EFFECTIVENESS OF BRIEF PROMPTING INSTRUCTION IN AI-ASSISTED COMMUNICATIVE PRACTICE IN FOREIGN LANGUAGE CLASSES

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Abstract

The case study, conducted in September 2024, investigates the impact of prompting instruction on the communicative skills of Czech learners of English. The main goal of the experiment was to see how pre-taught pragmatics-based prompting strategies affect human-chatbot interaction efficiency. The findings show that brief instruction in prompting significantly improves task completion, reduces misunderstandings and turn-taking, and enhances communicative outcomes, especially in complex tasks (such as synthesis, analysis, and emotional response). However, the study also evidences learners' dissatisfaction when comparing chatbot to human interaction, citing a lack of shared context, cooperation, and non-verbal cues.

Keywords

chatbots, artificial intelligence (AI), English as a foreign language (EFL), communicative practice

1 Introduction

With the unprecedented spread of AI in recent years, existing AI chatbots offer foreign language (FL) teachers unique opportunities to utilize human–chatbot interaction for various types of communicative practice. Dolenc and Brumen (2024, p. 2) state that "chatbots are ideal for informal learning environments, providing an authentic context and accessibility anytime and anywhere". AI-enhanced educational technology "presents unique opportunities for learners to receive real-time feedback, improve motivation, and increase engagement, especially in complex tasks such as writing" (Lai, 2025, p. 1). However, the evidence of chatbots' productive use is limited due to insufficient classroom research into this area, as "this line of research remains in its infancy, largely due to the recent introduction of ChatGPT in educational contexts and the limited generalizability of existing findings" (Muñoz et al., 2025, p. 2).

Moreover, it is worth noting that despite the multiple positive expectations of the additional interactional practice, human–chatbot interaction may significantly differ from human-human exchanges due to differences in underlying pragmatic principles and expectations (Kecskés & Dinh, 2025). Although ChatGPT, as well as other AI-powered communicators, is capable of generating logically appropriate replies, it is crucial to acknowledge that "it lacks genuine comprehension or

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consciousness" (Kecskés & Dinh, 2025, p. 370). Indeed, the researchers' analysis of human-chatbot interaction from the lens of pragmatics claims that "Grice's cooperative principle should be at work during conversations with computers, yet different maxims are violated by some means […] ultimately revealing their non-human identity" (Kecskés & Dinh, 2025, p. 370). Thus, it seems evident that FL learners require special preparation and practice to communicate effectively with chatbots. Dolenc and Brumen (2024, p. 11) also emphasize the importance of targeted education and awareness programs, which they consider essential for bridging the gaps in AI adoption: "These programs should foster an open and informed discourse on AI in education". Nevertheless, at present, we have no proven evidence of the effectiveness of such programs, forming a gap that this research aims to bridge.

This case study aims to introduce a short-term pragmatics-based prompting instruction to students, assessing its effectiveness on enhancing human-computer interaction and exploring the potential influence of acquired chatbot experience on the communicative development of EFL learners. For these purposes, an experiment in a controlled environment with a preceding learning intervention was chosen as a research method to compare the performance of an Experimental group (with prior instruction) with that of the Control group (without instruction) in fulfilling communicative tasks in a FL (English).

The study assumes that a preliminary pragmatics-based training in basic prompting strategies may facilitate human–chatbot communication and make this experience more satisfying for the FL learner who uses chatbots as a learning tool. The research questions are the following:

(1) What key challenges do participants face when adopting traditional human communication strategies in human-chatbot interaction?

(2) How do prompting strategies influence communication effectiveness in human-chatbot interactions compared to traditional human-human communication?

This study contributes to the existing literature in three specific ways. First, it operationalizes pragmatic theory by translating Gricean conversational maxims into concrete prompting strategies suitable for classroom use. Second, it evaluates the effectiveness of a short-term prompting intervention within a controlled experimental design comparing trained and untrained learners. Third, it integrates quantitative performance data with qualitative feedback interviews to provide a more comprehensive account of human–chatbot interaction in foreign language education.

2 Literature review

2.1 The use of chatbots for educational purposes

Over the last decade, chatbots have emerged as a powerful tool in educational contexts, promising to enhance learning experiences and facilitate various academic activities. Existing studies highlight the educational potential of chatbots, but also highlight certain limitations that require attention to their more effective implementation in educational contexts.

Pérez-Marín and Pascual-Nieto (2013) investigated the effects of a "pedagogic conversational agent" on young learners aged 11–14. Their mixed-methods study, involving 22 participants, revealed that children perceived the chatbot as a human-like entity and even as a friend. This perceived humanness encouraged prosocial behaviors among participants: "Pedagogic conversational agents provide support to students and can help students to improve their learning performance. Affective interaction has also shown great benefits" (Pérez-Marín & Pascual-Nieto, 2013, p. 963). However, the reliance on the chatbot's perceived human-like qualities raises questions about the consistency of these effects across diverse age groups and cultural backgrounds.

