatic dilemmas and guiding effective communication strategies, demonstrating measurable improvements in engagement, retention, and communicative accuracy, according to the detailed studies from 2022 (200-206), by Saftoiu et al., from 2023, by Nechifor et al., by Nechifor (348-371) and by Celasun and Kaya (45-67).

Adaptive learning pathways utilise AI systems that enable tailored experiences responding dynamically to individual profiles, analysing performance data, interaction patterns, and behavioural cues to identify strengths, weaknesses, and learning modalities (Abrar et al. 456-467). Systems like *Knewton Alta* and *DreamBox* can recalibrate instructional materials matching evolving proficiency levels, promoting mastery through customised pacing and knowledge progression (Demartini et al. article 1347). In this way, targeted practice can be provided which addresses identified gaps that reinforces strengths, tracks progress and adjusts instruction using predictive analytics and real-time feedback, as observed by Muncey in 2025.

4. Detailed Analysis of AI-Enhanced ESP Acquisition Scenarios

To illustrate the practical application of AI-driven pragmatic language acquisition, this section presents a comprehensive analysis of four progressive scenarios developed for criminology ESP contexts. These scenarios demonstrate how theoretical principles of language acquisition can be translated into concrete pedagogical practices that support natural pragmatic development.

4.1 Scenario Progression and Acquisition Theory Framework

AI enhancement features in vocabulary acquisition combine cognitive science and computational linguistics to optimise learning through multiple innovative approaches. Against the very detailed theoretical background presented above, the language acquisition framework suggested by this paper considers different elements derived from the potential offered by GenAI based systems which, for example, integrate, on the one hand, repetition algorithms that can

use personalised forgetting curves to schedule reviews, with models such as Half-Life Regression (HLR) predicting memorising probability and adapting revision intervals to maximise long-term memory commitment, as pinpointed by Zaidi et al. in 2020, and, on the other hand, AI systems which can offer dynamic scenario generation, creating multiple authentic contexts for vocabulary items and allowing learners to encounter terms across diverse communicative settings, as recounted by Leong et al., in 2024 and by Yang, in 2025. Additionally, these systems facilitate semantic network building by organising vocabulary into interconnected nodes and relationships such as ‘is a,’ ‘part of,’ or ‘related to,’ promoting deeper understanding and inferential analysis, according to Telnyx, in 2025. Adaptive complexity features adjust scenario details based on learner proficiency levels, enabling beginners to receive simplified contexts while advanced learners can engage with nuanced, domain-specific language (Gligorea et al. article 1216; Waladi, Lamarti 1-12). Multimodal input integration – including audio, visual, and textual elements – enhances comprehension and retention by engaging multiple cognitive channels, as demonstrated by both Mayer, in 2024 (article 4) and Elgendy, in 2025, through a very modern neurodidactic approach.

Beyond vocabulary acquisition, AI technologies support integrated competence development in second language learning through pragmatic instruction and cultural mediation, pragmatic pattern recognition enabling AI systems to analyse authentic discourse and to identify recurring patterns in speech acts, politeness strategies, and discourse organisation, as Godwin-Jones pointed out in 2024 and Qi and Chen, in 2025. Interactive dialogue systems, especially including chatbots powered by generative models, simulate authentic professional interactions and facilitate domain-specific conversations that reflect real-world communicative demands, as demonstrated in 2025 by both Song et al. and by Lee. Real-time personalised feedback provides immediate assessment and data on both linguistic form and pragmatic function, while context-oriented evaluations cater for indirectness, register, and cultural fit, guiding learners toward socially appropriate responses (Eragamreddy 169-189). Moreover, AI systems also offer cultural mediation through culturally diverse training data and adaptive modelling, recognising and responding to linguistic variation, idiomatic expressions, and social norms across cultures, according to studies by Ramlochan, in 2024, Sterken and Kirkpatrick, in 2025, Zhou and Divekar, in 2025 (427-446) and Stanford HAI, in 2024. In this way, these integrated features create a dynamic framework for developing communicative competence in globalised learning environments.

The four scenarios represent a carefully designed progression that aligns with established principles of SLA. Thus, *Scenario 1: Foundation Building* focuses on vocabulary acquisition and basic concept recognition,

Scenario 2: Contextualisation introduces authentic contexts to support meaningful input, *Scenario 3: Pragmatic Awareness Development* emphasises explicit attention to form-function relationships, while *Scenario 4: Integrated Competence* combines grammatical accuracy with pragmatic appropriateness in complex tasks. This progression reflects Pienemann's 'Processability Theory', developed in 1998, which suggests that certain linguistic features must be acquired before others based on processing complexity. The scenarios move from discrete vocabulary recognition through contextual understanding to complex pragmatic-grammatical integration.

