

MSc Interaction Technology
Final Project

Designing Emotional Support
Chatbots with Enhanced
Active Listening Through
Prompt Engineering

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Abstract

The increasing number of international students grappling with mental health challenges necessitates innovative solutions. This study addresses this issue by developing an emotionally supportive chatbot equipped with active listening capabilities through prompt engineering. Given the severe consequences of mental health issues, including suicide, and the growing recognition of mental health as equally important as physical health, this research aims to contribute to a critical area of need. Evaluation results indicate that the developed chatbot is perceived positively in terms of its appropriateness, support, and utility. While the chatbot was well-received, feedback also suggested areas for improvement, such as reducing response length.

Keywords: Chatbot, Large language model, Emotional Support, International student, Active Listening, Prompt Engineering, Chain of Thought, Heuristic, Zero-shot, Few-shot

Chapter 1

Introduction

An increasing number of students are opting to study abroad [41]. This trend underscores a heightened pursuit of personal development, including acquiring a global perspective, enhancing self-confidence, and immersing in diverse cultures and career opportunities. Nevertheless, a trend also highlights the significant mental health challenges encountered by international students [56]. These challenges are predominantly caused by anxiety related to language barriers, cultural differences, and separation from family [29, 30, 86, 45, 113]. This issue is further exacerbated by the ongoing global mental health crisis. According to the World Health Organization (WHO) [108], nearly one billion people suffer from conditions such as depression and anxiety. Additionally, depression is a leading cause of disability worldwide and a major factor in the global disease burden [7].

Addressing this issue is imperative. To understand how international students seek help in the face of these challenges, we posed the first research question: **What are the preferred sources of mental health support among international students when they face mental health struggles? (RQ1)**

A comprehensive literature review was implemented in response to RQ1 and reveals the importance of companionship for international students while studying abroad. Specifically, international students often prefer conversing with peers rather than seeking assistance from mental health professionals.

In addressing these challenges, chatbots have emerged as a promising solution. As behavioral intervention tools (BITs), chatbots offer a potential solution by integrating psychological principles with technological advancements across various media platforms [90]. Research indicates that chatbots, particularly those available via mobile applications, can be more accurate than traditional self-reporting methods for tracking health data [33]. Studies have demonstrated that extensive use of BITs, including chatbots, can significantly enhance mental health, showing substantial reductions in depression symptoms [39, 2, 87]. A 2022 study [57] compared self-help therapy through a chatbot with basic bibliotherapy, a form of therapy that uses reading to mitigate mental health issue, for young adults aged 19-28, revealing that the chatbot was more effective. This suggests that chatbots have significant potential in alleviating mental health issues compared to traditional treatments. Furthermore, randomized controlled trials support the efficacy of both chatbots and smartphone interventions in reducing anxiety levels [2]. This expanding body of research highlights the potential of chatbots in mental health therapy, demonstrating that integrating psychological approaches with technological innovations can significantly

improve treatment outcomes and decrease depression and anxiety [19, 109, 55, 83, 6].

Given the potential solution of chatbots, our objective is to develop one as a companion character for international students. We have incorporated Active Listening skills into the prompts of a large language model-based chatbot to enhance its role as a supportive companion. To assess how prompt engineering affects the chatbot's Active Listening capabilities, we pose the second research question: **Which prompt strategy will be most effective for a chatbot with a supportive character? (RQ2)** We experimented with various prompt strategies to identify the most effective combination. We evaluated these prompts by selecting the top four conversations generated by the chatbot using different prompts and having users review them, thereby identifying the prompts that received the most favorable feedback.

Hence, we have our third research question: **How do users perceive the appropriateness, supportive characteristics, and overall usefulness of the chatbot? (RQ3)** In this stage, we conducted an experiment. Participants first interacted with the chatbot and then participated in a semi-structured interview to provide their feedback, focusing on the chatbot's appropriateness, companion qualities, and general usefulness.

In this thesis, we first present the background in Chapter 2, and we examine the most common help-seeking behaviors in Chapter 3 to answer the first research question. Subsequently, we discuss prompt engineering and design the experiments to examine Active Listening capabilities in Chapter 4. We discuss preselection of best performance among designed conversations by researcher in Chapter 5, and the user feedback from survey in Chapter 6. Afterward, we do one design iteration, analysis feedback and final evaluations in Chapter 7. Lastly, we discussed the study and make conclusion in Chapter 8 and 9.

Chapter 2

Background

2.1 Mental health Issues Encountered by International Students

According to a survey conducted by the Institute for IES [41], an increasing number of students are choosing to study abroad. The survey suggests that this trend is driven by a desire to develop a well-rounded global perspective, boost self-confidence, gain a deeper understanding of different cultures and biases, and explore potential career paths. International students, however, face significant mental health challenges, particularly anxiety. Research conducted in 2008 [30] compared the mental health of American permanent residents and international students. This study found that international students from different continents experienced various levels of anxiety, such as language barriers and separation from family. A 2017 journal [86] highlighted that environmental, cultural, and language barriers limit the self-expression of international students. This limitation can lead to feelings of anxiety and fear due to the unknown. Further research by Jung et al. [45] demonstrated that non-native English speakers, especially older students, are more prone to anxiety. This anxiety stems from the unfamiliarity of the academic environment and the challenges of adapting to a new life. Several studies have shown that a large number of international students experience anxiety due to two main factors: the fear of negative evaluation and the worry of speaking inaccurately [30, 86, 45, 113], which can lead to students staying silent during group discussion. In 2022, a global report from WHO [92] emphasized the importance of improving mental health and overall well-being.

2.2 Chatbots

Chatbots, as one of behavioral intervention tools (BITs), emerge as a potential solution for addressing diverse health requirements by merging the advantages of psychology and technology through various media channels [90]. Research suggests chatbots, specifically those delivered via mobile apps, can be more accurate than traditional self-reporting methods for tracking health data [33]. Studies using quasi-experimental designs have shown that intensive use of BITs, including chatbots, can significantly improve mental health. These interventions have been linked to considerable reductions in depression symptoms [39, 2, 87]. A 2022 [57] study compared self-help therapy delivered through a chatbot to receiving basic reading materials (bibliotherapy) for young adults aged 19-28. The study found that the chatbot was more effective: it reduced depression over the entire 16-week intervention pe-

riod and anxiety within the first 4 weeks. This suggests the chatbot’s potential for reducing the issues of mental health compared to the physical treatment. Furthermore, randomized controlled trials indicate that both chatbots and smartphone interventions can effectively decrease anxiety levels [2]. This growing body of research highlights the potential of chatbots in mental health therapy. By integrating psychological approaches with technological advancements, chatbots offer significant promise for improving treatment outcomes and reducing depression and anxiety [19, 109, 55, 83, 6].

Mainly, there are three types of chatbots: rule-based chatbots, retrieval-based chatbots, and generative chatbots. Rule-based chatbots follow predefined rules and scripts to respond to user input, this sort of chatbot is suitable for simple and predictable interactions [37]. Retrieval-based chatbots utilize a database of responses to find the most relevant answer to a user’s input. They are suitable in scenarios requiring accurate information retrieval [72]. Generative chatbots, particularly those based on large language models (LLMs), generate responses dynamically by understanding and processing natural language, offering greater flexibility and a more conversational experience [3, 72]. In this study, we focused on the generative chatbot, in particular based on LLMs chatbot, since an LLM-based chatbot can enhance user interaction by providing more natural, coherent, and contextually relevant responses, improving user satisfaction and engagement [3, 72]. Therefore, the related work of the technology behind LLMs chatbot will be shown in the next section.

2.3 The Technology Behind Large Language Models Chatbot

To get to know and improve the outcome of Large Language Models (LLMs) chatbot, we conducted a comprehensive background study on LLMs. This included understanding the core concepts of LLMs, transformers, pre-training, and how prompts function. This research helped us establish the relationships between chatbots, LLMs, prompts, dialogue, and other crucial elements for successful chatbot design.

The Chatbot is a key application of Large Language Models (LLMs). LLMs are one of the most innovative technologies in artificial intelligence, designed to understand and generate human language through a foundational structure known as the transformer. This architecture allows LLMs to process language with unprecedented depth, handling long-range dependencies in text more effectively than earlier models [35]. Notable examples of LLMs include models like GPT [78] [11], T5 [79], LLaMa [97], and DBRX [95]. The applications of LLMs cover a wide range of tasks, such as text generation, translation, summarization, content rewriting, classification, sentiment analysis, and conversational AI. Chatbots leverage LLMs for their functionality. The technology behind chatbots, also known as chat models, relies on two main components: Natural Language Understanding (NLU) and Natural Language Generation (NLG). These technologies enable the bot to engage in conversations with users.

A chatbot operates through several key components, as illustrated in Figure 2.1. The process starts with User Input, where the user sends a message to the system. The NLU component processes this message, performing Intent Recognition to determine the user’s intent and Entity Recognition to extract key information. The Tracker updates the dialog state and manages slots by storing the extracted information. The Dialog Manager then

makes decisions based on the current dialog state and manages the dialog policy to determine the conversation strategy. Finally, the NLG component generates a response based on these decisions, and the System Output sends the generated response back to the user.

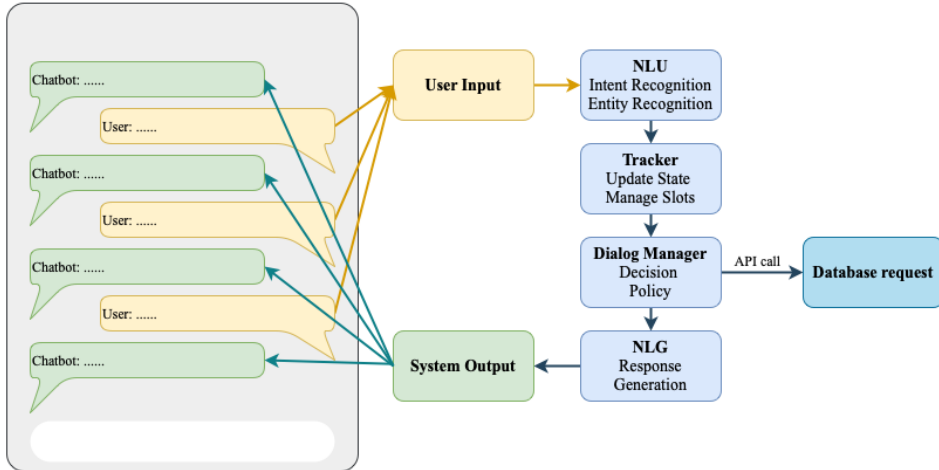


FIGURE 2.1: A chat model architecture

2.3.1 Pre-training

In LLMs, pre-training is the process of training a model on a large amount of unannotated text data to learn the fundamental structure and semantics of a language [64]. Through self-supervised learning techniques, the model sifts through this data to grasp the fundamental structure and semantics of the language. In essence, pre-training equips the models with foundational knowledge of grammar, vocabulary, and how words interact within context. This pre-trained understanding significantly enhances the models performance and efficiency when tackling specific language tasks like translation, text generation, and sentiment analysis [22].

2.3.2 Prompts

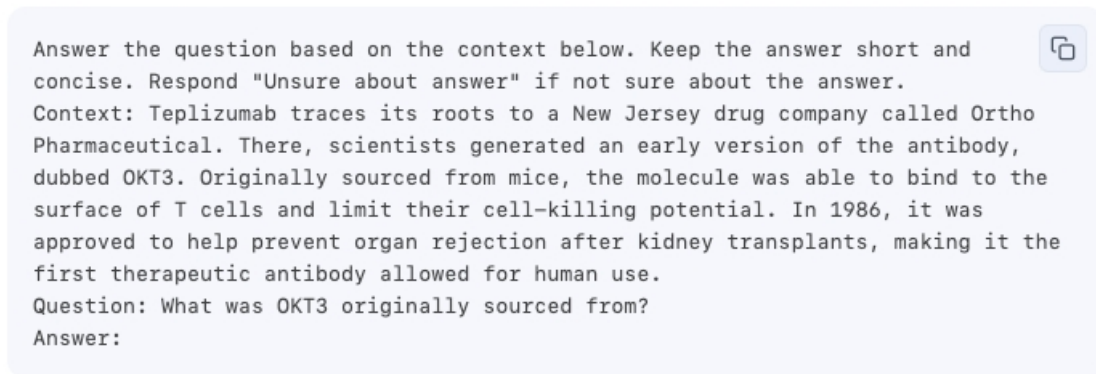
Prompts serve as the cornerstone of interaction with language models. As defined by Atlas (Atlas.ti 2023), a prompt is an input or instruction given to a model to elicit a specific response. These directives are essential for guiding large language models (LLMs) towards generating relevant and contextually appropriate outputs. Effective prompts enhance user experience by fostering natural conversation flow and ensuring responses align with the desired outcome. Beyond improving user interaction, prompts can also be leveraged to optimize chatbot functionality, such as automating processes, enforcing rules, and enhancing the quality and diversity of generated text [96, 61].

The design of prompts can be tailored to achieve various objectives. For example, Figure 2.2 illustrates a prompt specifically constructed for question answering. These prompts

typically combine instructions, context, user input, and desired output formats to optimize model performance. While not all components are mandatory, incorporating them is generally recommended to refine the model's understanding and improve response accuracy [61]. Similarly, Figure 2.3 presents a prompt for information extraction. It's important to note that language models excel in a wide range of natural language processing (NLP) tasks beyond text generation, including classification.

By significantly enhancing the quality and relevance of language model responses, prompts contribute to more effective and user-friendly interactions. Skilled prompt engineering can transform models into engaging conversational partners, capable of mimicking the behavior of friends, professionals, or clients [75]. Moreover, well-crafted prompts empower chatbots to generate linguistically diverse and contextually appropriate outputs, essential for maintaining dynamic and natural conversations [104].