Similarly, Ruan et al. (2019) evaluated the effects of chatbots on learning by comparing human-human interaction to human-QuizBot chats. This dialogue-based agent helps students acquire factual knowledge in science, safety, and English vocabulary, compared to traditional learning methods (e.g., flashcards), as demonstrated in two studies involving 47 university students and 76 alums, respectively. The studies report excellent results from the use of educational chatbots, claiming that chatbot communication is especially effective in boosting learning, particularly in terms of both recognition and recall of new information. The researchers attribute this effect to four elements that traditional techniques lack, namely active retrieval of new information, instant feedback, customized post-test questions, and, most importantly, "the persona effect", which is understood as a personal tutor (Ruan et al., 2019, p. 10). The study concludes that "although students practiced fewer problems due to the relative inefficiency of conversational systems, they were more engaged in the problems they did and more willing to be tutored by the conversational tutoring systems" (Ruan et al., 2019, p. 10). This suggests that chatbots' "human-like" conversation properties are perfectly capable of capturing students' attention, ensuring that this engagement translates into meaningful learning.

The potential of chatbots extends beyond classroom instruction. For instance, Mendez et al. (2019) studied chatbot use in faculty mentoring through a qualitative focus group study involving 10 participants. Chatbots simulated interactive

conversations with human users on organizational topics through engineered computer programs, such as those used by Twitter or Google Assistant. They effectively supported student mentoring, particularly by providing guidance and information to students. Their potential efficacy for these purposes is an important area of study as colleges and universities continue to develop and refine mentoring programs to support learners' career success in and across the professions. Mendez et al. (2019, p. 9), nevertheless, conclude that "while overall students shared a general satisfaction with the chatbots driven by the user interface and perceived trust of the emeriti faculty responses, they expressed concern about the lack of personalization and relationship building that could occur with the chatbot, which resulted in mixed responses on the intent to use". Thus, contextualizing and personalizing the chatbot mentor appeared to be a top priority for all students, again underscoring the need for a shared background for successful human-chatbot interaction.

Concerning the use of chatbots for purely communicative purposes, Kim et al. (2020) examined chatbots designed to facilitate group discussions in a series of three studies involving 65, 25, and 20 participants. The studies report that GroupfeedBot chatbot may encourage and promote human participants' involvement in group discussions: "A chatbot agent could efficiently support discussion procedures and facilitate communication, thus enhancing both taskwork and teamwork" (Kim et al., 2020, p. 8). Furthermore, the researchers propose a new method to improve chatbot-mediated discussions: "Reciprocal opinion exchange exposes members to diverse ideas and helps to improve understanding of different points of view, which eventually improves group dynamics" (Kim et al., 2020, p. 8). In the study, GroupfeedBot successfully serves as a virtual group member, promoting active participation and discussion among group members, thereby establishing a practice that can be successfully incorporated into EFL classes. Although, as the researchers admit, the chatbot's ability to manage complex or nuanced group dynamics is limited, they highlight the capabilities of advanced technology in mediating conversational classes and project work and serving as an additional motivational tool.

Liang and Wu's (2024) study on the role of chatbots in developing thinking and creativity skills among university students reveals that, in their research, ChatGPT served as a valuable tool for students in constructing arguments and enhancing their critical thinking skills. "The students highlighted how ChatGPT provided evidence, examples, and insights that contributed to the development of persuasive arguments and enrichment of conclusions made during group discussions" (Liang & Wu, 2024, p. 7). What is interesting here is that in the researchers' opinion, even ChatGPT's hallucinations – understood as incorrect or

improper responses – potentially engaged students in analysis and verification: "The students recognized that ChatGPT may provide inaccurate responses or misinformation. They acknowledged the importance of critically examining the information provided by ChatGPT and seeking validation from other sources, which was conducive to the development of their critical thinking skills. They approached ChatGPT with a critical mindset and emphasized the need to independently verify the information and actively engage in their own thinking processes" (Liang & Wu, 2024, p. 7).

Recent studies into AI-assisted FL skills development, in particular academic writing, noticed a massive wave of enthusiasm among EFL students about the AI use: "Learners perceived AI tools as transformative, reporting key benefits including enhanced feedback efficiency (83%), improved writing confidence (70%), personalized learning (65%), and expanded vocabulary (58%)" (Lai, 2025, p. 14). Similarly, Teng (2024, p. 9) concludes that FL instructors also recognize "a notable effect of AI assistance on writing motivation, self-efficacy, writing engagement, and collaborative writing tendency". However, despite these positive assessments of skill development, Muñoz et al. (2025) are moderately cautious about the long-term effects of this cooperation, as sociocultural awareness of the chatbot, or rather lack of it, is a crucial consideration in human-chatbot interaction. "ChatGPT's mono-cultural orientation may limit its ability to interpret culturally nuanced meanings […] thus, reinforce stereotypes and discriminatory representations" (Muñoz et al., 2025, p. 9). This poses a challenge, particularly in communicative tasks, where EFL learners' pragmatic and cultural competences influence correct lexical and syntactic choices. As AI-generated feedback becomes more common, future research should explore how covert differences in human-human vs. human-chatbot interaction, a lack of pragmatic awareness, and potential cultural bias may shape FL learners' communicative competence.