4.2 Scenario 1: Vocabulary Acquisition and Conceptual Development

The first scenario addresses the crucial role of vocabulary in language acquisition. Nation's research from 2001 demonstrates that vocabulary knowledge forms the foundation for all other language skills, while Schmitt's (329-363) work on vocabulary acquisition sequences suggests that multiple encounters with words in varied contexts are essential for deep learning. Starting from the following prompt: 'create a task environment for a post-reading activity on a text containing specialised vocabulary from criminology', *Claude, Anthropic's* AI conversational assistant created the following scenario based on its strong reasoning capabilities, document analysis, and educational support, particularly effective for complex academic discussions and detailed explanations:

'Post-Reading Activity: Criminology Vocabulary

Objective

To reinforce understanding and application of specialised criminology vocabulary from the assigned text.

Materials: assigned criminology text, this worksheet, access to a dictionary (optional)

Activities

1. Key Term Identification (10 minutes)

- Review the text and identify 10 key criminology terms.
- Write each term and its definition in your own words.

2. Contextual Usage (15 minutes)

- For each term identified, find the sentence in the text where it's used.
- Rewrite the sentence using simpler language while maintaining the same meaning.

3. Word Associations (10 minutes)

- Create a word web for 5 of the terms you identified.
- In the centre, write the criminology term.
- Around it, write 4-5 related words or concepts.

4. Real-World Application (20 minutes)

- Choose 3 of the criminology terms you've learned.
- For each term, write a brief paragraph (3-5 sentences) describing a real-world scenario where this concept might apply.

5. Vocabulary Quiz (10 minutes)

- Without referring to the text or your notes, match the following criminology terms with their definitions: recidivism, deterrence, victimology, anomie, penology
- Definitions (in random order):
 - a) The study of prisons and prison systems
 - b) The tendency of a convicted criminal to reoffend
 - c) The scientific study of victims and victimisation
 - d) A state of normlessness or lack of social norms
 - e) The use of punishment to prevent criminal behaviour

6. Discussion Questions (15 minutes)

- With a partner or in a small group, discuss the following:
 1. How do these specialised terms enhance our understanding of criminology?
 2. Which term did you find most interesting or surprising? Why?
 3. How might understanding these terms be useful in a career in criminal justice?

Conclusion

Summarise three key insights you've gained from this activity about criminology vocabulary and its importance in understanding criminal behaviour and the justice system.'

The acquisition process analysis based on this first scenario focuses on 'key term identification' followed by 'contextual usage' and 'word associations', which reflects the progressive nature of vocabulary acquisition. Thus, AI enhancement allows for personalised adjustment of the degree of difficulty based on individual acquisition rates, immediate feedback on knowledge acquisition, and scaffolded support that gradually reduces as competence develop.

On the positive side, the scenario successfully implements multiple encounters with vocabulary as advocated by Schmitt (329-363). Students engage with terms through identification, definition, contextual analysis, word association, and application – providing the varied exposures necessary for deep learning. The contextual variation is well-implemented, moving from textual context to simplified paraphrasing and then to real-world application, which could enhance semantic depth and pragmatic flexibility. The word association task (Activity 3) directly supports semantic network building by having students create conceptual webs around terms. This aligns with the framework’s emphasis on helping learners ‘construct conceptual connections between related terms’ through interconnected semantic fields and relationships.

On the negative side, the activity largely ignores the AI enhancement features suggested by the framework, with no incorporation of repetition algorithms at a distance, personalised forgetting curves, or adaptive scheduling – all identified as key innovations by the specialised literature. The activity remains essentially traditional, missing opportunities to showcase computational linguistics advances. Thus, the assessment approach (Activity 5) relies on traditional matching, which tests recognition rather than the deeper semantic understanding and inferential reasoning, not evaluating whether students have truly built the semantic networks that support long-term retention, but most critically, the activity fails to implement the personalised, cognitively aligned approach that the framework presents as essential. There’s no adaptation to individual learner needs, no tracking of personal encounters with terms, and no systematic approach to building on prior knowledge.

However, the scenario embodies competent traditional pedagogy even if it misses the opportunity to demonstrate how AI could transform vocabulary acquisition through the sophisticated, adaptive approaches outlined in the theoretical framework.

4.3 Scenario 2: Contextual Input and Meaningful Engagement

The second scenario introduces the ‘Maple Street Incident,’ representing a significant shift toward contextualised, meaningful input. This aligns with Krashen’s emphasis from 1985 on ‘Comprehensible Input’ and Long’s (413-468) ‘Interaction Hypothesis’, which suggests that acquisition is enhanced when learners engage with meaningful content that requires language use for understanding.