Prompt:



Output:

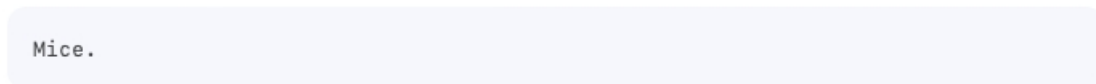


FIGURE 2.2: A prompt for question answering. Source: <https://www.promptingguide.ai/introduction/examples>

Prompt:

Author-contribution statements and acknowledgements in research papers should state clearly and specifically whether, and to what extent, the authors used AI technologies such as ChatGPT in the preparation of their manuscript and analysis. They should also indicate which LLMs were used. This will alert editors and reviewers to scrutinize manuscripts more carefully for potential biases, inaccuracies and improper source crediting. Likewise, scientific journals should be transparent about their use of LLMs, for example when selecting submitted manuscripts.
Mention the large language model based product mentioned in the paragraph above:

Output:

The large language model based product mentioned in the paragraph above is ChatGPT.

FIGURE 2.3: A prompt for information extraction. Source: <https://www.promptingguide.ai/introduction/examples>

Chapter 3

Preferred Sources of Mental Health Support

Our research aimed to develop a chatbot to address the mental health challenges faced by international students. Initially, we focused on identifying the most common help-seeking behaviors among this population to inform the chatbot's design. Additionally, we sought to understand the underlying causes of mental health issues to provide more comprehensive support.

To achieve these goals, we conducted a comprehensive literature review. Our first research question was: **What are the preferred sources of mental health support among international students when they face mental health struggles according to the literature?** By understanding these preferences, we could equip the chatbot with features and information.

A comprehensive literature review was chosen as the most suitable approach due to the challenges of conducting a survey that captures the diverse experiences of international students globally [18]. This review allowed us to examine existing research on the mental health concerns of international students, their help-seeking behaviors, and potential interventions. The findings from this review will inform the development of our chatbot and provide valuable insights into the mental health needs of international students.

3.1 Search Strategy

To understand the preferred sources of mental health support among international students over the past five years, we conducted a comprehensive search for relevant academic articles and conference papers published from 2019 to 2024. We utilized a variety of databases, including Google Scholar, IEEE, PubMed, and ProQuest, employing search terms like "international," "mental health issue," "cause," and "study abroad." This yielded a substantial amount of data: 17 articles from IEEE, 49 from PubMed, and 1235 from Scopus, reflecting the extensive research available on this topic.

3.2 Inclusion and exclusion criteria

We implemented a selection process for these articles and papers identified in our search. Only English-language articles and papers published between 2019 and 2024 were included. These articles and papers had to center on international students and mental health, specifically topics like anxiety, depression, or related issues. Additionally, open access was required. Any articles not meeting these criteria were excluded. Furthermore, we eliminated duplicates across platforms to guarantee data integrity. This selection resulted in 38 high-quality articles and papers, detailed in the accompanying PRISMA flow diagram 3.1 [71]

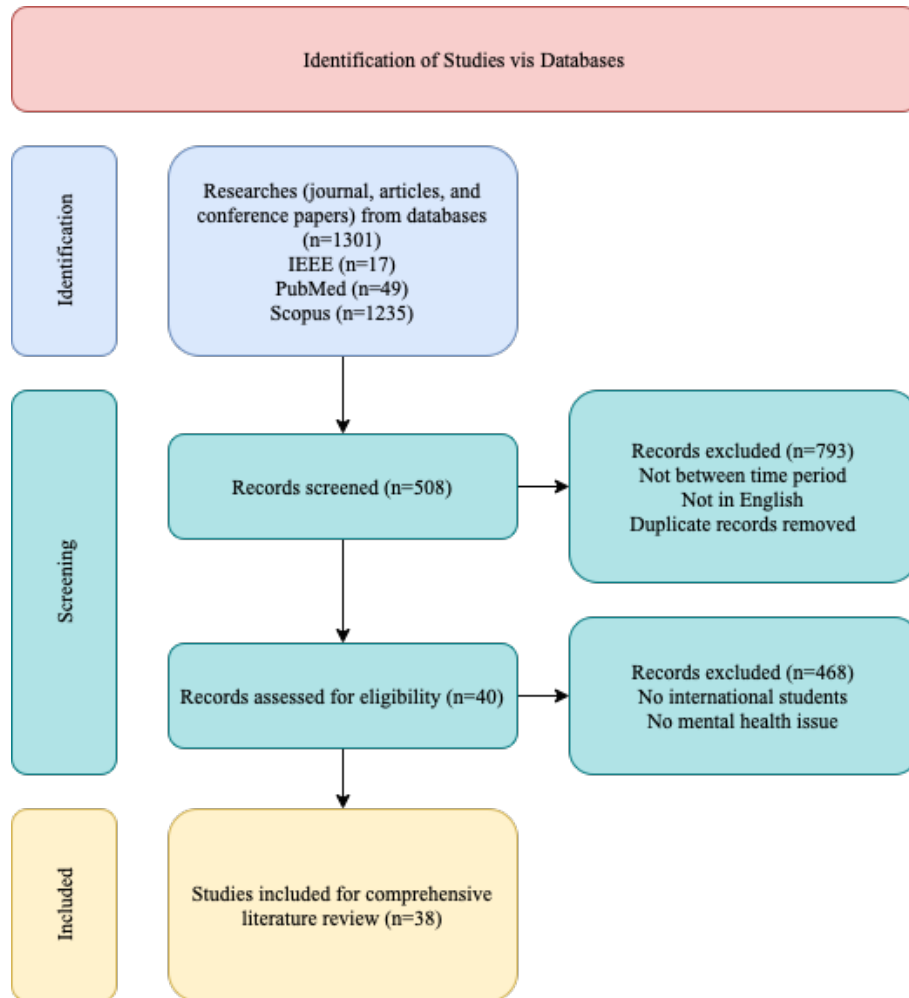


FIGURE 3.1: PRISMA

3.3 Methodology for the Analysis

The specific details of preferred support sources and student concerns can be found in the Appendix A. This section dives into the key findings from the research articles we analyzed. We focused on identifying the most common sources of support that international students rely on when facing mental health difficulties. Additionally, we pinpointed the specific mental health concerns highlighted within these studies. With this data in hand,

Labeled Group Name	Terms Belonging to the Group
Enhanced Help-Seeking	"help-seeking", "mental health literacy", "academic support"
Systematic Support and Community Building	"systematic support", "community", "distinct spaces for support"
Social Support	"social support", "family", "friends", "social connections"
Cultural Adaptation	"cultural adaptation", "cultural differences", "acculturation"
Language and Academic Support	"English proficiency", "teaching methods", "curriculum design", "collaborative effort between the government and universities"
Awareness and Stigma Reduction	"awareness", "stigma"

TABLE 3.1: Labeled Group Name and the Corresponding Terms

we'll perform a frequency analysis to uncover patterns and relationships. This analysis will involve pattern-matching. We grouped related terms together, revealing the most frequent themes. This will provide a deeper understanding of the support needs and challenges faced by this international student population.

To systematically analyze the data, we constructed a table summarizing the most frequently cited preferred sources of mental health support and the primary causes of mental health issues among international students. From this table, we manually extracted key terms representing the preferred sources and categorized them into similar groups. Subsequently, we quantified the frequency of occurrence of these categories within our literature review as shown in Table 3.1. Furthermore, to identify the main concerns of international students, we classified various terms into specific groups as illustrated in Table 3.2. Each category was carefully labeled to reflect the specific nature of the challenges discussed in the terms grouped under it.

3.4 Results

The analysis reveals several key issues and potential solutions impacting international students, organized by the frequency of related terms appearing in a referenced article. Based on our comprehensive literature review, the analysis reveals that social support is the most prevalent help-seeking behavior among international students, with a total of nine occurrences. This category includes terms such as social support (6), family (2), friends (3), and social connections (1). Enhanced help-seeking behaviors also appear prominently, with seven instances, including help-seeking (6) and mental health literacy (2). Awareness and stigma reduction is another significant area, with six occurrences, including awareness (3) and stigma (4). Cultural adaptation, with four mentions, also plays a crucial role in the help-seeking behaviors of international students, incorporating terms like cultural adaptation (1) and cultural differences (3). Language and academic support are identified three times, focusing on English proficiency (2), teaching methods (1), curriculum design (1),

Labeled Group Name	Terms Belonging to the Group
Cultural and Language Adaption	"cultural", "acculturative stress", "language", "understanding of Chinese ", "English ", "identity"
Issue of Sense of Belonging	"loneliness", "homesickness", "hopelessness ", "change in- ", "belonging", "cultural", "acculturative stress"
COVID-19 related issues	"COVID-19"
stigma issues	"stigma ", "raci- ", "discrimination"
academic issues	"academic"
financial issues	"financial", "rising living costs"
saperation	"separation", "far from permanent residence"

TABLE 3.2: Labeled Group Name and the Corresponding Terms of the Causes

and collaborative efforts between the government and universities (1). Lastly, systematic support and community building are the least frequent, with only two mentions, consisting of systematic support (1) and community (2).

Of which, social support is a network of people who provide us with help and comfort, especially when we're stressed or struggling with mental health. This network can include family, friends, colleagues, and even community groups. Social support can take many forms, including emotional support (like empathy, caring, and love), practical help (like running errands or providing childcare), informational support (like offering advice or sharing knowledge), and even feedback (both positive and constructive). The social support mentioned in this study is the emotional support specifically. Based on the findings, students indicated that they felt more comfortable talking to friends and family about their problems than seeking help from a professional. This is likely because they feel closer to and more trusting of their loved ones and the unaccessibility of the local healthcare system [10, 15, 65].

We can see the statistics of the main concerns among international students in Table 3.4. We identified various terms and classified them into relevant categories based on the main concerns of international students. These insights provide a comprehensive view of the areas requiring attention and action to support international students effectively.

The analysis reveals several key issues and potential solutions impacting international students. Social support is the most prevalent help-seeking behavior, followed by enhanced

Labeled Group Name	Terms and Their Counts
Social Support (9)	social support (6) [63, 10, 81, 76, 51, 88], family (2) [10, 65], friends (3) [10, 15, 65], social connections (1) [21]
Enhanced Help-Seeking (7)	help-seeking (6) [47, 14, 13, 15, 58, 65], mental health literacy (2) [47, 13]
Awareness and Stigma Reduction (6)	Matched Terms: awareness (3) [112, 15, 60], stigma (4) [112, 13, 58, 60]
Cultural Adaptation (4)	cultural adaptation (1) [103], cultural differences (3) [14, 15, 20]
Language and Academic Support (3)	English proficiency (2) [110, 43], teaching methods (1) [43], curriculum design (1) [43], collaborative effort between the government and universities(1) [48]
Systematic Support and Community Building (2)	systematic support (1) [99], community (2) [99, 21]

TABLE 3.3: The Terms and Their Counts in Labeled Groups

Labeled Group Name	Terms and Their Counts
Cultural and Language Adaption (17)	cultural (9) [53, 14, 110, 112, 43, 51, 15, 103, 20], acculturative stress (5) [51, 49, 65, 66, 88], language(8) [110, 13, 15, 103, 60, 48, 20, 66], understanding of Chinese (1) [53], English (1) [110, 43, 66, 88], identity (2) [23, 13]
Issue of Sense of Belonging (16)	loneliness (3) [110, 112, 59], homesickness (1) [110], hopelessness (1) [38], change in- (3) [21, 110, 51], belonging(1) [110], cultural (9) [53, 14, 110, 112, 43, 51, 15, 103, 20], acculturative stress (5) [51, 49, 65, 66, 88]
COVID-19 related issues (14)	COVID-19 (14) [40, 63, 74, 53, 10, 99, 42, 81, 38, 76, 68, 93, 48, 67]
stigma issues (8)	stigma (2) [112, 13, 58, 60], raci- (2)[110, 59], discrimination(3) [10, 110, 88]
academic issues (5)	academic (5)[47, 99, 110, 43, 48]
financial issues (2)	financial (2) [40, 38], rising living costs (1) [21]
saperation (2)	separation (1) [10], far from permanent residence (1) [40]

TABLE 3.4: The Terms of Cause and Their Counts in Labeled Group

help-seeking behaviors, awareness and stigma reduction, cultural adaptation, language and academic support, and systematic support and community building. Emotional support from friends and family is preferred over professional help due to closer, more trusting relationships and the inaccessibility of local healthcare systems. Additionally, the main concerns of international students are categorized into "cultural and language adaptation," "COVID-19 related issues," "issue of sense of belonging," "separation," "academic issues," "stigma issues," and "financial issues."

3.5 Discussion

This study aims to develop a chatbot with a supportive character tailored to assist international students in their study abroad journey. The answers to first research question highlight that international students prefer emotional support, providing empathy and companionship, desiring having friends or family around them. The chatbot should recognize signs of stress and offer comforting responses. Additionally, it should encourage

students to seek professional help when necessary by providing information on available support services, such as counseling centers.

To be a supportive character, the chatbot should deliver emotional support and promote help-seeking behavior. Emotional support comprises offering and receiving care, love, trust, empathy, respect, and admiration. According to Attachment Theory, individuals benefit from having reliable confidants who provide emotional support, which enhances their well-being [25]. Providing emotional support involves mindful listening, understanding, confirming people’s sentiments, validating their emotions, and demonstrating empathy [91]. Encouraging help-seeking behavior is crucial, as indicated by the results of the first research question.

Studies show that active listening is a high valued listening skill among both academics and practitioners and involves techniques like paraphrasing, asking questions, and maintaining nonverbal cues to demonstrate engagement [106]. It is essential for building empathic communication, which is a cornerstone of success in helping professions. Implementing active listening in conversations fosters a safe and stimulating environment for young people to express themselves freely, building trust and self-esteem [31, 94, 100].