In summary, existing chatbot studies collectively demonstrate the educational potential of chatbots in enhancing students' engagement, promoting classroom interaction, and supporting different kinds of FL learning tasks. Additionally, due to the unprecedented speed of AI development, many limitations of earlier papers, such as contextualization and memorization issues, have been successfully addressed. Chang and Sung (2024, p. 1) posit that in modern, highly digitized society, language educational practices have been successfully reshaped with extensive technology integration opportunities, shifting from learning from computers as content into learning with computers as partners, and "task-specific AI is utilized to encourage cyclical improvement with learner autonomy enhancement mainly among higher education students at intermediate level or

above". However, none of the cited papers consider the underlying pragmatic challenges of human-chatbot interaction or suggest a pre-intervention training to mitigate them. That is why exploring chatbots' capabilities in practicing effective communication while developing learners' pragmatic and cross-cultural awareness becomes a new research challenge.

2.2 Insights into chatbot pragmatics

It is well established that Gricean pragmatics, which is primarily based on a set of conventions, principles, and a top-down flow of pragmatic influence, is a foundational framework in the field of communication. According to Grice's theories (Grice, 1975, 1989), successful communication largely depends on mutual understanding of conversational maxims such as Quality (truthfulness), Quantity (no over-describing), and Manner (no ambiguity), as well as the Cooperative Principle, postulating that "people automatically assume that their interlocutor cooperates with them in conveying meaning through their utterances" (Jacquet et al., 2019, p. 180). These principles suggest that all participants in a conversation share some linguistic and cultural background, which allows for a relatively stable set of expectations about how communication should proceed.

By contrast, human–machine interaction introduces a set of challenges and complexities into communication. When a human interacts with a chatbot or other artificial agent, the interaction fundamentally differs from human-human communication. While designed to mimic human conversational patterns, the chatbot lacks the innate cultural, social, and experiential knowledge that human participants bring to a conversation. In this interaction, the human often guides the conversation and socializes the artificial agent by shaping its responses and teaching it how to engage in dialogue. This human-led process highlights a different kind of communicative framework, where the flow of pragmatic influence is not top-down, as in Gricean pragmatics, but rather bottom-up (Kecskés & Dinh, 2025).

More than a decade ago, Hill et al. (2015) identified at least three distinct parameters that characterised human-chatbot interaction, which still apply today. First, people have less experience communicating with chatbots than with humans, and so are less confident and comfortable with the communicative ability of a chatbot. Second, while chatbots are designed to sustain conversations, they are limited in their ability to engage in extended, goal-directed discussions and in the depth of information they provide on specific topics. Third, there is no element of common history or shared experience possible in human–chatbot conversations. Even if particular users have had extensive prior conversations

with a chatbot, the chatbot remains unaware of these interactions and is unable to reference them.

While the human participant in a chatbot interaction is still working to build a common ground, the machine's contribution to this process is fundamentally different. Chatbots rely on data-driven algorithms to generate responses. This is an important thing to consider, as "the closer a conversational agent is to the behavior of a human, the stronger any deviation from human behavior will affect the user" (Jacquet et al., 2019, p. 182). As a result, the human participant often takes on a more active role in guiding the conversation, leading the machine through the interaction, and shaping its responses to fit the context by using a prompting technique.

This dynamic introduces a new form of interagency, where the human participant is not only a contributor to the conversation but also a kind of teacher or guide for the machine. In this study, prompting strategies are understood as practical operationalizations of Grice's conversational maxims. For example, the maxim of Quantity is reflected in providing sufficient contextual detail in prompts; the maxim of Quality is reflected in verifying information and correcting inaccuracies; and the maxim of Manner is reflected in structuring requests clearly and specifying output formats. In this way, prompting instruction can be interpreted as a form of applied pragmatic training adapted to human–chatbot interaction.

The chatbot, in turn, contributes to the interaction by processing data and generating responses based on patterns it has learned. This interplay between human experience and machine data creates a novel cooperative interaction that challenges traditional notions of agency in communication. The co-construction of an interagency in human–chatbot interactions introduces new forms of pragmatic influence that challenge traditional models of communication. By examining the interplay between human experience and machine data, as well as the bottom-up nature of pragmatic influence in these contexts, new insights into the future of communication in an increasingly globalized and technologically advanced world can be gained.

3 Methodology

Research has been conducted in an ethical and responsible manner, and is in full compliance with all relevant codes of experimentation and legislation. All participants signed an informed consent form before participating in the study. An ethical approval of the study was obtained from the departmental review board on November 1, 2024.

The case study involved 24 students of the Technical University of Liberec. The number of participants in the experiment was determined by the number of students in the academic group who agreed to take part and met the selection criteria. The participants were balanced in terms of gender (12 females, 12 males), age (21–22 years old), and educational background (first-year students of the Faculty of Science, Humanities and Education, with English as their major).

The first criterion for participant inclusion in the experiment was their basic familiarity with chatbots, specifically with ChatGPT (GPT-3). The second was their ability to interact with the chatbot in English; therefore, a diagnostic computer-based English test was taken before the start of the experiment.

The participants were randomly assigned to an Experimental group and a Control group (each with 12 students), ensuring that the number of students of the same sex and English level in each group was equal. The participants' anonymized characteristics are available from the study's repository (Tymbay, 2026).

The experiment was organized in three steps (Figure 1) involving two groups of participants.