Thus, starting from the following prompt: ‘improve this by providing a real-life scenario’, *Claude* generated the second learning scenario, building on the first one, but improving it:

‘Post-Reading Activity: Criminology Vocabulary

Objective

To reinforce understanding and application of specialised criminology vocabulary from the assigned text through a real-life scenario.

Real-Life Scenario: The Maple Street Incident

Read the following scenario carefully. You will use this for several of the activities that follow. In the quiet suburb of Maplewood, a series of home burglaries has disrupted the community’s sense of security. Over the past month, five houses on Maple Street have been broken into, all following a similar pattern. The perpetrator gains entry through a back window, disables the alarm system, and takes valuable items and cash. Local police have increased patrols in the area, but the burglaries continue. Residents are growing frustrated, and some have formed a neighbourhood watch group. A town hall meeting is scheduled to discuss the situation and potential solutions. Meanwhile, a suspect has been arrested. John Doe, a 25-year-old male with a history of petty theft, was caught attempting to sell items matching the description of those stolen from Maple Street. However, he claims innocence and states he purchased the items from an acquaintance. As the case unfolds, various aspects of criminology come into play, from understanding the nature of the crimes to the community’s response and the potential rehabilitation of the offender.

Activities

1. Key Term Identification (10 minutes)

- Review your assigned criminology text and identify 10 key terms that could apply to the Maple Street Incident.*
- Write each term and its definition in your own words.*

2. Contextual Usage (15 minutes)

- For each term identified, write a new sentence using it in the context of the Maple Street Incident.*
- Then, rewrite the sentence using simpler language while maintaining the same meaning.*

3. Word Associations (10 minutes)

- Create a word web for 5 of the terms you identified.*
- In the centre, write the criminology term.*
- Around it, write 4-5 related words or concepts, drawing connections to the Maple Street Incident where possible.*

4. Scenario Analysis (20 minutes)

- Choose 3 of the criminology terms you've learned.
- For each term, write a brief paragraph (3-5 sentences) explaining how it applies to a specific aspect of the Maple Street Incident.

5. Vocabulary in Action (15 minutes)

- Without referring to the text or your notes, complete the following tasks:
- Identify which of the following terms best describes the community's response in forming a neighbourhood watch group: social control, deterrence, rehabilitation, incapacitation
- Explain how the concept of recidivism might be relevant if John Doe is found guilty and sentenced.
- Describe how victimology could be applied to study the effects of the burglaries on the Maple Street residents.

6. Discussion Questions (15 minutes)

- With a partner or in a small group, discuss the following:
- How do the specialised terms we've learned enhance our understanding of the Maple Street Incident?
- What criminological theories might explain the series of burglaries?
- How might understanding these terms and concepts be useful for law enforcement handling this case?

Conclusion

Summarise three key insights you've gained from this activity about how criminology vocabulary applies to real-world situations. Reflect on how this understanding might influence approaches to crime prevention and criminal justice.'

The language acquisition process analysis based on the real-life second scenario focuses on serving multiple acquisition functions. It provides a rich, meaningful context that supports natural language acquisition, ensuring that vocabulary items appear naturally within an integrated narrative and are encountered through multiple exposures, catering thus for the already classicised communicative approach. Learners are cognitively engaged, processing the language for meaning rather than merely focusing on form. In addition, the scenario enables pragmatic development by introducing implicit elements such as professional discourse conventions (e.g., police procedures, community responses), sensitivity to contextual appropriateness (formal vs. informal language use), and awareness of cultural assumptions surrounding crime, community, and justice.

Critically analysing the 'Maple Street Incident' scenario, it can be noticed that this one represents a significant improvement in acquisition

potential. The meaningful context supports the kind of engagement that acquisition research suggests is crucial for development. The scenario successfully implements **Krashen’s ‘Comprehensible Input’ principle** developed in 1985, by embedding vocabulary within a coherent, meaningful narrative that learners can understand and engage with naturally, the story providing sufficient context for learners to infer meaning while encountering specialised terms organically, rather than in isolated lists. **Long’s ‘Interaction Hypothesis’** (413-468) is also well-supported through the discussion activities and partner work, where learners must negotiate meaning and use language purposefully to analyse the scenario, creating authentic communicative force that facilitates acquisition.

Thus, the **contextualised approach** represents a substantial improvement, moving from abstract definitions to applied understanding within a unified narrative framework. The scenario effectively introduces **domain-specific discourse conventions** through realistic police procedures, community responses, and legal terminology. Students encounter formal register features naturally embedded within the narrative, supporting pragmatic competence development alongside lexical growth.