3.5.1 Active Listening

The ability to listen effectively is crucial for being a successful listener in a communication. Abboud, A. K. (2018) identified various listening skills, including active listening, discriminative listening, and empathetic listening, among others. The paper highlights these three techniques as particularly effective [1].

Active listening requires the listener to fully focus on the speaker, provide feedback, and demonstrate understanding of the information being conveyed. This ensures the speaker feels heard and facilitates clear communication. Discriminative listening, on the other hand, focuses on distinguishing different sounds within speech. This includes identifying pitch, tone, and the emotions these elements convey. Empathetic listening, also known as therapeutic listening, involves understanding the speaker’s feelings beyond their words. It requires the listener to closely observe the speaker during the conversation and pay attention to emotional cues.

However, both discriminative listening and empathetic listening necessitate a level of observation that is difficult to implement in a chatbot. For these reasons, our project focuses primarily on active listening techniques. By incorporating active listening, we can build a chatbot that effectively engages in communication and understands user intent.

Active listening is a back-and-forth process where the listener truly engages with the speaker’s message [28]. It requires actively receiving, understanding, and reflecting back on the content. This creates a sense of shared space in the conversation, ensuring both parties are on the same page and fostering a deeper connection. Effective active listeners prioritize understanding the speaker first then being realized as listeners.

Based on result, the output of chatbot should involve two key aspects, content-focused and emotion-focused one. In a content-focused one, listeners should paraphrase the content to ensure they have correctly understood it. This also involves clarifying the speaker’s

emotions, whether in-person or online, to ensure both parties are aligned in their understanding. Afterwards, summarizing the reply could help the speaker feel that their message has been processed and not just repeated. This shows that the listener has engaged with the content thoughtfully. Moreover, in active listening, the emotional aspect should be handled without judgment. Speakers need encouragement rather than strict instructions on what they should do [8, 34, 28].

These principles apply to both physical and online scenarios; however, there are notable differences between the two. In online interactions, clarifying emotions becomes more crucial than in physical settings [101]. Due to the inability to observe facial and body expressions online, clarifying emotional intent helps reduce misunderstandings. Regarding content-focused communication, constantly paraphrasing and summarizing can lead to excessively long text messages in online conversations, which may cause speaker fatigue. Therefore, in online scenarios, it is important to be concise to maintain effective active listening without overwhelming the speaker with lengthy texts.

3.6 Conclusion

This analysis provides valuable insights for creating a chatbot that effectively supports international students. To building a supportive chatbot, there are some key characteristics the chatbot should have. **Emotional Support:** The chatbot should act like a friend or family member, offering empathy, companionship, and emotional support. It should be able to recognize signs of stress and provide comforting responses. **Encouraging Help-Seeking:** The chatbot should play a crucial role in encouraging students to seek professional help when needed. It can achieve this by providing information on available support services, such as counseling centers. **Reducing Stigma and Raising Awareness:** The chatbot can help reduce the stigma surrounding mental health issues by providing information and encouraging open conversations about these topics. This will raise awareness and make it easier for students to seek help without feeling judged. **Language Support:** Recognizing the language barrier, the chatbot should offer multilingual support or direct students to language learning resources. This will make it easier for students to communicate effectively and access all the support the chatbot offers. To achieve emotional support and encouraging help-seeking, we implemented active listening capability in the chatbot. However, in terms of reducing stigma and raising awareness and language support, due to the time and resource constraint, we would not focus on these two characteristics in the study. As of active listening, it is a four-step process: paraphrasing to ensure understanding, clarifying emotions to build connection, summarizing to validate the message, and encouraging the speaker to continue sharing. By incorporating these characteristics, the chatbot can become a valuable tool for international students. It can address their main concerns, provide comprehensive support, and ultimately enhance their well-being and academic success.

Chapter 4

Design

The goal of this study is to develop a chatbot capable of listening, empathic communication, offering therapeutic resources, and building trust. Due to ethical considerations, the chatbot will not provide direct therapeutic interventions or resources. The study aims to enhance the supportive character of the LLM-based chatbot to ensure international students feel accompanied and heard. To achieve this, two primary approaches to improve LLM outputs are prompt engineering and fine-tuning [77].

Prompt Engineering: This involves crafting specific instructions that guide the LLM towards the desired response without modifying the underlying model structure. Common techniques include few-shot prompting, analogical prompting, heuristic prompting, and chain of thought prompting [96, 61].

Fine-Tuning: This approach involves further training a pre-trained LLM on a new dataset focused on a specific domain, enhancing its response capabilities for nuances not covered in its initial training. For example, fine-tuning an LLM on medical records could enable it to generate personalized treatment plans by recognizing subtle variations in patient data [77].

Given the diverse challenges faced by international students, using a narrow dataset for fine-tuning is impractical. Thus, prompt engineering is deemed more suitable for guiding the model's responses to address these diverse needs accurately.

To develop the chatbot with active listening capacity, the second research question is as follows: **Which prompt strategy will be most effective for a chatbot with a supportive character? (RQ2)**

This section aims to systematically and empirically determine the most effective prompt strategy to enhance the chatbot's supportive character, particularly its capacity for active listening. The methodology involves several steps: first, a diverse set of chatbot conversations is generated using various prompt strategies to explore different ways of achieving empathetic and supportive interactions. Since the best strategy is unknown, all possible variations are created. Researchers then evaluate these conversations based on specific criteria to identify the most promising examples for detailed user research. To prevent information fatigue [84] among users, the researchers select the top four conversations for further analysis. User feedback is then gathered on these selected conversations, focusing on their perceived active listening skills. This feedback helps identify the most effective

conversational elements and user preferences. Through this iterative process, the research aims to develop a chatbot capable of providing tailored, empathetic, and supportive interactions for international students. The methodology is summarized as follows:

Methodology:

1. Generate 12 different conversations based on 12 different prompt strategies.
2. Preselect the best four conversations using specific criteria.
3. Conduct a user research survey to gather feedback on how active listening skills are perceived in the four generated conversations.
4. Determine the best performance from the user's perspective and identify their preferences for conversational elements.

Based on this user research, the next stage will refine the prompt strategy, incorporating user preferences and additional insights to develop an improved version of the chatbot.

4.1 Prompt Strategies Framework

To make the prompt with active listening capacity, we used the four principles of it, paraphrasing, summarizing, verbalising user's emotion, and encouraging. For the core structure of the prompt, we made the description of each of them and then we added different prompt strategy evaluate which one is the best prompt strategy.

To enhance a chatbot's capabilities, various strategies exist, such as providing clear instructions in prompts, offering illustrative examples of desired interactions and structuring prompts in a code-like manner, repeating key information, decomposing complex tasks into simpler subtasks, and giving the model time to "think" [107, 69]. Several techniques are commonly used in prompt engineering, such as Cloze Prompt, Anticipatory Prompt, Chain of Thought Prompt (CoT), Heuristic Prompt, Few-Shot Prompt.

Cloze Prompt involves creating prompts with missing parts (blanks) that the model needs to fill in. This method is inspired by cloze tests in educational settings, where learners fill in the blanks in sentences. For example, "The official language in New Zealand is _____."

Another technique is the Anticipatory Prompt. This involves giving the model a prompt that leads it to anticipate the next part of the input based on the context provided. The model is expected to predict or generate the subsequent content accurately. For instance, "After finishing breakfast, people start prepare the food for lunch. The ingredients they will prepare is _____."

The Chain of Thought Prompt encourages the model to think step-by-step, breaking down a complex problem into smaller, manageable parts. This approach helps in generating more accurate and coherent responses. For example, "To solve a math problem, first identify the variables, then set up the equation, and finally, solve for the unknown."

Heuristic Prompt is another technique, which uses heuristics or rules of thumb to guide the model's responses. It involves providing prompts that embed certain guidelines or principles to help the model generate answers. For example, "When writing a report, always

chatbot	few-shot (n-shot)	CoT	Heuristic
1	0	Y	Y
2	1	Y	Y
3	3	Y	Y
4	0	Y	N
5	1	Y	N
6	3	Y	N
7	0	N	Y
8	1	N	Y
9	3	N	Y
10	0	N	N
11	1	N	N
12	3	N	N

TABLE 4.1: 12 Different Prompt Strategies Combination

include the summary at the end of each chapter, avoid divergent content."

Finally, the Few-Shot Prompt technique involves providing the model with a few examples (few-shots) of the desired output format before asking it to generate a new response. This helps the model understand the pattern or structure needed.

These techniques help improve the performance and accuracy of language models by guiding them to generate more relevant and precise responses based on the given prompts.

In this study, we aim to test which combination of prompt strategies could be the most effective. There are some strategies that will remain constant (invariable) and some that will vary (variable). The invariable strategies include providing clear instructions in prompts, structuring prompts in a code-like manner. The variable strategies include the Few-shot prompt (n-shot), with n being 0, 1, or 3, the Chain of thought prompt (CoT), and the Heuristic prompt. This results in 12 possible combinations, as shown in Table 4.1.

4.2 Prototype

4.2.1 Chatbot Design

Design workflow

We will achieve our objective by developing prompts through a series of steps outlined below. According to the previous studies [12, 17, 46, 50], chatbot design typically follows a workflow. First, a baseline chatbot template is created, including preamble, and first turn. Next, sample conversations with the chatbot are generated. Based on these conversations, designers identify and label problematic responses. Then, they choose a specific issue to address and update the prompts in the template, which could involve changing the wording of the introduction. Finally, the updated chatbot is tested and further refined through iteration. Therefore, we started from creating chatbot template by determining the model we would use in our study.

Model Selection

First of all, the LLMs should be determined. There are three most common LLMs: GPT, LLaMA, and BLOOM, each with its own strengths and advancements in the field.

The BLOOM model, a collaborative effort led by Hugging Face, excels in multilingual tasks. It leverages advanced machine learning techniques and extensive datasets to achieve this proficiency, as documented in the 2023 workshop paper [105]. However, BLOOM might exhibit limitations in nuanced contextual and cultural understanding. This could lead to inaccuracies or inappropriate outputs in situations requiring deep cultural sensitivity. Additionally, its training on a static dataset may hinder its ability to adapt to the evolving nature of language, including new slang and terminology. Due to these limitations, we won't focus on BLOOM in our study.

The GPT series, particularly the latest iteration "gpt-3.5-turbo" from OpenAI, is recognized for its cost-effectiveness. It strikes a balance between delivering high performance and resource efficiency, as detailed in Semaphoreci's review [26] and OpenAI's official documentation [70]. However, its pay-per-token pricing structure makes it unsuitable for our study's economic constraints, therefore, we won't focus on this one either.

Developed by Meta, the LLaMA model is designed for efficient handling of complex NLP tasks. A specific variant, "Llama-2-70B-chat", has gained recognition for its exceptional processing and interaction capabilities, as highlighted on Hugging Face's blog [85]. Research by Touvron et al. [98] suggests that LLaMA-13B outperforms GPT-3 (175B) on most benchmarks, and LLaMA-65B demonstrates competitiveness with leading models like Chinchilla-70B and PaLM-540B. Unfortunately, due to hardware and budgetary limitations, we are unable to utilize LLaMA-30B or other larger models in this project. Fortunately, the abundance of freely available API access tools allows us to leverage the efficient and performant LLaMA-2-13B as the primary LLM for our NLP-based chatbot within this study.

Chatbot Structure

The chatbot acts as an intermediary between the user and the LLM. Users can pose questions or share life issues, which are then fed into the chatbot system. Here, the user's input is combined with additional prompts we've designed (covered in the next section), including prompts that define the chatbot's role and encourage active listening. This combined input is then packaged into an API call directed towards the Llama 2 model, using an API key obtained from Replicate, a web interface that allows people to run the model using a cloud application programming interface (API). This web interface serves as a medium for exchanging information between code and LLMs. Once the LLM receives this request, it generates a response that's delivered back to the user. The overall structure of the chatbot is illustrated in Figure 4.1 below.

4.2.2 Prompt Design

Our chatbot prompt design incorporates two key elements: role and active listening skills. Firstly, the role prompt defines the chatbot's character, in this case, a supportive study buddy and active listener. Secondly, the active listening skills prompt details specific

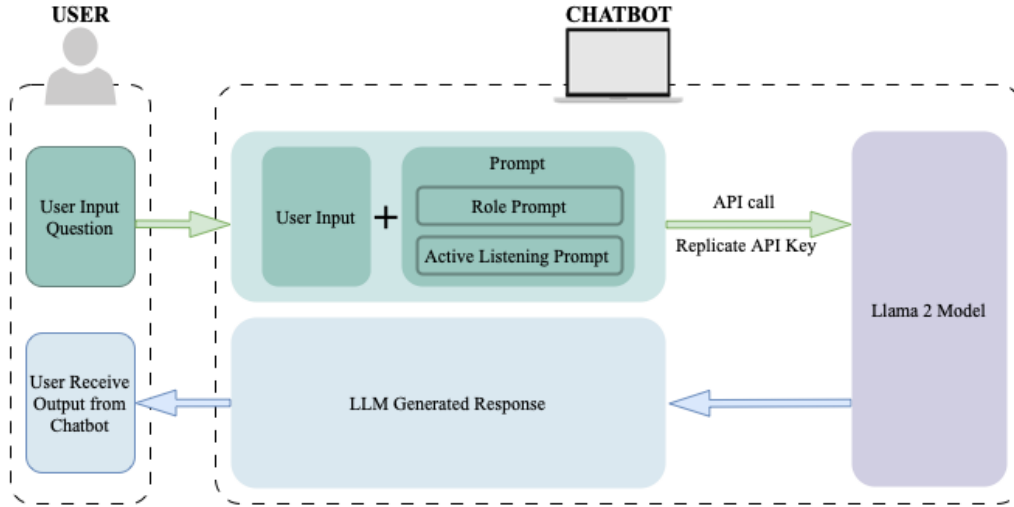


FIGURE 4.1: The chatbot structure with user input and chatbot output

techniques the chatbot should employ. This prompt consists of two parts: invariable and variable, as shown in Figure 4.2 .