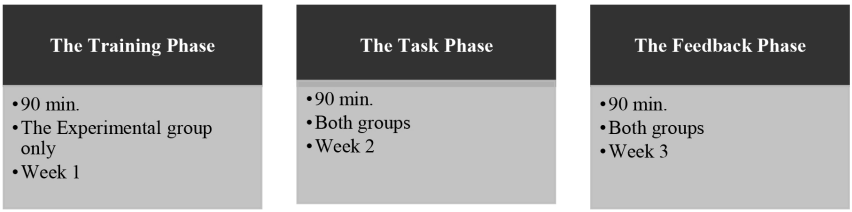


Figure 1: The structure of the experimental study

The Training Phase: A 90-minute training session was organized exclusively for the Experimental group students (see Appendix for the syllabus). During the training, participants from the Experimental group were instructed on effective prompting techniques, which involved sample practice with the GPT chatbot. The chatbot practice followed three possible scenarios of human-chatbot interaction, based on observing Grice's Maxims of Quality (fact-checking the information and correcting mistakes), Quantity (controlling the relevance/irrelevance of the output for the task-setter), and Manner (establishing the format of the output) (Grice, 1975).

The training session was designed as a brief learning intervention that combined the key elements of pragmatic theory with hands-on practice for learners. It covered basic communicative strategies such as using clear and concise language, providing context where necessary, and structuring (adjusting one's) inputs to

align with the chatbots' natural language processing capabilities in accordance with Lewis's (2008) "sender–receiver" model. The sender–receiver model was relevant here because the effectiveness of human–chatbot communication depends on how users structure their inputs in ways that the system can interpret.

The Control group received no training and proceeded directly to the task phase.

The Task Phase: A practical session was conducted in a controlled environment (a computer laboratory) over 90 minutes for both groups. The Task phase was conducted one week after the Training Phase.

In the Task Phase, the study participants were briefed on the purpose of the experiment (the study of human-machine interaction) and the tasks they needed to complete. The participants were given a list of 20 communicative tasks of various complexity levels, ranging from simple questions and information retrieval (Complexity 1–2) to more complex problem-solving tasks, creative generation, and specialized information synthesis (Complexity 4–5). The examples of the tasks, graded by their complexity levels, are presented in the case study's repository at https://github.com/open-data-repository/human-chatbot-interaction.

The experimental procedure was designed to closely simulate fundamental everyday interactions with chatbots while controlling for variables that could affect the outcome, such as prompting experience or differences in task difficulty.

Each participant had the same 20 tasks presented in randomized order to minimize the effect of learning by experience, which they had to resolve in English (L2 [Language 2/FL]). The participants could also change the order of the tasks, but were asked to continue communicating with the chatbot until the task was executed entirely (as self-assessed). After the participants considered the task completed, they could move to the next task on the list. At the end of each task, the record of chatbot interaction was copied from the OpenAI web page and saved in a shared repository for further analysis.

During the Task Phase, four key metrics were recorded for each human-chatbot interaction using Likert scales (Figure 2). The collected data were used to analyze task completion rates statistically, the number of turns required for task completion, user satisfaction scores, and conversational efficiency (the frequency of chatbot misunderstandings) to compare the performance of the Experimental and Control groups and determine the impact of the prompting training on human-computer interaction.

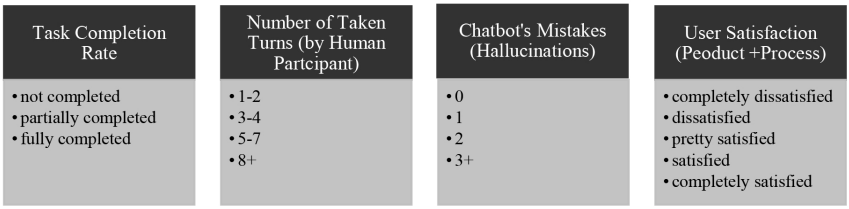


Figure 2: The key metrics of human-chatbot interaction analysis

The Feedback Phase: After completing the tasks, the members of both groups participated in a research interview (a round-table discussion), which was held the day following the Task Phase. The sessions for the Experimental group and the Control group were organized separately and lasted 45 minutes each. The discussion questions focused on reflecting the participants' perceptions of the chatbots' effectiveness (mistakes), ease of human-chatbot communication, the impact of the prompting training (in the Experimental group), and the challenges faced during the interactions.

4 Results

The study demonstrated overall high task completion rates for both groups (the mean for the Experimental group was 94%, and the mean for the Control group was 92%), which is explained by the experiment's condition that the next communicative task can be started by the participant only when the current one is completely fulfilled.

For Level 1 tasks, both the trained (Experimental group) and untrained (Control group) participants achieved a perfect completion rate of 100%, indicating excellent communicative performance of the chatbot due to the simplicity of the tasks, which required no advanced prompting techniques from the human participants. In Level 2 tasks, the trained group had a 98% success rate, while the untrained group had a 96% success rate. This minor difference was not statistically significant, suggesting similar performance in these moderately complex tasks. However, noticeable differences appeared in the results of the two groups when the tasks became more complex, specifically at Levels 4 and 5.