Nevertheless, despite the theoretical framework’s emphasis on AI capabilities, the scenario remains fundamentally static, maintaining a somewhat artificial, textbook-like quality that may limit its authenticity. There is no **dynamic scenario generation** – learners receive the same fixed narrative regardless of their interests, cultural background, or proficiency level, and even if the ‘Maple Street Incident’ scenario is more engaging than the first, it still remains a one-size-fits-all approach that does not adapt to individual learner characteristics, interests, or cultural contexts. Advanced learners are not challenged with more nuanced elements, while beginners may struggle with the constant complexity, and even if Activity 5 attempts more sophisticated assessment than simple matching, it still does not use AI’s potential for **adaptive evaluation**.

The framework highlights multimodal input as crucial for ‘engaging multiple cognitive channels’ and supporting ‘deeper semantic processing’. However, the scenario remains purely textual, missing opportunities to incorporate audio (police recordings, witness statements), visual elements (crime scene photos, neighbourhood maps), or interactive components that would enhance comprehension and retention, an aspect which could be, on the other hand, perfected, if the prompt had mentioned these aspects overtly.

All in all, the second scenario brings significant pedagogical improvement by implementing established SLA principles effectively. However, it still fails to demonstrate the transformative potential of AI enhancement features outlined in the framework. While it successfully creates meaningful, contextualised learning, it remains essentially a traditional

activity that could have been designed decades ago, missing the opportunity to showcase how AI could revolutionise vocabulary acquisition through dynamic, adaptive, and multimodal approaches.

4.4 Scenario 3: Pragmatic Awareness and Noticing

The third scenario specifically targets pragmatic acquisition through focus on activity types and speech acts. This approach is grounded in Schmidt's 'Noticing Hypothesis' from 1990 and reflects current understanding that pragmatic features often require explicit attention to become relevant to learners, as observed by Rose and Kasper, in 2001.

Thus, starting from the third prompt which said: 'now focus on the pragmatic aspect of language - activity types, speech acts', *Claude* generated the following scenario:

'Pragmatics in Criminology: Activity Types and Speech Acts

Objective

To understand and apply concepts of pragmatics, particularly activity types and speech acts, in the context of criminology and criminal justice scenarios.

Introduction

Pragmatics is the study of how context contributes to meaning. In criminology, understanding the pragmatic aspects of language can be crucial in various situations, from police interviews to courtroom proceedings. This activity will focus on two key concepts:

- 1. Activity Types: The social contexts or situations that influence language use.*
- 2. Speech Acts: The actions performed through utterances (e.g., promising, ordering, requesting).*

Materials: *this worksheet, pen or pencil, access to criminology textbook or online resources (optional)*

1. Identifying Activity Types in Criminal Justice (15 minutes)

Different situations in criminal justice constitute different activity types. For each of the following, describe the key features of the activity type and how it might influence language use: police interrogation, courtroom trial, victim statement, prison intake interview, parole hearing

2. Speech Acts in Law Enforcement (20 minutes)

Read the following scenario:

Officer Smith pulls over a vehicle for speeding. The driver, Mr. Johnson, appears nervous.

- *Officer Smith: “License and registration, please.”*
- *Mr. Johnson: “I’m sorry, officer. I didn’t realise I was speeding.”*
- *Officer Smith: “Have you been drinking tonight, sir?”*
- *Mr. Johnson: “No, absolutely not.”*
- *Officer Smith: “Step out of the vehicle, please.”*
- *Mr. Johnson: “Am I under arrest?”*
- *Officer Smith: “No, but I need you to perform a field sobriety test.”*

For each utterance, identify the speech act being performed (e.g., requesting, apologising, denying, commanding, questioning). Then, explain how the activity type (traffic stop) influences these speech acts.

3. Courtroom Pragmatics (25 minutes)

Watch or read a transcript of a short courtroom scene (from a real case or a dramatisation). Identify and analyse:

- a. The different activity types within the courtroom (e.g., direct examination, cross-examination, jury instructions)*
- b. Five different speech acts performed by various participants (judge, lawyers, witnesses)*
- c. How the formal setting of the courtroom influences language use*

4. Analysing Miranda Rights (15 minutes)

Consider the Miranda warning: “You have the right to remain silent. Anything you say can and will be used against you in a court of law. You have the right to an attorney. If you cannot afford an attorney, one will be provided for you.”