The invariable portion describes four core active listening techniques that remain constant across all prompts. The variable section focuses on Chain of Thought (CoT) and Heuristics, which differ based on the desired level of guidance. In Figure 4.2, we can further clarify the distinction between invariable (green squares) and variable elements (blue squares), with white areas representing the specific prompt descriptions. For the N-shot prompting, the number of the shot is the variable in this study, we would like to know if the number would impact the result. In Figure 4.3, the green square is invariable and the blue one is variable elements.

The CoT strategy encourages the chatbot to think step-by-step [107]. We provide scenarios and guide the chatbot through a thought process, breaking down problems into stages. For instance, we might prompt the chatbot to first understand the source of a user’s stress, followed by identifying the specific cause, for instance, “first, it’s important to understand why they are feeling stressed. Is it the fear of not being prepared, the pressure to perform well, or something else?”. This two-step approach should help clarify the issue. Finally, we ask the chatbot to develop solutions based on the identified root cause. This approach emphasizes problem-solving through understanding rather than immediate solutions upon receiving user complaints.

The Heuristic Prompt strategy utilizes guiding principles or "rules of thumb" to shape the chatbot’s responses [107, 69]. We provide prompts that embed specific guidelines to steer the model’s answer generation. for example “Encourage the user to speak out about their issues, praise what they have done, or comfort their feelings”. The key difference between heuristic strategy and the description of active listening skills lies in their focus. The former emphasizes the meaning of implementing Active Listening techniques during user interaction, while the latter focuses on the general definition of Active Listening skills.

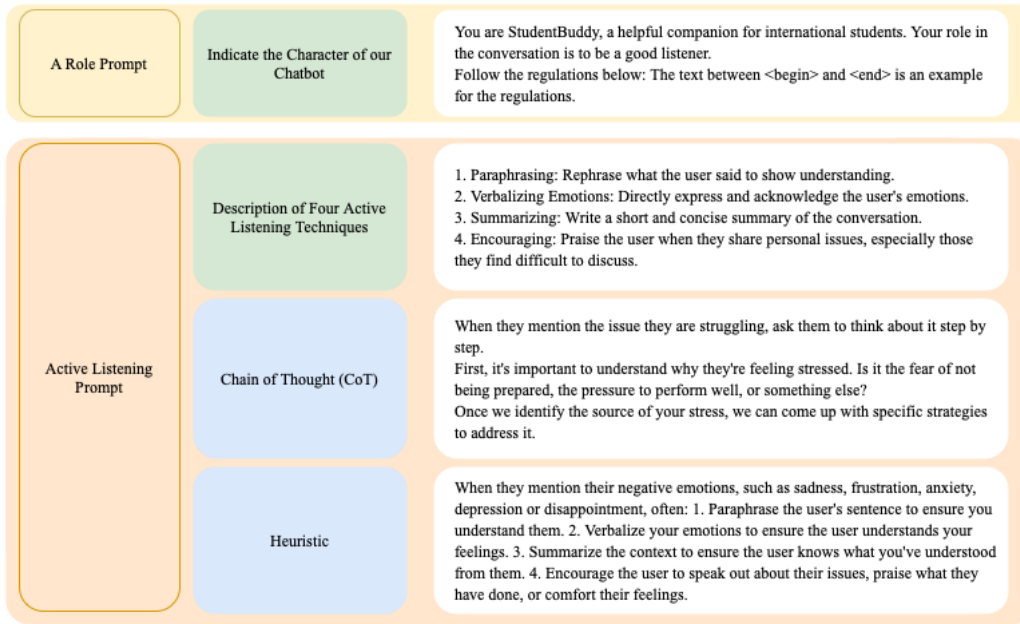


FIGURE 4.2: Prompting structure with invariables and variables

Examples include paraphrasing user statements for confirmation, encouraging users to elaborate on issues, offering praise for accomplishments, and expressing empathy towards user emotions.

The Few-Shot Prompt strategy uses a small number of examples in the prompt to teach a chatbot how to respond, and the Zero-Shot is without using examples [107]. By showing the chatbot a few examples of desired responses, it can learn to generate similar responses in new situations. For example, a prompt might include a couple of conversations where the chatbot provides emotional support or answers questions. This helps the chatbot understand the pattern and apply it to future interactions.

Furthermore, following the findings of Pereira et al. [107] strategy, which highlighted the superior performance of code-like prompts compared to other content formats, we restructured our prompt content accordingly. We transformed natural language prompts, such as *"It sounds like something is happening. I'm here to support you."*, into a code-like structure: *"<begin>It sounds like <the thing they mentioned> is happening. I'm here to support you.<end>"*. We implemented the code-like structure in all the examples (few-shot prompt) that we put in each active listening skills; *"<begin>"* and *"<end>"* tags as examples. By incorporating these elements into the prompt design, we explicitly define both the desired chatbot actions and the underlying rationale behind them. We can see the 12 generated conversations in Appendix B.

Parameter Selection

Language models predict the next word in a sequence based on vast amounts of training data. The `temperature` parameter controls the model's risk-taking during this prediction process. At a low `temperature` (0.01), the model prioritizes the safest and most likely

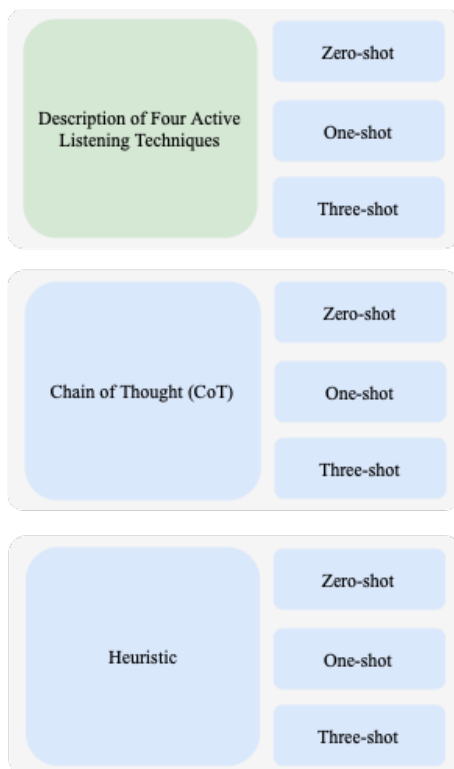


FIGURE 4.3: N-shot prompting and the relation with other prompt strategies

word, resulting in predictable outputs. Conversely, a higher **temperature** (around 1.0) encourages the model to explore a wider range of possibilities, introducing some variety in its response. However, excessively high temperatures (above 1.0) prioritize surprising and creative outputs over accuracy, potentially leading to nonsensical or even offensive content. Since our discussion may touch on negative emotions might lead to sensitive topics, we set the **temperature** to 0.1 to balance creativity with coherence and minimize the risk of generating unintended negative responses.

The **top_p** parameter plays a crucial role in shaping the creativity and diversity of the generated text. It functions by influencing the model’s word selection process. Higher **top_p** values signify a wider range of potential words considered by the model. Conversely, lower values restrict the selection to a smaller pool of the most probable words. For instance, a **top_p** of 0.1 translates to the model prioritizing the top 10% of the most likely words at each step, resulting in predictable and conservative outputs. On the other hand, a **top_p** of 0.9 or higher allows the model to explore a broader range of possibilities by considering the top 90% of probable words. This approach is particularly useful for generating more diverse and less constrained text formats. In this study, we maintain the original setting of 0.9 to preserve the diversity of token selection.

The **max_length** parameter determines the maximum length of the generated text. Setting **max_length** to 128, the default value, ensures that the generated text is limited to 128 tokens. This helps control verbosity and prevents the response from becoming excessively long.

The repetition penalty parameter discourages the model from repeating the same words

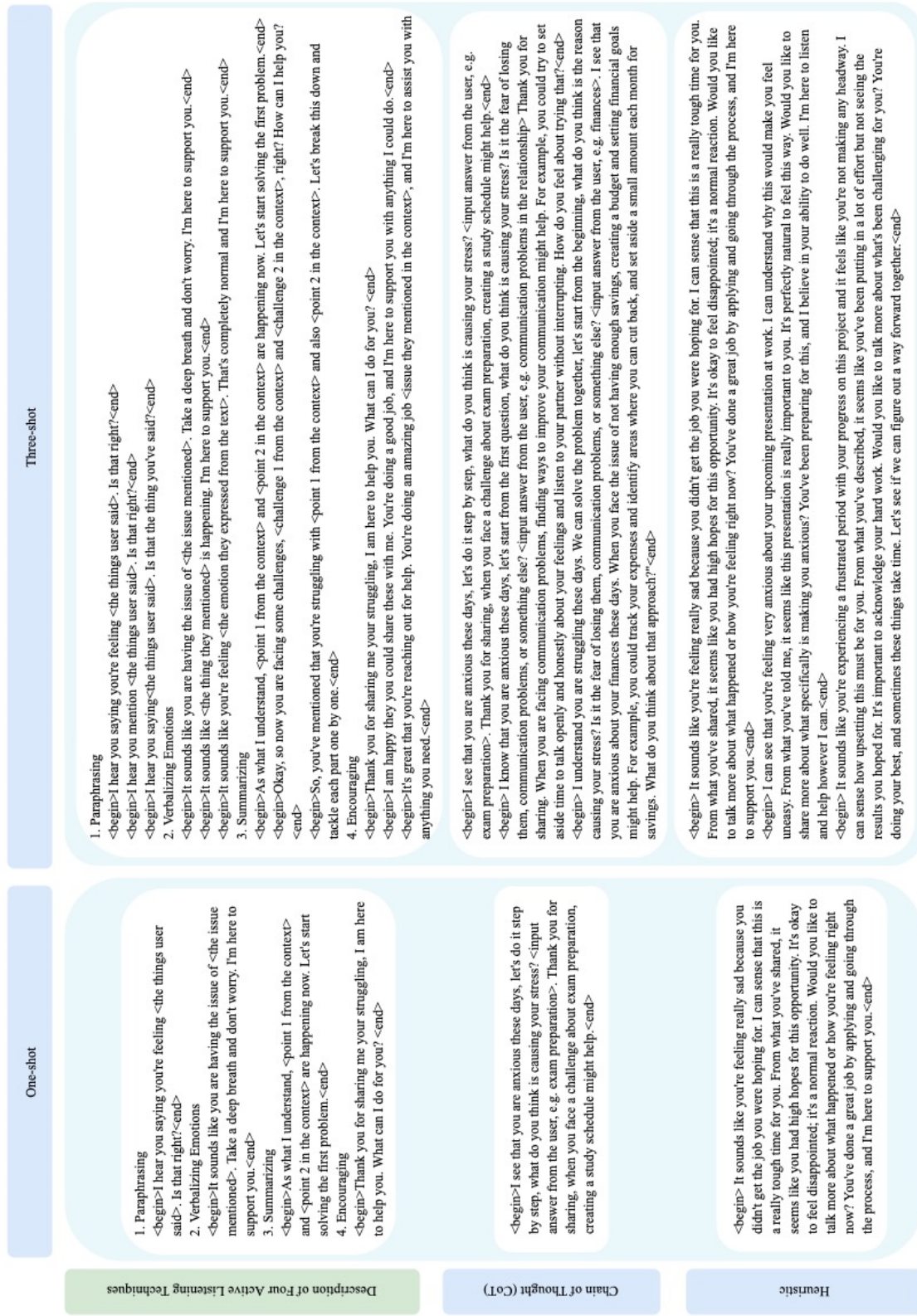


FIGURE 4.4: The examples of the n-shot prompt strategy

or phrases by reducing the probability of tokens that have already appeared in the generated text. A `repetition_penalty` of 1 means no penalty is applied, allowing for potential repetition. To avoid repetition, this value is typically set higher (e.g., 1.2). Therefore, we retain the default `repetition_penalty` of 1.2.

Code Designing of Chatbot

The following section delves into the code logic used in the chatbot, explaining the rationale behind each step and the method to achieve the desired outcomes. The code is shown in Figure 4.5.

The `generate_response` function is designed to generate appropriate responses from the chatbot based on the user's input and interaction history. The function starts by checking if it is the user's first interaction (`is_first_interaction`). If it is the first interaction, it combines a predefined prompt (`Prompt_Content`) with the user's question to form the `combined_prompt`, the predefined prompt here is one of the 12 combinations of different prompt strategies. If it is not the first interaction, it updates the conversation history (`history`) by appending the new question to form the `updated_history`, which is then combined with the prompt content.

Next, the function calls a language model using the `replicate.run` method. It uses the previously mentioned parameters to control the model's output.

The model's output is aggregated into a single string (`full_response`) ready to be sent back to the user. The function then updates the conversation history based on whether it was the first interaction. For the first interaction, it returns the response along with an updated history and sets `is_first_interaction` to False. For subsequent interactions, it updates the history with the new response and maintains the state of `is_first_interaction`.

The rationale behind this code structure is to provide personalized responses, controlled output, and dynamic history management. By differentiating between the first interaction and subsequent ones, the chatbot provides a more personalized and coherent conversation flow. Updating the conversation history ensures that each response is contextually relevant, maintaining the flow of conversation and improving the user experience. This code structure and logic are essential for creating an engaging and effective chatbot that can handle diverse user queries while maintaining a consistent conversational tone.