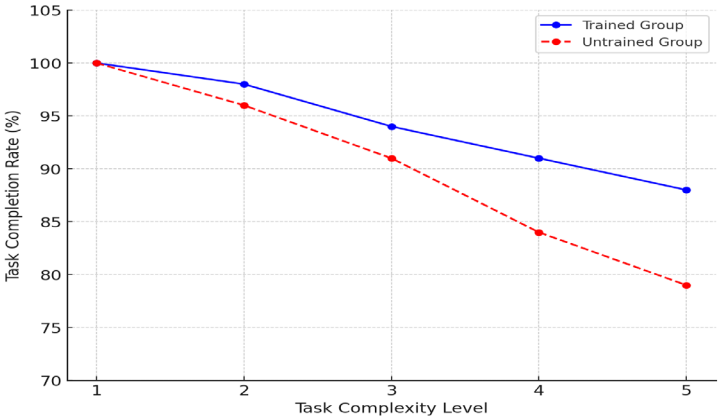


Figure 3: The task completion rates of the Experimental (trained) and Control (untrained) groups across different task complexity levels

Figure 3 illustrates that the difference in task completion rates between the trained and untrained participants becomes more pronounced as task complexity increases, indicating that prompting instruction plays a progressively more important role in supporting successful communication in demanding tasks.

For Level 3 tasks, the trained group achieved a 94% success rate, compared to 91% for the untrained group. This marginal difference still suggests that the prompting training had an impact on the participants' performance. In Level 4 tasks, the trained group completed 91% of the tasks, whereas the untrained group completed only 84%. For Level 5 tasks, the trained group achieved an 87.5% success rate (rating of two), while the untrained group achieved a 79% success rate, with the remaining tasks graded as "partially completed" (rating of one). The 9% difference between the groups highlights the growing advantage of guided prompting experience in handling more challenging tasks, demonstrating its crucial role in improving performance as the complexity of communicative tasks increases.

Another critical metric analyzed in the study was the average number of turns (requests) taken by the human participant in each task (Figure 4).

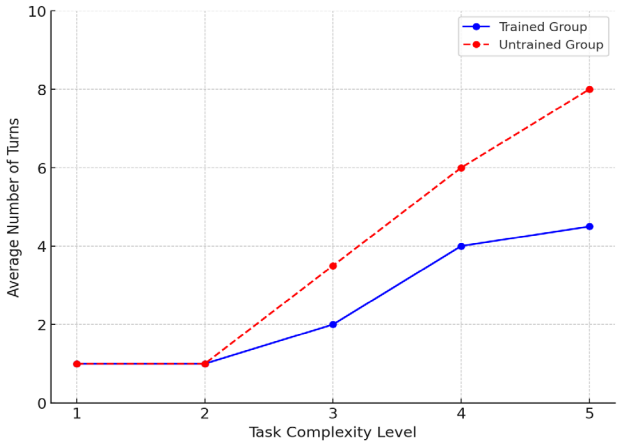


Figure 4: The average number of conversational turns required by the trained (Experimental) and untrained (Control) communicators across different tasks

Figure 4 demonstrates that participants who received prompting instruction required fewer conversational turns to complete complex tasks. In Level 1 and Level 2 tasks, the number of conversational turns required to complete each task was similar between the Experimental and Control groups, with both averaging one turn per task. For Level 3 tasks, the Experimental group averaged two turns per task, while the untrained group required an average of 3.7 turns. This difference suggests that the prompting-trained participants could ask more precise and direct questions, which minimized the need for multiple exchanges to adjust the chatbot's responses. On the other hand, the untrained participants required additional turns due to less efficient or less specific prompts, resulting in a higher number of conversational turns to complete the task.

An example below illustrates how members of different groups dealt with a Level 3 task: "Find a supervisor for your perspective BA thesis among the teachers of the English Department at the Technical University of Liberec University". The sample illustrates how both students produced a similar result – an email draft to the prospective supervisor. However, the pre-trained student (KD) achieved this in two turns, whereas the student with no prompting experience (IN) required six turns. It should be noted, though, that the turns of the student with prior training are more condensed, setting the task and format in one query, just as the group was instructed. In contrast, the student with no

training uses shorter turns, which are also more natural, as if communicating with a real person.

Example 1

Control group student (B2, Czech native language, female, 21 years old, no experience with chatbots) **interacting with Chat GPT 4.0**	**Experimental group student** (B2, Czech native language, female, 21 years old, had a 90-minute prompting instruction) **interacting with Chat GPT** 4.0
IN: Hello, I need to find a supervisor for my bachelor's thesis at the English Department of the Technical University of Liberec. Can you help me with that? **ChatGPT:** Hello! Of course, I would be happy to help. Do you already have an idea of the topic you want to work on, or do you prefer a specific teacher? **IN:** Well… I am not sure. Can you tell me who teaches English there? **ChatGPT:** Certainly, I can name some of the lecturers. Are you more interested in literature, linguistics, or something else? **IN:** I do not really know; I just need a supervisor. Who is the best? **ChatGPT:** The best supervisor depends on your topic and your working style. For example, you could contact […]. **IN:** Oh, okay. Can you give me their contacts then? **ChatGPT:** Unfortunately, I do not have access to personal contact details, but I recommend checking the English Department's website, where staff members and their emails are usually listed. **IN:** Alright, and how should I write the email? What should I say? **ChatGPT:** We can try writing a simple email together, where you introduce yourself, mention your thesis topic, and ask if they could be your supervisor. Would you like me to help you with the text? **IN:** Yes, please.	**KD:** Hi ChatGPT, I need to find a supervisor for my bachelor's thesis at the English Department of the Technical University of Liberec. I am focusing on linguistics with an emphasis on pragmatics. Could you please list three suitable lecturers with a short description of their specialization and recommend how to contact them? Please format the answer as: name, specialization, contact recommendation. **ChatGPT:** Hi! Sure, here is an overview of three suitable lecturers. […] If you want, I can help you draft a professional and clear email. **KD:** Great, thanks! Yes, please draft a sample email for me. **ChatGPT:** Of course. Here is an example: Dear […], My name is [Your Name], and I am studying in the bachelor's program at the English Department of TUL. I am interested in writing my bachelor's thesis focused on pragmatics within linguistics. I would like to kindly ask if you would consider being my supervisor. Thank you in advance for your response. Best regards, [Your Name]