- a. What type of speech act is the Miranda warning as a whole?*
- b. Identify at least three different speech acts within the warning.*
- c. How might the activity type (arrest situation) affect how this warning is delivered and received?*

5. Role-Play: Victim Interview (20 minutes)

In pairs, role-play a victim interview scenario. One person will play a police officer, and the other will play a victim of a home burglary. Conduct a short interview, paying attention to a), b), c). After the role-play, discuss your observations with your partner.

- a. The activity type and how it shapes the interaction*
- b. Different speech acts used by both the officer and the victim*
- c. How power dynamics in this activity type influence language use*

6. Reflection and Discussion (15 minutes)

In small groups or as a class, discuss the following:

- 1. How does understanding pragmatics (activity types and speech acts) contribute to effective communication in criminal justice settings?*
- 2. Can you think of instances where misunderstanding pragmatic aspects of language could lead to problems in a criminal justice context?*
- 3. How might awareness of these pragmatic concepts help criminal justice professionals perform their duties more effectively?*

Conclusion

Write a brief paragraph summarising what you've learned about the role of pragmatics in criminology and criminal justice contexts. Consider how this knowledge might be applied in real-world situations.'

The language acquisition process analysis based on the pragmatic awareness third scenario focuses on speech act acquisition, targeting essential pragmatic competencies such as requesting, denying, commanding, and questioning. Learners develop form-function identification skills, understanding how linguistic forms perform communicative purposes, and explore contextual variation, observing how language choices shift across professional settings like traffic stops and court proceedings. The activities also promote cultural sensitivity by revealing the cultural assumptions that emphasise communicative practices. Furthermore, the activity type analysis offers a framework for understanding how specific contexts shape language use, from the formal, power-imbalanced conventions of police interrogation to the highly ritualised discourse of courtroom trials, and the empathetic, culturally aware communication required in victim statements.

This scenario effectively addresses pragmatic acquisition needs by making pragmatic features noticeable, providing opportunities for discerning, and systematically directing learners' attention to these typically overlooked elements. The integration of speech acts and activity types reflects sophisticated understanding of pragmatic competence, the scenario successfully implementing **Schmidt's 'Noticing Hypothesis'** (129-158) by making pragmatic features explicit to learners, thus also addressing Rose and Kasper's findings from 2001 that pragmatic features require deliberate pedagogical intervention.

Regarding the positive aspects, the **speech act acquisition** component is well-designed, systematically exposing learners to requesting, commanding, questioning, and denying within authentic criminal justice contexts. The progression from identification to analysis and then to production (role-play) supports form-function identification development effectively, while **contextual variation and cultural sensitivity are well imbued**, the scenario successfully demonstrating how Levinson's **activity types from 1979 shape discourse**, contrasting the power dynamics of police interrogations with courtroom formality and victim interviews. The **cultural aspects** defining communicative practices are made visible through activities like Miranda rights analysis, where learners must consider how legal discourse reflects specific cultural and institutional values, this comparative approach helping learners understand that pragmatic competence requires sensitivity to contextual appropriateness rather than universal rules.

Concerning the negative aspects, the scenario still resides in a traditional model, with no **pragmatic pattern recognition**, learners not being exposed to AI-analysed authentic discourse patterns or data-driven insights about recurring speech act sequences in criminal justice contexts, thus having to identify speech acts and activity types without benefiting from computational analysis of large discourse corpora that could reveal frequency patterns, co-occurrence relationships, or register variations. Furthermore, **the interactive dialogue systems** are absent, the scenario relying solely on static and predetermined texts and basic role-play, having the students encounter the same traffic stop dialogue and Miranda warning regardless of their proficiency level, cultural background, or specific learning needs, even if the framework highlights AI chatbots that can 'simulate authentic professional interactions'. Moreover, the framework emphasises AI's ability to provide 'immediate, context-sensitive evaluations of learners' pragmatic choices', including assessment of 'indirectness, register, and cultural fit'. However, the scenario offers no systematic feedback mechanism, the role-play activity (Activity 5) concluding with peer discussion rather than expert analysis or AI-powered appropriateness evaluation.

Nevertheless, the scenario demonstrates solid understanding of pragmatic pedagogy, the progression from explicit instruction through guided practice to autonomous production following established principles, through a variety of criminal justice contexts that provide rich material for pragmatic exploration, thus creating meaningful opportunities for learners to develop awareness of speech acts and activity types within domain-specific contexts.

4.5 Scenario 4: Integrated Competence Development

The final scenario integrates grammatical accuracy with pragmatic appropriateness, reflecting Bachman's understanding from 1990 of communicative competence as involving multiple, interconnected competencies. This approach aligns with 'Focus-on-Form' methodology put forward by Doughty and Williams in 1998, which suggests that attention to linguistic features is most effective when embedded in meaningful communication.