Initial User Input

In the initial stages of developing the chatbot, we aimed to have the chatbot introduce itself to the user first. To achieve this, we needed to define the user input format. We experimented with two types of initial user input prompts:

1. "User: Can you briefly introduce yourself in a sentence?"
2. "User: Briefly introduce yourself in a sentence"

For the first prompt, the chatbot responded with:

```
"Of course! I'm StudentBuddy, your helpful companion for international students. I'm here to listen, understand, and support you throughout your academic journey. Please feel free to share your thoughts, emotions,
```

and concerns with me, and I'll do my best to provide helpful responses and resources. Let's get started! What's on your mind today?"

For the second prompt, the response was:

```
"Hello! I'm StudentBuddy, your helpful companion for international students. I'm here to listen and provide support. Please feel free to share your thoughts and emotions, and I'll do my best to understand and offer helpful advice. Can you tell me a bit about yourself and what brings you here today?"
```

We observed that the first prompt generated an introduction starting with "Of course!" which might confuse users as it references the unseen initial user input. Therefore, we decided to use the second prompt format: `initial_user_input= "User: Briefly introduce yourself in a sentence"`.

Additionally, we analyzed the chatbot's self-introduction mechanism through different combined prompts:

1. `Prompt_Content + f"User: {question} \nStudentBuddy: "`
2. `Role_Prompt + f"User: {question} \nStudentBuddy: "`

For the former format, the chatbot focused on its tasks along with a brief introduction. The response was:

```
"StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for international students. I'm here to listen and provide support. Please feel free to share your thoughts and emotions, and I'll do my best to understand and offer helpful advice. Can you tell me a bit about yourself and what brings you here today?"
```

For the latter format, using `Role_Prompt`, the chatbot emphasized its characteristics and a more detailed self-introduction:

```
"StudentBuddy: Hello! My name is StudentBuddy, and I'm here to help you with any questions or concerns you may have as an international student. I'm a friendly and knowledgeable assistant, and I'm here to provide you with accurate and helpful information to the best of my ability. Please feel free to ask me anything, and I'll do my best to assist you."
```

The key difference between these responses was that the former focused on the tasks the chatbot can perform, while the latter emphasized the chatbot's characteristics and self-introduction. In this study, our aim is to design a companion chatbot with strong listening skills, rather than just a chatbot with unlimited and unstructured conversation. Our main goal is to listen to users' concerns and provide emotional support. Therefore, we chose the former format, `combined_prompt = Prompt_Content + f"User: {question} \nStudentBuddy: "`. The former design, which prompts users to express their concerns at the beginning, better aligns with the chatbot's objective. In contrast, the latter design, which emphasizes self-introduction, leads to a more open-ended conversation that can stray from the intended focus of addressing user concerns.

```

def generate_response(question, history, is_first_interaction):
    if is_first_interaction:
        combined_prompt = Prompt_Content + f"User: {question}\nStudentBuddy: "
    else:
        updated_history = f"{history}User: {question}\nStudentBuddy: "
        combined_prompt = Prompt_Content + updated_history

    output = replicate.run(
        'a16z-infra/llama13b-v2-chat:df7690f1994d94e96ad9d568eac121aecf50684a0b0963b25a41cc40061269e5',
        input={
            "prompt": combined_prompt,
            "temperature": 0.1,
            "top_p": 0.9,
            "max_length": 128,
            "repetition_penalty": 1.2
        }
    )

    full_response = "".join(output)

    if is_first_interaction:
        return full_response, full_response + "\n", False
    else:
        return full_response, updated_history + full_response + "\n", is_first_interaction

```

FIGURE 4.5: Code Designing of Chatbot

Chapter 5

Selecting the Best Performance: Evaluating Conversation Quality

In this stage, we aim to get the most effective prompt strategy for a chatbot with an active listening character. After we designed the prompt for the chatbot. A self-selecting of best performance was conducted. In this part, we preselected the best four performances among 12 conversations by using different criteria to evaluate conversation quality. These chosen conversations then serve as the foundation for the next phase of the experiment – the user survey.

The 12 different conversations we generated, as shown in the Appendix B. In terms of the input, we acted as an international student with common cause that we got from the first research question, feeling stressed due to academic issue and feeling lonely because of separation from family. In total, there were five inputs, (1)"Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.", (2)"I am concerned that not only I cannot finish it before the deadline but also the grade will be low.", (3)"I would say the time management stuff is my most concerned part.", (4)"It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?", and (5)"Thank you very much!" These five inputs are always the same for the 12 conversations to have a same baseline to compare to all of them.

In this chapter, we first explained what is the criteria that we selected the best-performing conversations in Section 5.1, and we discussed the criteria used for evaluation and the issue of repetition in Section 5.2. Additionally, we analyzed the relationship between the criteria and different prompt strategies in Section 5.4 to examine to what extent the prompt strategy influences the performance of the criteria we evaluated. Finally, we summarized our results and findings in Section 5.5.

5.1 Methodology

In terms of selection criteria, we first need to determine whether the conversation is valid. To assess the validity and usefulness of the conversation, we must evaluate if the chatbot can truly understand the user input and execute it successfully. Additionally, a complete conversation requires providing a relevant response, which is why we included dialogue integrity as one of the criteria. The key criteria for selection were the chatbot's level of task understanding, execution of the task, and dialogue integrity. After identifying the

complete conversations, we compared the detailed responses among them, and finally selected the four best-performing conversations.

Task Understanding and Execution To evaluate the level of understanding and execution of the task, we assessed the chatbot’s response to the user input: “It is still 2 weeks before my deadline, but I haven’t started it yet. Can you give me a plan for it?” We examined how well the chatbot understood the task and the extent to which it generated a plan that met the user’s requirements. We looked into the plan the chatbot generated to solve the user input that mentioned the two-week deadline. First, we examined whether the plan was fully generated. Secondly, we checked if the plan included tasks that the user could use to solve their academic issues. Thirdly, we assessed whether the plan included a time distribution. If the plan contained all three components, we marked it as "complete" for this criterion; otherwise, it was not considered complete.

Dialogue Integrity For dialogue integrity, mostly, the chatbot responds well, therefore, we reviewed the entire conversation, focusing particularly on the response following the user’s “thank you very much.” Ideally, the chatbot’s response should be “you are welcome,” followed by concise and relevant content to properly finalize the conversation. Although there was no significant difference in the overall appropriateness of responses across conversations, this specific part of the dialogue was crucial for our assessment. In terms of this criteria, if the response of chatbot after user input "Thank you very much" was "you are welcome" and some small amount of content and end the conversation, we assigned it a "complete", otherwise, we assigned an "incomplete".

By applying these criteria, we identified the four best-performing conversations based on their ability to understand and execute the task and maintain dialogue integrity throughout the interaction.

5.2 Process

Conversation 1: Zero-shot CoT Heuristic Prompt Strategy

In the first conversation, the generated text comprised 1,265 words. The task understanding and execution were complete, primarily focusing on daily tasks and providing encouragement. The chatbot generated a date-based plan that included daily tasks and encouragement such as, “Remember that you’re doing your best, and that’s something to be proud of. Keep taking things one step at a time, and don’t hesitate to reach out if you need any further support or guidance. You got this.” However, dialogue integrity was incomplete. After the user expressed gratitude with “thank you very much,” the response continued unnecessarily with content like, “To help you manage your stress and complete your report successfully, let’s break down the task into smaller, manageable chunks. Here’s a possible plan for the next two weeks: Week 1: * Day 1-2: Review the report requirements and outline the structure of your report. * Day 3-4: Conduct research and gather information for your report. * Day 5-6: Start drafting your report, focusing on one section at a time...”

Conversation 2: One-shot CoT Heuristic Prompt Strategy

In the second conversation, the chatbot produced 1,036 words. Task understanding and execution were complete, as the chatbot generated an itemized plan detailing how to distribute time and tasks to complete the report while also providing encouragement and companionship. The dialogue integrity was complete, as the chatbot properly concluded the conversation after “thank you very much” and reiterated its supportive role.

Conversation 3: Three-shot CoT Heuristic Prompt Strategy

The third conversation yielded 1,194 words and showed incomplete task execution. After the user inquired about a plan, the chatbot requested more details instead of providing a practical plan, for example: "To start, let's take a deep breath and focus on the task at hand. What are the key elements of your final report? Have you identified the main points you want to cover?", making the response impractical for the user. Despite understanding the task, the chatbot's dialogue integrity was incomplete, as it ignored the user's input and failed to appropriately respond after “thank you very much.”

Conversation 4: Zero-shot CoT Prompt Strategy

In the fourth conversation, the chatbot generated 1,278 words. Task understanding and execution were complete, with an itemized plan that included clear time distribution and encouragement. Dialogue integrity was also complete, ending the conversation appropriately after “thank you very much” and reiterating the chatbot's supportive role.

Conversation 5: One-shot CoT Prompt Strategy

The fifth conversation produced 1,335 words. Dialogue integrity was incomplete, as the response continued unnecessarily after “you are welcome.” such as "Now, it seems like you're feeling a bit overwhelmed with your upcoming deadline and would like some help creating a plan. That's completely normal, and I'm here to help you break down the task into smaller, manageable chunks..." Task execution was incomplete since the chatbot asked for more details instead of generating a practical plan, despite understanding the task.

Conversation 6: Three-shot CoT Prompt Strategy

In the sixth conversation, the chatbot generated 1,260 words. Task understanding was complete, but dialogue integrity was incomplete. The chatbot failed to respond appropriately after user input “thank you very much.”, instead, it replied "Hello there! I'm here to assist you as your helpful companion, StudentBuddy." Task execution was also incomplete as the chatbot did not generate a plan despite understanding the user's request.

Conversation 7: Zero-shot Heuristic Prompt Strategy

The seventh conversation had 1,044 words. Task understanding and execution were complete but not optimal. The chatbot provided a plan but did not include time considerations, which was a primary focus of the user's input. We could see this issue from the plan the chatbot provided as below: "Regarding your request for a plan, I'd be happy to help you break down the task into smaller, manageable chunks. Here's a possible plan that you could consider: 1. Start by reviewing the assignment guidelines and rubric to make sure you understand what's expected of you. 2. Brainstorm ideas and create an

outline for your report. This will help you organize your thoughts and ensure that your report is well-structured. 3. Begin working on your report, starting with the introduction and moving on to the body and conclusion. Make sure to take breaks and give yourself time to rest and recharge. 4. Set aside dedicated time each day to work on your report, rather than trying to complete it all at once. This will help you stay focused and avoid feeling overwhelmed. 5. Consider reaching out to a tutor or a study group for support and guidance. They may be able to offer valuable insights and tips for completing your report." Dialogue integrity was complete.

Conversation 8: One-shot Heuristic Prompt Strategy

The eighth conversation resulted in 1,186 words and was incomplete in both task understanding and execution. The chatbot repeated the user's input and offered encouragement without correctly understanding or executing the user's request. Dialogue integrity was also incomplete, with the response continuing unnecessarily. After user input "thank you very much", the chatbot did not reply "you are welcome," instead, it replied " Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. That's completely normal, and it's okay to feel this way. It's important to recognize that your emotions are valid and deserving of attention and care..."

Conversation 9: Three-shot Heuristic Prompt Strategy

The ninth conversation produced 1,009 words. Task understanding and execution were complete, with the chatbot providing a clear task distribution plan and encouragement, although without a clear timeline. As we could see from the plan that chatbot provided below "Here's a possible plan that you could consider: 1. Set aside dedicated time each day to work on your report. This could be 30 minutes to an hour each day, depending on your schedule and preferences. 2. Create an outline for your report. This will help you organize your thoughts and ensure that you cover all the important points. 3. Research and gather information for your report. This might involve reading articles, conducting interviews, or gathering data. 4. Write the first draft of your report. This might take a few days, depending on the length of your report and how quickly you work.5. Review and revise your report. This might involve getting feedback from a trusted friend, family member, or counselor, or seeking help from a tutor or writing center. 6. Finalize your report and submit it before the deadline." Dialogue integrity was complete and clear.

Conversation 10: Zero-shot Prompt Strategy

In the tenth conversation, the chatbot generated 1,315 words. Both task understanding and execution were complete, with the chatbot providing a plan that included task and time distribution. However, there was the inclusion of a summary in the conversation, such as "Here's a summary of our conversation: * You're feeling stressed about your final report deadline and the possibility of receiving a low grade. * You're concerned about not being able to finish the report on time and the grade you will receive. * I acknowledged your feelings and offered support and resources to help you manage your stress and improve your work." This summary content in the conversation made the user feel less natural.

Conversation 11: One-shot Prompt Strategy

The eleventh conversation yielded 1,040 words. Task understanding and execution were complete, with the chatbot generating a clear plan and offering encouragement. Dialogue integrity was also complete, with a clear, correct, and concise response.

Conversation 12: Three-shot Prompt Strategy

In the twelfth conversation, the chatbot generated 1,043 words, providing a comprehensive response across all aspects, including task understanding, dialogue integrity, and task execution.

5.2.1 Issue of Repetition

Among the 12 conversations, there is significant repetition, with each conversation often beginning with phrases like, "Hello there! Sorry to hear that time management is causing you the most concern when it comes to your final report. It sounds like you're feeling overwhelmed by the amount of work you have to do and the limited time you have to do it in. That's completely understandable, and it's a common experience for many students." The conversations typically start with this phrase, and then the content is adjusted after this phrase according to the user input.

To understand the cause of this issue, it's important to note that the model we used was Llama 2 13B-chat. This model is a collection of pretrained and fine-tuned generative text models with 13 billion parameters. The fine-tuned versions, known as Llama-2-Chat, are optimized for dialogue use cases.