It should be noted that the sample output generated by the chatbot includes phrasing that may be considered stylistically imprecise (e.g., "pragmatics within linguistics"). This observation highlights an important limitation of AI-generated text: although structurally correct, the output may still require human revision and critical evaluation. The example therefore illustrates not only interaction efficiency but also the need for user oversight in evaluating the linguistic quality of chatbot responses.

As the tasks increased in complexity, the difference became more pronounced. In Level 4 tasks, the trained group averaged four turns per task compared to the untrained group's six turns. By Level 5, the trained group required an average of 4.2 turns, while the untrained group needed eight turns. The widening gap between the two groups reflects the increasing difficulty the untrained group faced in framing their inputs effectively, leading to more back-and-forth exchanges to refine their requests. This indicates that strategic training in prompting played a crucial role in streamlining communication, enabling participants to reduce the number of interactions required to complete the most complex tasks.

User satisfaction in the case study was evaluated on a Likert scale from 1 (dissatisfied) to 5 (completely satisfied). This parameter primarily reflects participants' perceptions of the interaction process rather than a formal evaluation of the linguistic quality of the chatbot-generated product. Although participants were exposed to the final outputs produced by the chatbot, they were not systematically instructed to assess the accuracy or stylistic appropriateness of these outputs. This decision was made because the study focused on communicative interaction efficiency rather than output quality assessment.

In general, the difference in satisfaction between the Experimental and Control groups was marginal, demonstrating a consistent relationship between satisfaction level and task complexity (Figure 5).

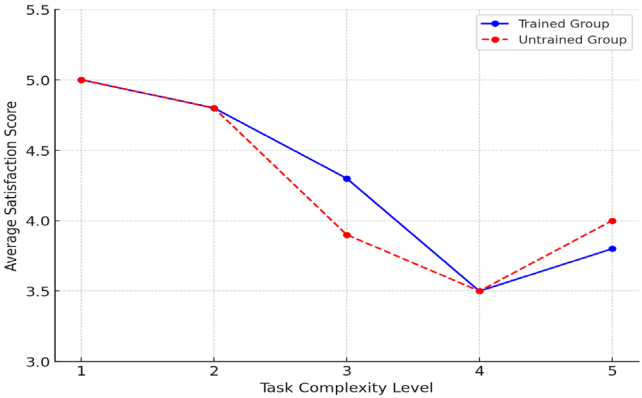


Figure 5: The average user satisfaction scores for the Experimental and Control groups across different task complexity levels

Figure 5 shows that user satisfaction levels gradually decline as task complexity increases, reflecting the growing communicative challenges associated with more cognitively demanding tasks, regardless of prior prompting training.

For Level 1 tasks, both groups reported high satisfaction with the chatbot's responses (Mean = 5). Similarly, for Level 2 tasks, satisfaction remained high, averaging 4.8, with no significant difference between the Experimental and Control groups. As the task complexity increased, specific differences in satisfaction emerged, albeit only marginally. For Level 3 tasks, the trained group reported an average satisfaction score of 4.3, slightly higher than the 3.9 reported by the untrained group. In Level 4 tasks, both groups exhibited the lowest satisfaction level (Mean 3.5), reflecting the increased challenges of analysis and synthesis tasks that involved a high degree of personal customization, as well as questions related to relationships and attitudes. Satisfaction scores for Level 5 tasks (empathy and emotional intelligence tasks) were slightly higher than at the previous stage, with the trained group averaging 3.8 and the untrained group averaging 4.

Measuring the frequency of chatbot misunderstandings, understood in the study as the breaches of conversation efficiency, was another crucial characteristic measured in the study. Figure 6 indicates that the frequency of chatbot misunderstandings rises substantially with task complexity, particularly among untrained participants, highlighting the importance of effective prompting strategies for maintaining communicative efficiency in complex interactions.