Thus, starting from a fourth prompt which capitalised on all previous three scenarios and introduced one last variant by saying: 'to all this, assign the most appropriate grammar structure', *Claude* generated the following scenario:

'Pragmatics in Criminology: Activity Types, Speech Acts, and Grammar Structures

Objective

To understand and apply concepts of pragmatics, particularly activity types and speech acts, in the context of criminology and criminal justice scenarios, while reinforcing relevant grammar structures.

Introduction

[Content remains the same]

Activities

1. Identifying Activity Types in Criminal Justice (15 minutes)

Grammar Focus: Descriptive language and present tense for defining characteristics

For each activity type, use descriptive present tense sentences to explain its features. For example:

"A police interrogation typically involves direct questioning. The officer asks specific questions, while the suspect responds under legal caution."

2. Speech Acts in Law Enforcement (20 minutes)

Grammar Focus: Reported speech and modals for speculation

After identifying speech acts, practice converting them to reported speech:

- *Direct: Officer Smith said, "License and registration, please."*
- *Reported: Officer Smith requested the driver's license and registration.*

Then, use modals to speculate about the intentions: “The officer might have been trying to establish authority by using a direct command.”

3. Courtroom Pragmatics (25 minutes)

Grammar Focus: Passive voice and formal language

When describing courtroom procedures, use passive voice to emphasise actions over actors: “Evidence is presented to the jury”; “Objections are raised by the opposing counsel”

Also, note the formal language used in court and practice forming complex sentences with formal conjunctions (e.g., thereafter, whereupon, pursuant to).

Grammar Focus: Conditional sentences and modal verbs of obligation

Analyse the use of conditionals in the Miranda warning: “If you cannot afford an attorney, one will be provided for you.”

Practice creating similar conditional sentences related to legal rights. Also, focus on modal verbs expressing rights and obligations:

“You have the right to remain silent.” (possibility)

“Anything you say can and will be used against you.” (certainty and futurity)

4. Role-Play: Victim Interview (20 minutes)

Grammar Focus: Question formation and past tense narratives

For the officer: Practice forming different types of questions (yes/no, wh-questions, indirect questions): “Where were you on the night of the incident?” or “Could you tell me what you saw?”

For the victim: Use past tense narratives to describe the crime: “I had just gotten home when I noticed the broken window.”

5. Reflection and Discussion (15 minutes)

Grammar Focus: Complex sentences with subordinate clauses. Encourage the use of complex sentences in the discussion:

“Although pragmatics is often overlooked, it plays a crucial role in effective communication within the criminal justice system.”

Conclusion

Grammar Focus: Academic writing style with nominalisations and hedging language

In the concluding paragraph, practice using nominalisations (turning verbs into nouns) and hedging language common in academic writing:

“The application of pragmatic principles to criminal justice contexts may lead to an enhancement of communication effectiveness.”

Additional Exercise: Grammar in Legal Documents

Analyse a short legal document (e.g., a brief court order or a section of a law) and identify: complex sentence structures, legal jargon and formal vocabulary, use of modal verbs (shall, may, must), passive constructions, conditionals

Discuss how these grammatical choices contribute to the precision and authority of legal language.’

The language acquisition process analysis based on the grammar-pragmatics integration fourth scenario focuses on the relationship between grammatical structures and their communicative purposes. Conditional sentences in the context of Miranda rights illustrate a sophisticated form-function correlation, where linguistic form (“If you cannot afford an attorney...”) serves the pragmatic function of establishing legal rights and obligations, reflects the cultural context of the American legal system, and presents an acquisition challenge due to the complex interaction between grammatical structure and pragmatic meaning. Modal verbs further demonstrate this integration, with specific forms used to express rights (“You have the right to remain silent”), mark obligations (“Anything you say can and will be used against you”), indicate varying degrees of certainty, and contribute to a formal, professional legal register. Finally, passive voice is analysed for its multifunctionality – creating objectivity by removing personal agency, reinforcing formality, ensuring legal precision, and aligning with cultural expectations for legal discourse.