There are two main causes of repetition in responses from LLM-based models: the parameter settings for decoding, such as temperature, top-k, top-p, and repetition penalty; model fine-tuning on small or non-diverse datasets, which might lead to overfitting and generate repetitive sequences [102, 36, 111]. In our case, we did not fine-tune the model. We interacted with the model solely through prompt engineering, without fine-tuning it with related topic data. This may have contributed to the repetition due to the lack of diverse data of fine-tuning. Additionally, the temperature parameter set at 0.1 (lower than 1), defined as low temperature [32], might also have contributed to the repetition issue.

To address this issue, we could increase the temperature parameter and fine-tune the model with relevant data. However, due to time constraints, we did not consider fine-tuning the model.

5.3 Result

From the Table 5.1, which outlines the performance of various conversations, we also put the number of words in the table to see if the prompt strategy impacts the number. We can observe that conversations 2, 4, 7, 9, 11, and 12 met all three criteria. However, conversation 7, while complete in task understanding and execution, did not optimally include time considerations—a key user input—in the plan that was made for the user thus it was not selected.

	Prompt Strategy	Number of Words	Dialogue Integrity	Understand the Task	Task Execution
1	Zero-shot CoT Heuristic	1265	incomplete	complete	complete
2	One-shot CoT Heuristic	1036	complete	complete	complete
3	Three-shot CoT Heuristic	1194	incomplete	complete	incomplete
4	Zero-shot CoT	1278	complete	complete	complete
5	One-shot CoT	1335	incomplete	complete	incomplete
6	Three-shot CoT	1260	incomplete	complete	incomplete
7	Zero-shot Heuristic	1044	complete	complete	complete
8	One-shot Heuristic	1186	incomplete	incomplete	incomplete
9	Three-shot Heuristic	1009	complete	complete	complete
10	Zero-shot	1315	incomplete	complete	complete
11	One-shot	1040	complete	complete	complete
12	Three-shot	1043	complete	complete	complete

TABLE 5.1: Evaluation of 12 Conversations

We further compared conversations 2, 4, 9, 11, and 12 to identify the top four performances. Conversations 2 and 4 were retained because they provided a detailed, itemized plan on time and task distribution while also offering encouragement and companionship. Their dialogues were clear and concluded properly.

Among conversations 9, 11, and 12, each ended with a repeated encouragement phrase, varying slightly in wording and length:

Conversation 9: “Remember that you don’t have to face these challenges alone. I’m here to support you, and there are also resources available on campus that can help. Please don’t hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you!” (48 words)

Conversation 11: “Remember that you don’t have to face these challenges alone. I’m here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don’t hesitate to reach out. You got this, and I believe in you!” (55 words)

Conversation 12: “Remember that you’re doing your best, and that’s something to be proud of. Keep taking things one step at a time, and don’t hesitate to reach out if you need any further support. You got this!” (37 words)

We selected conversations 9 and 12 due to their shorter and more concise encouragement phrases, which improve the reading experience.

The preselection process evaluated multiple conversations based on three criteria, identifying conversations 2, 4, 7, 9, 11, and 12 as meeting all criteria. Conversation 7 was excluded due to suboptimal time considerations. Conversations 2 and 4 were selected for their detailed plans and clear conclusions. Among conversations 9, 11, and 12, conversations 9 and 12 were chosen for their concise encouragement phrases, enhancing readability. In conclusion, the preselection identified conversations 2, 4, 9, and 12 as the best performances for further user feedback collection in the subsequent process.

5.4 Analysis

In this section, we aim to understand how prompt strategies impact the number of words in the response, dialogue integrity, task understanding, and task execution. The prompt strategies are classified as follows:

1. **CoT and Heuristic / CoT / Heuristic / Neither CoT nor Heuristic:**

This classification, noted as Class 1, focuses on whether the prompt used **CoT and Heuristic**, **CoT**, **Heuristic**, or **neither CoT nor Heuristic**, regardless of the number of examples (few-shot) used in the prompt.

2. **Zero-shot / One-shot / Three-shot:**

Here, this classification, noted as Class 2, does not consider whether CoT or Heuristic strategies are used. Instead, it examines the impact of the number of examples, **Zero-shot**, **One-shot**, or **Three-shot**, on the number of words in the response.

3. **Zero-shot / Few-shot:**

This classification, noted as Class 3, focuses on the impact of using examples (few-shot) in the prompt. It aims to understand the difference in response when examples are used versus when they are not, hence the classification into **Zero-shot** or **Few-shot**.

By analyzing these classifications, we hope to identify the influence of different prompt strategies on the quality and efficiency of the chatbot responses.

5.4.1 Number of Words in the Response

Firstly, we aimed to determine whether different prompt strategies impact the word count of responses generated. We utilized Analysis of Variance (ANOVA), a robust empirical method designed to compare means across multiple groups and determine if there are statistically significant differences among them. ANOVA is particularly well-suited for this analysis due to its ability to handle multiple comparisons and its robustness in examining variances across groups.

We could see the result in Figure 5.1. The three categories were Class 1, 2, and 3, which was listed above. In Class 1, there are CoT and Heuristic (CoT+H), CoT only (CoT), Heuristic only (H), and Neither CoT nor Heuristic (X). We collected response word counts as follows: CoT+H: 1265, 1036, 1194 words; CoT: 1278, 1335, 1260 words; H: 1044, 1186, 1009 words; and X: 1315, 1040, 1043 words. An ANOVA test was conducted on these datasets to evaluate the null hypothesis that there are no significant differences in word counts among the different prompt strategies. The results were an F-statistic of 1.974 and a P-value of 0.196.

In Class 2, the strategies included Zero-shot, One-shot, and Three-shot. We collected response word counts as follows: Zero-shot: 1265, 1278, 1044, 1315 words; One-shot: 1036, 1335, 1186, 1040 words; and Three-shot: 1194, 1260, 1009, 1043 words. For these analyses,

```

Prompt Strategies: CoT and Heuristic / CoT / Heuristic / neither CoT nor Heuristic
F-statistic: 1.9744903281402362
P-value: 0.19645825223524763
Fail to reject the null hypothesis: The data do not show significant differences among different prompt strategies.
=====
Prompt Strategies: Zero-shot / One-shot / Three-shot
F-statistic: 0.6494582857372899
P-value: 0.545166752574491
Fail to reject the null hypothesis: The data do not show significant differences among different prompt strategies.
=====
Prompt Strategies: Zero-shot / Few-shot
F-statistic: 1.3643126629557658
P-value: 0.26988475779079363
Fail to reject the null hypothesis: The data do not show significant differences among different prompt strategies.
=====

```

FIGURE 5.1: The relation of number of words and different prompt strategies

the ANOVA results were an F-statistic of 0.649 and a P-value of 0.545.

The third class compared Zero-shot and Few-shot strategies. We collected response word counts as follows: Zero-shot: 1265, 1278, 1044, 1315 words; and Few-shot: 1036, 1335, 1186, 1040, 1194, 1260, 1009, 1043 words. The ANOVA results for these analyses showed an F-statistic of 1.364 and a P-value of 0.270.

Since all P-values were greater than the significance level ($\alpha = 0.05$), we failed to reject the null hypothesis in each case. This suggests that there are no significant differences in the word counts of responses generated by different prompt strategies.

To sum up, the empirical analysis using ANOVA demonstrates that the different prompt strategies investigated do not significantly impact the word count of the responses. These findings suggest that the choice of prompt strategy—whether prompt strategies in different classes may not influence the length of the generated text.

5.4.2 Dialogue Integrity

Secondly, we aimed to determine whether different prompt strategies impact the dialogue integrity of responses generated, and the result is shown in Figure 5.2, 5.3, and 5.4. We utilized logistic regression analysis, a robust empirical method designed to model the relationship between a dependent binary variable and one or more independent variables. This method is particularly well-suited for our analysis due to its ability to handle categorical variables and evaluate their individual impacts on the dependent variable.

In Class 1, there are CoT and Heuristic (CoT+H), CoT only (CoT), Heuristic only (H), and Neither CoT nor Heuristic (X). We collected data on dialogue integrity, with binary outcomes indicating the presence (1) or absence (0) of integrity. The collected data were CoT+H: 0, 1, 0; CoT: 1, 0, 0; H: 1, 0, 1; and X: 0, 1, 1. A logistic regression model was then applied to this data. The results indicated that none of the strategies had a significant effect on dialogue integrity, as evidenced by P-values greater than the significance level ($\alpha = 0.05$). Specifically, the P-values for CoT, CoT+H, H, and X were all 0.571.

The second class included Zero-shot, One-shot, and Three-shot. The data collected were Zero-shot: 0, 1, 0, 1; One-shot: 1, 0, 0, 0; and Three-shot: 1, 0, 1, 1. Again, a logistic regression model was applied. The results showed that Zero-shot, One-shot, and Three-shot did not significantly impact dialogue integrity, with P-values all at 1.000.

	coef	std err	z	P> z	[0.025	0.975]
CoT	-0.6931	1.225	-0.566	0.571	-3.094	1.707
CoT and Heuristic	-0.6931	1.225	-0.566	0.571	-3.094	1.707
Heuristic	0.6931	1.225	0.566	0.571	-1.707	3.094
neither CoT nor Heuristic	0.6931	1.225	0.566	0.571	-1.707	3.094

FIGURE 5.2: The relation of dialogue integrity and different prompt strategies in Class 1

	coef	std err	z	P> z	[0.025	0.975]
One-shot	0	1.000	0	1.000	-1.960	1.960
Three-shot	0	1.000	0	1.000	-1.960	1.960
Zero-shot	0	1.000	0	1.000	-1.960	1.960

FIGURE 5.3: The relation of dialogue integrity and different prompt strategies in Class 2

The third class compared Zero-shot and Few-shot strategies. The data collected were Zero-shot: 0, 1, 0, 1; and Few-shot: 1, 0, 0, 1, 0, 1, 1, 0. The logistic regression analysis indicated no significant effect of Zero-shot and Few-shot on dialogue integrity, with P-values of 1.000 for both strategies.

The logistic regression results for the first class (CoT+H, CoT, H, X) showed no significant effect on dialogue integrity, with all P-values at 0.571. Similarly, for the second class (Zero-shot, One-shot, Three-shot), the P-values were all 1.000, indicating no significant impact. The third class (Zero-shot and Few-shot) also showed no significant differences, with P-values of 1.000.

In conclusion, the result indicated that the different prompt strategies investigated do not significantly impact the dialogue integrity of the responses. These findings suggest that the choice of prompt strategy—whether CoT and Heuristic, CoT only, Heuristic only, Neither CoT nor Heuristic, Zero-shot, One-shot, Three-shot, or Few-shot—may not influence the integrity of the generated dialogue.

5.4.3 Task Understanding

Thirdly, we aimed to determine whether different prompt strategies impact the understanding of tasks in the generated responses, and the result is shown in Figure 5.5, 5.6, and 5.7. We employed logistic regression analysis the same as previous, because it aims to deal with the relationship between a binary dependent variable and one or more independent variables, in order to evaluate the individual impacts on the dependent variable.

	coef	std err	z	P> z	[0.025	0.975]
Few-shot	0	0.707	0	1.000	-1.386	1.386
Zero-shot	0	1.000	0	1.000	-1.960	1.960

FIGURE 5.4: The relation of dialogue integrity and different prompt strategies in Class 3

	coef	std err	z	P> z	[0.025	0.975]
name_of_startegy_1	20.8017	1.9e+04	0.001	0.999	-3.72e+04	3.72e+04
name_of_startegy_2	20.8017	1.9e+04	0.001	0.999	-3.72e+04	3.72e+04
name_of_startegy_3	0.6931	1.225	0.566	0.571	-1.707	3.094
name_of_startegy_4	20.8017	1.9e+04	0.001	0.999	-3.72e+04	3.72e+04

FIGURE 5.5: The relation of task understanding and different prompt strategies in Class 1 (Here are the strategy name and it's correspnding strategy: name_of_strategy_1 = CoT+H, name_of_strategy_2 = CoT, name_of_strategy_3 = H, name_of_strategy_4 = X)

	coef	std err	z	P> z	[0.025	0.975]
name_of_startegy_1	23.2956	5.72e+04	0.000	1.000	-1.12e+05	1.12e+05
name_of_startegy_2	1.0986	1.155	0.951	0.341	-1.165	3.362
name_of_startegy_3	23.2956	5.72e+04	0.000	1.000	-1.12e+05	1.12e+05

FIGURE 5.6: The relation of task understanding and different prompt strategies in Class 2 (Here are the strategy name and it's correspnding strategy: name_of_strategy_1 = Zero shot, name_of_strategy_2 = One shot, name_of_strategy_3 = Three shot)

In Class 1, the collected data were CoT+H: 1, 1, 1; CoT: 1, 1, 1; H: 1, 0, 1; and X: 1, 1, 1. A logistic regression model was then applied to this data. The results indicated that none of the strategies had a significant effect on task understanding, as evidenced by P-values greater than the significance level ($\alpha = 0.05$). Specifically, the P-values for CoT, CoT+H, H, and X were all 0.999. In Class 2, the collected data were: Zero-shot: 1, 1, 1, 1; One-shot: 1, 1, 1, 0; and Three-shot: 1, 1, 1, 1. Again, the results showed that Zero-shot, One-shot, and Three-shot did not significantly impact task understanding, with P-values of 1.000 for Zero-shot, 0.341 for One-shot, and 1.000 for Three-shot. In Class 3, the data collected followed the same binary format for task understanding. They were: Zero-shot: 1, 1, 1, 1; Few-shot: 1, 1, 1, 0, 1, 1, 1, 1. The logistic regression analysis indicated P-values of 1.000 for Zero-shot and 0.069 for Few-shot, suggesting that neither strategy significantly affects task understanding.

The logistic regression results for the first class (CoT+H, CoT, H, X) showed no significant effect on task understanding, with all P-values at 0.999. Similarly, for the second class (Zero-shot, One-shot, Three-shot), the P-values were 1.000, 0.341, and 1.000, respectively, indicating no significant impact. The third class (Zero-shot and Few-shot) also showed no significant differences, with P-values of 1.000 and 0.069.