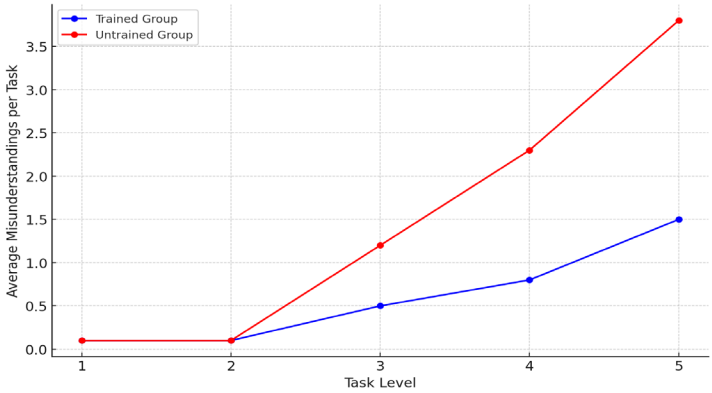


Figure 6: Frequency of chatbot misunderstandings (per turn)

For Level 1 and Level 2 tasks, misunderstandings were infrequent, averaging just 0.1 mistakes per task in both groups. This low rate once again reflects the simplicity of interaction at low complexity levels. As the task complexity increased, the difference in misunderstanding rates between the trained and untrained groups became more notable. By Level 4, the trained group averaged 0.8 misunderstandings per task, whereas the untrained group encountered 2.3. This suggests that the untrained group had more difficulty framing their inputs effectively. For the most complex Level 5 tasks, the trained group had 1.5 misunderstandings per task compared to 3.8 for the untrained group. The substantial difference demonstrates the significant challenges the untrained group faced in communicating effectively with the chatbot for complex tasks.

The feedback interviews (with two groups, each comprising 12 participants) revealed numerous similarities in the participants' reactions to their human–chatbot experience. Both research groups found their experience to be quite successful, with the tasks being easy and understandable. Still, detailed questioning revealed specific differences in the task fulfilment between the Experimental and Control groups. The students from the Control group, who did not receive special prompting instruction, initially struggled with more complex tasks, especially at the beginning of the experiment. However, most of them developed effective prompting strategies independently over time. This was particularly evident in Level 4–5 tasks (tasks that involved personal customization, larger context, and emotional intelligence), where some untrained participants spontaneously adopted techniques similar to those taught to the

Experimental group during the training session. For example, the Control group members learned to use more specific language (e.g., "reformulate the task", "give your considerations in accordance with the data provided", and so on) or give more context and data for processing (e.g., by putting all the details together as one query), which helped them improve their task completion rates and satisfaction over time. However, despite these adaptive strategies, the untrained group generally lagged behind the trained Experimental group in performance and the number of chatbot misunderstandings, particularly in Level 5 tasks. This suggests that while users can develop practical prompting skills independently, formal training accelerates this learning process and enhances the overall quality of human-computer interaction.

When asked to compare their impressions about chatbot interaction, the interviewees from both groups consistently reported that human–human interactions, particularly those involving complex problem-solving or creative tasks, seemed to them more flexible and adaptive. This is partly because humans can reach understanding halfway and use channels other than written speech communication, such as non-verbal cues, which, in the participants' opinion, often lead to more efficient and satisfying outcomes compared to human–computer interactions. Additionally, it was noted that in a similar human-human task completion scenario involving complex tasks, the average number of conversational turns needed to complete the task was expected to be significantly lower. This was explained by the humans' ability "to anticipate misunderstandings", proactively "provide context", and "take the emotional aspect of communication into account", something chatbots currently struggle with. As a result, satisfaction levels in human–human interactions were expected to be higher in both groups.

Finally, the Experimental group members mentioned the positive effect of the prompting training session on the results of their human-chatbot interaction. The short period of prompting instruction (90 minutes, the Training Phase), in the Experimental group's opinion, considerably facilitated Level 2–3 task completion because the participants had learned the key principles of task contextualization; however, the training was not enough for Level 4–5 tasks' successful completion, where hands-on practice and making situational prompting decisions seemed more beneficial. This was also reflected in the Experimental group's low satisfaction levels with Level 4–5 tasks, as explained by the high number of [chatbot's] misunderstandings, evidenced by both groups.

5 Discussion

This section aims to answer the study's research questions:

What key challenges do participants face when adopting traditional human communication strategies in human-chatbot interaction? – The case study participants (both groups) faced several challenges in adapting traditional human–human communication strategies to human–chatbot interaction. One major challenge was shifting from a natural, context-driven communication style to a more explicit and structured one. This challenge was reflected in the study through the increased cognitive load associated with the participants' structuring inputs in a way that the chatbot could accurately interpret and respond to them. In several cases, chatbot users had to learn to anticipate potential complexities and proactively clarify their requests to ensure the chatbot understood their intent.

The feedback interviews demonstrated that the absence of implicit cues and non-verbal communication in human–chatbot interactions also negatively impacted users' ability to convey complex or context-dependent information. The participants complained that "chatbots cannot interpret their emotions", and it is problematic to "meet understanding halfway". These limitations required the users to rely solely on explicit language and structured prompts, which could be challenging, particularly in foreign language communication. As a result, the research participants had to engage in clarification and correction exchanges, subconsciously referring to Grice's Maxims of Quality, Quantity, Relevance and Manner, to achieve their desired outcomes.

This way, the experiment reaffirmed the findings of earlier papers (Lai, 2025; Kecskés & Dinh, 2025), which claim that the lack of common ground, absence of mutual communicative effort, and malfunctioning cooperative principle in human-chatbot interaction may seriously damage general communication effectiveness. These findings contribute to the existing body of knowledge, aligning with Teng's (2024, p. 8) concerns about "the formal and impersonal nature of ChatGPT's responses", noting that it lacks the "human touch and emotional understanding that a human evaluator or peer might provide".