Analysing the grammar-pragmatics integration scenario against the theoretical framework reveals sophisticated pedagogical understanding, considering that the scenario successfully operationalises **Bachman’s communicative competence model** from 1990 by demonstrating the correlation between grammatical accuracy and pragmatic appropriateness. Rather than treating grammar as isolated forms, each structure is embedded within meaningful criminal justice communication, showing how conditional

sentences in Miranda rights serve both legal precision and pragmatic functions. **‘Focus-on-Form’ methodology** from 1998, belonging to Doughty and Williams, is well-implemented throughout, as well, grammar instruction emerging naturally from communicative contexts – passive voice arises from courtroom discourse analysis, modals from legal obligations, and question formation from interview scenarios. This integration ensures that ‘attention to linguistic features’ occurs within ‘meaningful communication’ as the theory recommends. Moreover, the **form-function identification** is particularly sophisticated, as students do not simply learn that conditionals exist; they discover how “If you cannot afford an attorney...” simultaneously establishes legal rights, reflects American legal culture, and creates specific pragmatic effects. This multilayered analysis represents advanced understanding of grammar-pragmatics interfaces.

In terms of pedagogical strengths, the progression from **receptive to productive use** is well-structured. Students first identify grammatical patterns in authentic texts, then analyse their pragmatic functions, and finally produce similar structures in role-play contexts, this scaffolded approach supporting both formal accuracy and communicative appropriateness. The **register-specific focus** effectively shows how grammatical choices create professional discourse identity, the contrast between formal courtroom language (“whereupon,” “pursuant to”) and interview contexts demonstrating how grammar serves sociolinguistic functions beyond mere correctness.

However, there is still no **real-time feedback** system to provide ‘immediate input on both linguistic form and pragmatic function’. Students receive no dynamic assessment of whether their conditional sentences are grammatically accurate while pragmatically appropriate for specific legal contexts and all students receive identical instruction regardless of their grammatical proficiency or pragmatic development needs, even though the framework describes AI systems that can ‘track dialogue history, manage conversational states, and tailor responses to user goals’. Yet the scenario provides no mechanism for tracking individual learner progress in integrating grammatical accuracy with pragmatic appropriateness, nor does it adapt based on learner performance patterns. And while the framework highlights AI’s capacity for ‘immersive, task-based environments’, the scenario relies on static role-play rather than dynamic conversational agents, thus accounting for **authentic interaction gaps**, having students practice victim interviews with peers rather than AI systems that could provide authentic, responsive interaction while monitoring both grammatical accuracy and pragmatic appropriateness.

Cultural mediation is also missing, as the framework emphasises AI’s ability to offer ‘guidance on culturally appropriate choices’ and ‘navigate intercultural communication’. However, the scenario assumes uniform

American legal culture without addressing how students from different cultural backgrounds might interpret or produce these grammar-pragmatics combinations. There is no AI-mediated cultural input to help learners understand why passive voice creates authority in American legal discourse or how modal obligations might be expressed differently across cultures, but this is an aspect which yet again could be improved if another, more engineered prompt had been used, explicitly asking for such intercultural comparisons.

Nonetheless, the last scenario demonstrates the most solid understanding of grammar-pragmatics integration within established SLA theory, creating meaningful connections between form and function in professional contexts, being pedagogically sound and digitally modern, even if it remains anchored within traditional instructional paradigms despite the framework's emphasis on technological innovation.

5. Findings, Challenges and Limitations

The four scenarios were deliberately designed with minimal prompt engineering, in order to demonstrate that even with limited input, both teachers and students can generate meaningful contexts for language acquisition. From one scenario to the next, the prompts merely suggested progression and improvement, without necessarily specifying all the details that the language acquisition framework proposed in the paper could provide through AI support. This approach was intentional, aiming to test how much output generative AI assistants can produce when tasked with understanding the core intention of the learning scenarios, while remaining focused primarily on content creation within a pedagogical framework.

Even under these conditions, the results proved satisfactory, addressing the needs of a field that, even today, often lacks sufficient specialized material. As professor Jeremy Day observed in 2011, the field can still be divided into sub-domains where specialized resources exist and others where teachers of ESP continue to struggle with the development of appropriate didactic materials.

The scenario progression demonstrates exceptional pedagogical design within established SLA theory through systematic movement from vocabulary acquisition by means of contextualised application to pragmatic awareness and grammar-pragmatics integration. This coherent instructional sequence addresses multiple dimensions of communicative competence, with each scenario building meaningfully on previous learning. The contextual authenticity achieved for the criminology domain provides genuine professional discourse patterns, ensuring that vocabulary, pragmatic features, and grammatical structures emerge naturally from communicative needs rather than artificial generation.