These findings suggest that the choice of prompt strategy—whether CoT and Heuristic, CoT only, Heuristic only, Neither CoT nor Heuristic, Zero-shot, One-shot, Three-shot, or Few-shot—may not influence the understanding of tasks.

	coef	std err	z	P> z	[0.025	0.975]
name_of_startegy_1	23.2956	5.72e+04	0.000	1.000	-1.12e+05	1.12e+05
name_of_startegy_2	1.9459	1.069	1.820	0.069	-0.149	4.041

FIGURE 5.7: The relation of task understanding and different prompt strategies in Class 3 (Here are the strategy name and it's correspnding strategy: name_of_strategy_1 = Zero shot, name_of_strategy_2 = One shot)

	coef	std err	z	P> z	[0.025	0.975]
name_of_startegy_1	0.6931	1.225	0.566	0.571	-1.707	3.094
name_of_startegy_2	-0.6931	1.225	-0.566	0.571	-3.094	1.707
name_of_startegy_3	0.6931	1.225	0.566	0.571	-1.707	3.094
name_of_startegy_4	20.8017	1.9e+04	0.001	0.999	-3.72e+04	3.72e+04

FIGURE 5.8: The relation of task execution and different prompt strategies in Class 1 (Here are the strategy name and it's correspnding strategy: name_of_strategy_1 = CoT+H, name_of_strategy_2 = CoT, name_of_strategy_3 = H, name_of_strategy_4 = X)

	coef	std err	z	P> z	[0.025	0.975]
name_of_startegy_1	23.2956	5.72e+04	0.000	1.000	-1.12e+05	1.12e+05
name_of_startegy_2	0	1.000	0	1.000	-1.960	1.960
name_of_startegy_3	0	1.000	0	1.000	-1.960	1.960

FIGURE 5.9: The relation of task execution and different prompt strategies in Class 2 (Here are the strategy name and it's correspnding strategy: name_of_strategy_1 = Zero shot, name_of_strategy_2 = One shot, name_of_strategy_3 = Three shot)

5.4.4 Task Execution

Fourthly, we aimed to determine whether different prompt strategies impact task execution, and we could see the result in Figure 5.8, 5.9, and 5.10. We employed logistic regression analysis the same as previous.

The collected data of first class were CoT+H: 1, 1, 0; CoT: 1, 0, 0; H: 1, 0, 1; and X: 1, 1, 1. The logistic regression model did not converge within the maximum number of iterations, and the P-values were all above the significance level ($\alpha = 0.05$), indicating no significant effect of these strategies on task execution. The data of second class were Zero-shot: 1, 1, 0, 1; One-shot: 1, 0, 0, 0; and Three-shot: 1, 0, 1, 1. Again, the logistic regression model did not converge, and the P-values were 1.000 for Zero-shot, 1.000 for One-shot, and 1.000 for Three-shot, indicating no significant impact. The data of third class were Zero-shot: 1, 1, 0, 1; and Few-shot: 1, 0, 0, 0, 1, 1, 1, 1. The logistic regression analysis showed no significant effect, with P-values of 1.000 for Zero-shot and Few-shot.

The logistic regression results for all classes showed no significant effect on task execution, with all P-values at 0.571 or higher in the first category, all 1.000 in seoncd and third class.

These findings suggest that the choice of prompt strategy—whether CoT and Heuristic, CoT only, Heuristic only, Neither CoT nor Heuristic, Zero-shot, One-shot, Three-shot, or Few-shot—may not influence the execution of tasks.

	coef	std err	z	P> z	[0.025	0.975]
name_of_startegy_1	23.2956	5.72e+04	0.000	1.000	-1.12e+05	1.12e+05
name_of_startegy_2	0	0.707	0	1.000	-1.386	1.386

FIGURE 5.10: The relation of task execution and different prompt strategies in Class 3 (Here are the strategy name and it's correspnding strategy: name_of_strategy_1 = Zero shot, name_of_strategy_2 = One shot)

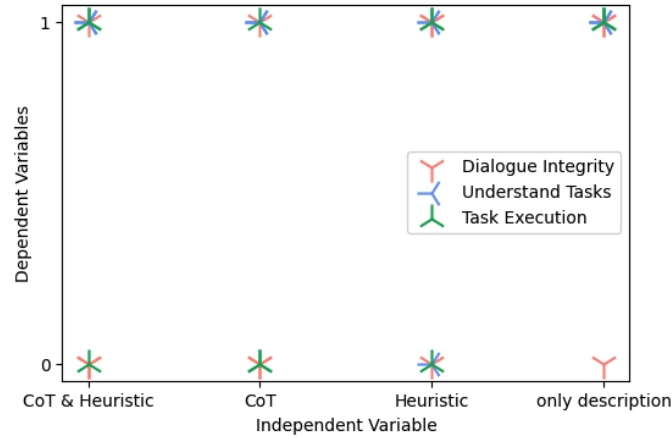


FIGURE 5.11: Scatter plot of Dependent Variables vs Prompt Strategies of CoT and Heuristic, CoT, Heuristic, and neither CoT nor Heuristic

5.4.5 Data Visualisation

We visualized the prompt strategies in different classes in scatter plot, we can see the result in Figure 5.11, 5.12, and 5.13.

In the first part, which are the four strategies in Class 1, as shown in Figure 5.11. We analyzed the impact of different prompt strategies ("CoT and Heuristic," "CoT," "Heuristic," and "neither CoT nor Heuristic") on three dependent variables: dialogue integrity, understanding tasks, and task execution. For dialogue integrity, "CoT Heuristic" and "CoT" showed similar performance with mixed results, while "X", which is "neither CoT nor Heuristic," appeared to have a positive impact. For understanding tasks, all strategies mostly resulted in a value of 1, indicating that the strategies had little impact on this variable. For task execution, "CoT Heuristic" and "CoT" showed inconsistent results, while "Heuristic" and "X" performed better. Overall, "X" seemed to perform better for both dialogue integrity and task execution.

In the second part, which are the three strategies in Class 2, as shown in Figure 5.12. We analyzed "Zero Shot," "One Shot," and "Three Shot" prompt strategies. "One Shot" showed better performance for dialogue integrity and task execution, while the other strategies were inconsistent. Understanding tasks were mostly unaffected by the number of prompts.

Finally, in the third part, which are the two strategies in Class 3, as shown in Figure 5.13. We compared "Zero Shot" and "Few Shot" strategies. "Few Shot" performed better for both dialogue integrity and task execution, while understanding tasks remained mostly unaffected. In summary, "One Shot" and "Few Shot" strategies showed positive effects on dialogue integrity and task execution, while all strategies had little impact on understanding tasks.

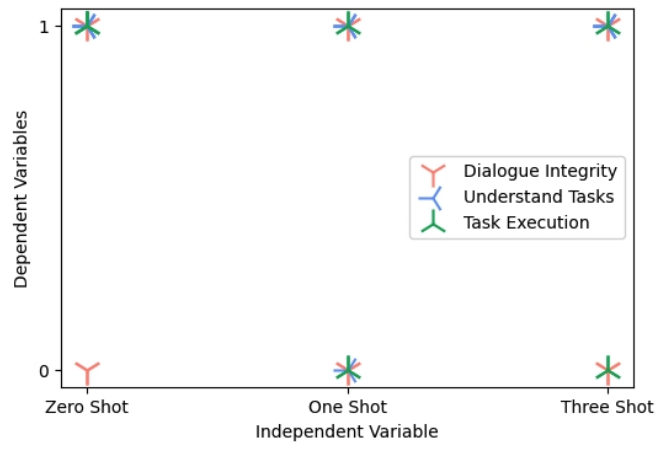


FIGURE 5.12: Scatter plot of Dependent Variables vs Prompt Strategies of Zero-shot, One-shot, and Three-shot

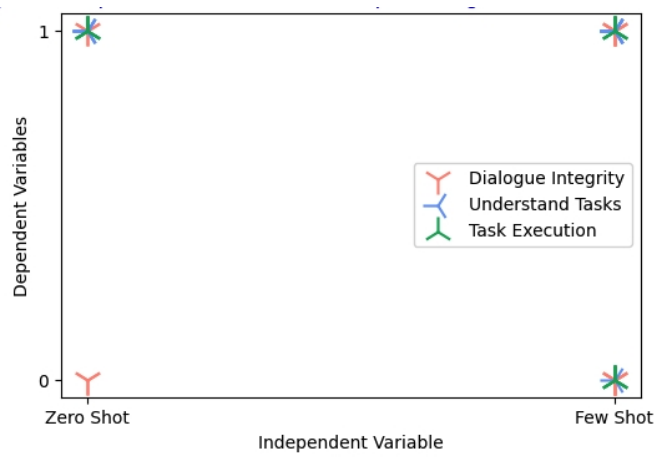


FIGURE 5.13: Scatter plot of Dependent Variables vs Prompt Strategies of Zero-shot and Few-shot

5.5 Conclusion

In the preselection process for identifying the best-performing conversations, we evaluated multiple conversations based on three criteria, ultimately identifying conversations 2, 4, 7, 9, 11, and 12 as meeting all the criteria. However, conversation 7 was excluded due to lack of time considerations in the plan. Among conversations 9, 11, and 12, conversations 9 and 12 were chosen for their concise encouragement phrases, which enhanced readability. In conclusion, conversations 2, 4, 9, and 12 were identified as the best performers for further user feedback collection in the subsequent process.

Following this, we conducted an analysis to examine the extent to which prompt strategy influences the performance of the evaluated criteria. First, an empirical analysis using ANOVA demonstrated that the different prompt strategies investigated did not significantly impact the word count of the responses. Secondly, the logistic regression analysis indicated that the different prompt strategies among the three classes investigated did not significantly impact dialogue integrity, task understanding, or task execution in the responses.

Although there was no significant impact on dialogue integrity, task understanding, or task execution, some slight differences among these prompt strategies were observed in data visualization. In Class 1, the "X" strategy appeared to perform better for both dialogue integrity and task execution. In Class 2, the "One Shot" strategy showed better performance for dialogue integrity and task execution, while other strategies were inconsistent. In Class 3, the "Few Shot" strategy performed better for both dialogue integrity and task execution, while task understanding remained mostly unaffected.

Chapter 6

User Survey: Gathering Feedback on Active Listening

Following the selection of the best conversations, we conducted a user survey. This survey targeted a specific user group: international students currently studying abroad at a university. Participants in the survey were presented with multiple chatbot conversations. In the survey, after reading each conversation, participants were invited to complete a survey. The survey was designed to gather their feedback on the chatbot's active listening skills displayed during the interaction.

Participation Guidelines and Data Privacy

To ensure a representative sample, the survey had specific inclusion and exclusion criteria. Participants must be international students currently enrolled at a university abroad. However, individuals with past or present struggles with mental health or those who feel uncomfortable reading about student struggles were excluded from the survey. The survey is completely anonymous. We collected some basic demographic data from participants, such as their age, gender, university affiliation, and continent of origin. This information was used alongside their survey responses for analysis purposes. It is important to note that once submitted, participants were not able to access their individual data.

By conducting this experiment, we hope to gain valuable insights into the effectiveness of active listening strategies in chatbots. The findings contributed to the development of more engaging and user-centric chatbot experiences, particularly for populations like international students who may benefit from additional support and understanding.

6.1 Design

This survey is designed to capture participants' opinions and experiences after reading a series of generated conversations. Participants are then presented with conversations demonstrating four different Active Listening strategies employed by the chatbot. Every participant rated the same conversation in the same sequence.

Likert Scale

The Likert scale [54] is widely used in surveys to measure respondents' attitudes or feelings towards a given subject. Its primary advantages include simplicity and ease of use for both respondents and researchers. It allows participants to express the intensity of their feelings towards a particular statement, providing a more nuanced view than a simple yes/no response. Moreover, the Likert scale can help reduce central tendency bias, as it encourages respondents to carefully consider their level of agreement or disagreement [44].

In this survey, the Likert scale evaluates the chatbot's ability to paraphrase participants' statements, verbalize participants' emotions, summarize participants' points, and encourage participants during the conversation. Example questions include: "To what extent do you think the chatbot can paraphrase the user in this conversation?" and "To what extent do you think the chatbot can verbalize the user's emotions in this conversation?" These questions are rated on a scale from 1 to 5.

Open-Ended Questions

Open-ended questions allow respondents to provide more detailed and nuanced answers, enabling them to express their thoughts in their own words. This can lead to the discovery of insights that might not emerge from structured questions and is particularly useful for exploring complex issues and understanding the reasons behind respondents' opinions and behaviors [73]. In this survey, open-ended questions address general experiences and personal preferences regarding the importance of the four Active Listening techniques. Examples include: "What did you feel during this conversation?" and "What else would you like to share with us?"

Ranking Questions

Ranking questions ask respondents to order items based on their preferences, providing a clear picture of what is most important to them. This type of question forces respondents to make clear distinctions between different options, highlighting priorities and preferences. Ranking questions can reveal relative importance or preference levels that might not be apparent through rating scales alone, making them particularly useful in understanding consumer preferences, prioritizing features in product development, or determining the most valued aspects of a service [4]. Therefore, participants are asked to rank the following aspects in order of importance in terms of active listening capacity: Paraphrasing, Verbalizing Emotions, Summarizing, and Encouraging.

The survey takes approximately 15 minutes to complete. The full content of the survey is available in Appendix C.