On the other hand, the study revealed that the participants who received a pragmatics-based prompting training formulated their inputs more efficiently. This process can be interpreted as an example of interagency, where the human participant actively shapes the chatbot's responses while the machine contributes computational processing, resulting in a jointly constructed communicative outcome.

Additionally, post-experiment analysis of collected data indicated that many untrained participants began to develop effective prompting strategies

independently (on the go). This suggests that while the adaptation process is challenging, users can learn and refine their communicative strategies through repeated interactions with chatbots.

How do prompting strategies influence communication effectiveness in human-chatbot interactions compared to traditional human-human communication? – In line with previous studies, for example, Dolenc and Brumen (2024), prompting strategies significantly enhance communication effectiveness in human–chatbot interactions, particularly as task complexity increases. Our study demonstrates that the participants trained in prompting techniques achieved higher task completion rates, took fewer turns in high-complexity tasks, and had fewer misunderstandings than those who were untrained.

For simple tasks (Level 1 and Level 2), the completion rates were almost identical between the trained and untrained participants, suggesting that fundamental interactions with chatbots do not require specialized prompting skills. However, as the tasks became more complex (Level 4 and Level 5), the trained group's task completion rates were significantly higher compared to the untrained group, highlighting the importance of effective prompting in complex scenarios. The study suggests that well-developed prompting skills in chatbot interactions help users adopt a more deliberate and structured approach in communicative exchanges. Formal training in prompting accelerates the human-chatbot interaction process, resulting in more consistent and reliable outcomes.

The study is not without limitations. The sample size of 24 participants is relatively small, which limits the statistical power and generalizability of the findings beyond the specific educational context in which the study was conducted. Additionally, while varied in complexity, the tasks used in the experiment may not fully capture the breadth of real-world interactions that users might have with chatbots. Furthermore, the study primarily focused on short-term interactions, leaving open questions about how users' prompting skills might evolve with the long-term use of chatbots and how these skills might influence other forms of communication.

6 Conclusion

The study found that brief periods of instruction in prompting strategies significantly increase the efficiency of human-chatbot interaction, reduce the number of turns required to complete a communicative task, decrease the number of misunderstandings, and positively impact the task completion rate. However, the positive influence of prompting instruction is primarily noticeable in high-complexity tasks (such as synthesis, analysis, and emotional response).

Although most communicative tasks in the experiment were eventually successfully completed, during the feedback interviews, the participants highlighted significant and sometimes unexpected differences between human-human and human-chatbot interactions arising, despite the prior prompting training. The experiment demonstrated that effective human-chatbot interactions require significant effort from users to minimize ambiguity and optimize their inputs for machine processing, in contrast to human-human interactions, where interlocutors can rely on shared knowledge, implicit cues, and nonverbal communication to convey meaning more quickly and easily.

Despite these challenges, the study underscores the didactic value of engaging with chatbots as a tool for developing practical communication skills. Training in prompting techniques enhances the ability of FL learners to interact successfully with chatbots by improving their socio-pragmatic awareness and highlighting the strategic importance of clarity, specificity, and precision in communication.

Further studies may consider expanding the sample size and including a more diverse group of participants in the experiment to ensure the findings are more broadly applicable. Additionally, incorporating a wider range of tasks, including those that involve more complex, context-dependent, or creative communication, could provide a more comprehensive understanding of the challenges and benefits associated with human–chatbot interaction. Longitudinal studies that track changes in users' communication strategies over time could also provide valuable insights into the long-term impact of engaging with chatbots on the development of communication skills. It is expected that this kind of research will explore the transferability of these skills to various communication contexts.

Appendix

The Prompting-Training Session (90 min.)

Session Objective: to equip participants with practical knowledge and skills for optimizing AI chatbot interactions based on Grice's Maxims: Quality, Quantity, Relevance, and Manner.

Session Outline:

Introduction and Objectives (15 minutes)

Explanation	Activities
Introduction to Grice's Maxims and their relevance to effective prompting.	Brief overview of AI tools.

Maxims of Quality and Relevance: Fact-Checking and Error Correction (20 minutes)

Explanation	Activities

Importance of verifying chatbot-generated information. Strategies for identifying inaccuracies (fact-checking).	Participants prompt the chatbot with factual queries (e.g., historical dates, scientific facts). Evaluate the responses for accuracy (fact-checking). Discuss corrections and refine prompts.

Maxim of Quantity: Ensuring Relevance (20 minutes)

Explanation	**Activities**
How to craft prompts that minimize irrelevant responses. Techniques for balancing detail and brevity.	Provide an open-ended task (e.g., "Describe renewable energy".) Participants refine the prompt to focus on specific aspects (e.g., "List three benefits of solar energy for households".) Share results and discuss the impact of refining prompts.

Maxim of Manner: Structuring Responses (20 minutes)

Explanation	**Activities**
Importance of clear, consistent output formats. Examples of structured outputs (tables, bullet points, summaries).	Participants prompt the chatbot for specific formats (e.g., "Create a table comparing solar and wind energy".) Evaluate the clarity and usefulness of the formatted output.

Wrap-Up and Q&A (15 minutes)

Activities
Recap of key techniques: fact-checking, relevance control, and output structuring. Discuss challenges encountered during activities and how to address them. Q&A session for additional clarification.

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