Acquisition-centred pedagogical advantages include rich comprehensible input generated by AI tools which can deliver extensive, varied, contextually appropriate language exposure, addressing Krashen's emphasis laid in 1985 on comprehensible input. Optimal response timing is achieved through the capacity of the adaptive systems to introduce linguistic features at precise developmental stages, thus aligning with Pienemann's developmental readiness hypothesis, from 1998. Enhanced noticing opportunities emerge through the capability AI-powered activities have to draw attention to pragmatic features, in this way supporting Schmidt's (129-158) 'Noticing Hypothesis' while maintaining meaningful communication focus. Last, but not least, authentic interaction is facilitated through AI conversational systems creating meaningful exchange opportunities, approximating successful naturalistic acquisition conditions.

The analysis reveals key implications emphasising context dependency through extensive exposure to authentic professional settings, with AI technologies offering access to otherwise unavailable contexts. Integrated competence requires simultaneous mastery of grammatical accuracy, pragmatic appropriateness, and cultural sensitivity – integration that AI systems can facilitate through advanced Large Language Models (LLM) generative patterns. Individual variation recognises different pragmatic competence development patterns, which can be accommodated more effectively by AI's adaptive capabilities than traditional methods, while cultural intervention requires AI systems to make cultural dimensions explicit and accessible to learners from diverse backgrounds, but must always be checked for bias. The explicit attention to form-function relationships integrates a crucial advantage over traditional instruction within this framework, AI being able to offer sophisticated feedback on both linguistic accuracy and communicative effectiveness. But most importantly for ESP learning environments, authentic professional contexts provide rich grounds for AI-powered simulation, cultural mediation, and domain-specific feedback difficult to attain in generic language learning contexts.

Current AI technologies could transform scenarios through dynamic content generation, responsive interaction systems, and intelligent scaffolding. Rather than static scenarios, AI could generate multiple variations of professional incidents, adjusting complexity, cultural context, and specific foci based on learner profiles and progress patterns. Role-play activities could evolve into sophisticated conversational AI encounters where learners engage with virtual professionals who respond authentically while monitoring linguistic accuracy and pragmatic appropriateness. AI could provide real-time support during activities, offering just-in-time vocabulary assistance, pragmatic coaching, or grammatical guidance based on individual learner needs.

6. Conclusions

This analysis demonstrates the potential AI-driven approaches have to enhance pragmatic language acquisition in ESP contexts by addressing key SLA challenges, particularly the need for rich, contextual input supporting both grammatical development and pragmatic competence. The theoretical background and practical applications show AI tools can effectively support natural language acquisition processes while providing focused attention necessary for pragmatic development, by generating a meaningful LSP framework.

The detailed criminology ESP scenario analysis illustrates how theoretical language acquisition principles translate into concrete pedagogical practices, the progression from foundational vocabulary acquisition through contextual engagement to integrated competence development reflecting current understanding of pragmatic competence emergence through meaningful exposure and guided attention to form-function relationships.

However, AI's greatest potential lies in intelligently augmenting rather than replacing existing pedagogical frameworks within ethical barriers. The scenarios build on solid pedagogy, authentic content, and logical progression, with the prompt generator in control of both vision, originality and desired output, as strong foundations for AI-driven enhancement. AI-enhanced versions amplify original pedagogical value by adding personalisation, adaptability, and responsiveness layers previously difficult to scale, aspects which can be improved in the present examples, but which could, nevertheless, represent the next step starting from these very well-structured responses.

Effective language instruction requires both pedagogical expertise and technological capability through a human-AI partnership. Human insight creating theoretically grounded, contextually authentic activities provides essential foundation, while AI enhancement amplifies this foundation exponentially, creating learning experiences that are simultaneously more personalised, responsive, comprehensive, and engaging than either approach alone. In this way, the future of ESP acquisition lies in intelligent integration valuing both artificial intelligence potential and human expertise while remaining faithful to established language acquisition and academic ethical principles. Future developments must prioritise natural acquisition processes enabling learners to develop not just language knowledge, but also authentic professional communication ability. The ELITE-AI (<https://elite-ai.unitbv.ro/>) and AI in HED (<https://www.aiinhigheredu.eu/>) Erasmus+ projects and similar initiatives demonstrate the importance of collaborative efforts in understanding AI-enhanced pragmatic language acquisition's full potential in professional contexts and across diverse cultures and subject areas.

The future of language learning involves intelligent integration combining human pedagogy and AI technology strengths rather than choosing between them. These criminology scenarios provide an excellent blueprint for such integration, moving from traditional but well-designed activities toward AI-enhanced environments maintaining pedagogical rigour while offering unprecedented ESP contextualisation and grammatical insertion to support meaningful pragmatic circumstances.

Acknowledgements

This research was supported by the Erasmus+ grant number 2024-1-RO01-KA220-HED-000248845, funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the ANPCDEFP. Neither the European Union nor the ANPCDEFP can be held responsible for them.

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