6.2 Result

Demographic Characteristics of Survey Participants

The survey participants comprised international students currently studying at the University of Twente, ranging in age from 21 to 33 years, with a mean age of 26. We used a histogram to visualize the age distribution, as shown in Figure 6.1. The gender distribution included 7 males (43.8%), 8 females (50%), and 1 individual (6.3%) who pre-

Characteristic	N%
Age	mean 26 years (range: 21-33)
Gender	
Male	7 (43.8)
Female	8 (50)
Prefer not to say	1 (6.3)
University Affiliation	
University of Twente	16 (100)
Continent of Origin	
Europe	4 (25)
Asia	11 (68.8)
Africa	1 (6.3)

TABLE 6.1: The demographic data of participants

ferred not to disclose their gender. Regarding geographical representation, the majority of participants were Asian (68.8%), with 11 students identifying as such. European students made up 25% of the sample, with 4 participants, while 1 participant (6.3%) identified as African.

As shown in Figure 6.2, Conversation 1 is labeled as C1, corresponding to the second conversation mentioned in the previous chapter; Conversation 2 is labeled as C2, which refers to the fourth conversation; Conversation 3 is labeled as C3, corresponding to the ninth conversation; and Conversation 4 is labeled as C4, which corresponds to the twelfth conversation mentioned earlier. Additionally, 'O,' 'A,' and 'E' in the figure represent the overall population, Asian participants, and European participants, respectively. We excluded African participants from the figure since there was only one African respondent in the sample, leading to a lack of representativeness. Including this low-proportion data point might introduce bias into the overall analysis.

Figure 6.3 shows the scores participants assigned to their personal preferences for the four active listening skills. The skill ranked first was assigned a score of 5, the second place received a score of 3, the third place was given a score of 1, and the last place was scored as 0. We then summed the total scores based on the participants' rankings.

It is evident that European participants generally rated the chatbot's performance higher than their Asian counterparts, indicating greater satisfaction among the European group. In Conversation 1, Europeans rated paraphrasing the highest at 4.75, while summarizing received the lowest score of 4.0. Conversely, the Asian group rated summarizing highest at 4.45 and encouragement lowest at 3.36. In Conversation 2, Europeans awarded both verbalizing and encouragement the highest scores of 4.75, with summarizing receiving the lowest at 4.25. The Asian group, however, maintained a preference for summarizing, scoring it highest at 4.45, and rated encouragement lowest at 3.36. For Conversation 3, Europeans rated paraphrasing highest at 4.5, with all other aspects receiving a score of 4.25. In contrast, Asians rated summarizing highest at 4.55 and verbalizing lowest at 3.82. In Conversation 4, Europeans rated both paraphrasing and verbalising highest at 4.75 and the rest at 4.5. Asians again rated summarizing highest at 4.45, similar to their ratings in Conversations 1 and 2, with verbalizing receiving the lowest score of 3.82.

	C1			C2			C3			C4		
	O	A	E	O	A	E	O	A	E	O	A	E
Understanding	4.06	4	4.25	4.25	4.18	4.5	4.13	4	4.25	4.29	4.18	4.25
Paraphrasing	4.38	4.27	4.75	4.19	4.18	4.5	4.19	4.18	4.5	4.28	4.27	4.75
Verbalising	3.94	3.73	4.5	4	3.73	4.75	3.84	3.82	4.25	4	3.82	4.5
Summarising	4.31	4.45	4	4.38	4.45	4.25	4.38	4.55	4.25	4.44	4.45	4.5
Encouraging	3.69	3.36	4.5	3.69	3.36	4.75	3.75	3.45	4.5	4.13	4	4.5
overall grade	3.38	3.18	3.75	3.63	3.3	4.25	3.69	3.5	4	4	3.9	4

TABLE 6.2: The result of survey

	Overall	Asian	European
Paraphrasing	21	13	5
Verbalising	52	35	12
Summarising	28	21	7
Encouraging	43	30	12

TABLE 6.3: The Personal Preference of Four Active Listening Skills

Overall, Europeans consistently gave higher scores than Asians across all conversations. Europeans favored Conversation 2 the most with an average score of 4.25, followed by Conversations 3 and 4 at 4.0, and rated Conversation 1 the lowest at 3.75. On the other hand, Asians rated Conversation 4 highest at 3.9, followed by Conversations 3 and 2 at 3.5 and 3.3, respectively, with Conversation 1 receiving the lowest score of 3.18.

In Conversation 4, which was rated as the best performance among the four conversations, the highest average score was given to summarizing with 4.44. This was followed by paraphrasing with 4.38, encouraging with 4.13, and the lowest score was given to verbalizing with 4.0. Interestingly, from a personal perspective, people overall preferred the chatbot to focus on verbalizing the most, followed by encouragement, summarizing, and paraphrasing the least. The result is shown in Figure 6.3.

6.3 Evaluation

It is noticeable that Conversation 1 utilized a one-shot CoT heuristic prompt strategy, Conversation 2 employed a zero-shot CoT prompt strategy, Conversation 3 followed a three-shot heuristic prompt strategy, and Conversation 4 used a three-shot prompt strategy. Overall, Conversation 4 was rated the best with an average score of 4, receiving 3.9 from Asians and 4 from Europeans. For Asians, this conversation was their top choice, whereas it was the second preference for Europeans. The lowest overall rating was for Conversation 1, with an average score of 3.38, consisting of 3.18 from Asians and 3.75 from Europeans, making it the least favored by both groups. Europeans rated Conversation 2 as the best performance, with a score of 4.25, and it was also the third-highest overall with an average of 3.63. In Conversation 4, the highest one, we implemented only three-shot prompt strategy, summarizing and paraphrasing were rated the highest with scores of 4.44 and 4.38 respectively. Interestingly, Europeans rated verbalizing and paraphrasing the highest at 4.75, closed to their personal preferences, which contributed to this conver-

sation's top rating.

However, Asians still considered summarizing the most notable technique. From the open question feedback, it is evident that participants disliked paraphrasing due to its frequent repetition. Comments such as "too repetitive" and "The chatbot seems to have responses that sound very repetitive and seems to be following a very strict format which makes it lack the emotional touch" highlight this issue. Participants also mentioned that repetitive phrases like "hello there" detract from the conversation's quality. This repetition made the interaction feel very machine-like, with remarks such as "Make me feel like I'm talking to an inanimate machine in a short time" and "The chat seems very robotic. The phrases are very repetitive and the suggestions made by the chatbot are very generic."

In conclusion, the zero-shot CoT prompt strategy performed the best overall, particularly due to the clear emotional expression in verbalizing. Nevertheless, there is room for iteration as some participants felt that summarizing was overly emphasized. For future iterations, we focused on the zero-shot CoT prompt strategy, emphasizing techniques of verbalizing and encouragement. We also minimized summarizing and paraphrasing by limiting paraphrasing to two or three sentences to avoid repetition of content.

The Relation of Demographic and Ranking Individual Active Listening Skills Preference

From Table 6.4, it is evident that most of the intervals cross zero, indicating that the effects of these variables on different dependent variables are not statistically significant. This further supports the conclusion that age, gender, and continental background (Asia or Europe) do not have statistically significant impacts on these skills (such as paraphrasing, verbalizing emotions, summarizing, encouraging, and understanding users).

Based on the provided regression results in Table 6.4, we can conclude that age, gender, and the continent participants are from do not significantly impact their selection of the most important and least important active listening skills.

For the selection of the most important active listening skill (`most_important_encoded`), the coefficients for `gender_Male`, `gender_Female`, `from_asia`, `from_europe`, and `age` all have P-values of 1.000, indicating no statistical significance. The wide confidence intervals, which include zero, further support that these variables do not significantly affect the outcome. For example, the coefficient for `gender_Male` in `most_important_encoded=1` (Encouraging) is 22.1028, with a confidence interval from $-1.52e+05$ to $1.52e+05$, and the coefficient for `age` is -0.2177, with a confidence interval from -1.118 to 0.683. Similar patterns are observed for `most_important_encoded=2` (Verbalising Emotions) and `most_important_encoded=3` (Summarizing). Similarly, for the least important skill (`least_important_encoded`), the coefficients also have P-values of 1.000 and wide confidence intervals, indicating no significant effect. For instance, the coefficient for `gender_Male` in `least_important_encoded=1` (Paraphrasing) is -22.2175, with a confidence interval from $-1.06e+05$ to $1.06e+05$, and the coefficient for `age` is 0.3683, with a confidence interval from -0.713 to 1.450. Similar results are seen for `least_important_encoded=2` (Summarizing).

In conclusion, these regression results strongly indicate that age, gender, and continental background do not significantly influence the selection of the most and least important

variable	dependent_var	2.5%	97.5%
const	Paraphrasing	-4.538799059790238	5.907029763130854
gender_Male	Paraphrasing	-0.9121161958078798	2.4158755943041235
gender_Female	Paraphrasing	-0.43503770169543476	2.8526640460373036
from_asia	Paraphrasing	-1.5410398296929837	1.8994675445497453
from_europe	Paraphrasing	-1.0939871154279044	2.8914554698582857
age	Paraphrasing	-0.08224081851161202	0.253174481783716
const	Verbalizing_emotions	-1.5493741360476347	13.388909683777737
gender_Male	Verbalizing_emotions	-1.0187311249909845	3.7405356362691853
gender_Female	Verbalizing_emotions	-1.005530942849423	3.6961181704119994
from_asia	Verbalizing_emotions	-3.6459621376244975	1.274209972401306
from_europe	Verbalizing_emotions	-3.2168228649659585	2.482645649776082
age	Verbalizing_emotions	-0.3491896261738057	0.13047829087352836
const	Summarizing	-5.308406112625423	10.046009615052393
gender_Male	Summarizing	-3.1902831143615833	1.7015613098503064
gender_Female	Summarizing	-3.093668819990858	1.7389529163076003
from_asia	Summarizing	-1.8770504129079764	3.1801816587440856
from_europe	Summarizing	-2.5240552762164676	3.334181858494951
age	Summarizing	-0.1673296460267597	0.3257002560962368
const	Encouraging	-2.289405003366319	16.946300406430986
gender_Male	Encouraging	-3.274728820254638	2.8536761886756956
gender_Female	Encouraging	-2.325573692275896	3.7286383158601697
from_asia	Encouraging	-4.8979795555805445	1.4376197954206442
from_europe	Encouraging	-4.2011868189467965	3.1378956797062862
age	Encouraging	-0.41275972086664314	0.20489829515045188
const	Understanding_user	0.35115276758824177	13.986907573137014
gender_Male	Understanding_user	-0.6157526032204124	3.7285345581076377
gender_Female	Understanding_user	-1.2611983841481853	3.030495043518127
from_asia	Understanding_user	-2.476760476825954	2.0144020491110894
from_europe	Understanding_user	-2.7531532064555533	2.4493557381011186
age	Understanding_user	-0.3764359098698954	0.06140783334947905

TABLE 6.4: The analysis of active listening skill

active listening skills for the participants in this study.

6.4 Ethical Consideration and Value

Involving humans in chatbot research requires careful attention to ethics. Transparency in avoiding deceiving users is key, as outlined by Lee et al. [16] who emphasize informing users about the system’s capabilities and limitations to prevent misuse and respecting user autonomy. A 2020 paper [62] also identified several ethical concerns surrounding AI and robotics, which this study aims to address the ethical concerns were demonstrated in four main points as followed.

Privacy and Surveillance

There’s a risk of AI systems collecting excessive personal data. To mitigate this, this

study only collected information explicitly consented to by participants. The chatbot itself did not collect any personal data. Participants were informed about the risks of sharing personal information with the chatbot, and any data collected only was used for this study and stored securely for five years.

Manipulation of Behavior

AI systems can be designed to influence user behavior. To avoid this, the chatbot was developed to provide minimal or no advice. While some users might find limited advice frustrating, forceful guidance is unethical. Participants were informed about this approach in the information letter. [52]

Opacity of AI Systems

Users might not understand how AI systems generate responses. However, the code and more details about development could be, but were not, revealed after the experiment if the participant inquired to access. The study clearly explained this in the information letter to participants. [62]

Bias in Decision System

In this study, the chatbot is actively developed not to mention anything with race, gender, ... etc, that will make user feel discrimination or uncomfortable.

This study addresses these concerns through a two-part approach: a survey and a user experiment. While a detailed information letter was provided beforehand, we acknowledge the risk of Information Overload Bias [82] where participants struggle to digest excessive information.

In the survey session, a one-page checklist summarizing key points in bullet form accompanied the questionnaire to address this. In the user experiment session, which involves conversation and interview, necessitates even stricter adherence to ethical guidelines due to the increased risk. We provided the information letter and go through each bullet point with participants, ensuring they click the checkbox for each one to confirm their understanding of all details they encountered in the experiment.

6.5 Conclusion

We could see the difference between Europeans and Asians, the survey showed that Europeans preferred paraphrasing while Asians favored summarizing. Conversation 2 resonated best with Europeans, while Conversation 4 was the overall favorite and top choice for Asians. Both "One Shot" and "Few Shot" strategies improved conversation flow and task completion, while prompts had minimal impact on task understanding. Notably, the zero-shot CoT prompt strategy used in Conversation 4 excelled in conveying emotions verbally and achieved the best overall results. Demographics like age, gender, and continent had no significant influence on preferred active listening techniques, suggesting a universal approach is possible.

In conclusion, the three-shot prompt strategy (C4), particularly effective in expressing

emotions, emerged as the top performer. However, participant feedback highlighted a need for modification. Some felt summarizing was excessive, while others disliked repetition, perceiving the chatbot as unnatural. Subsequently, we focused on refining the three-shot strategy, emphasizing natural verbalization and encouragement techniques. Additionally, we minimized summarizing and limit paraphrasing to a few sentences to avoid repetition.

Chapter 7

Iteration

To improve our chatbot design, we followed an iterative approach. First, we refined the chatbot prompts based on feedback from the participants in our previous study, focusing on clearer responses, less summarized information, minimal paraphrasing, and reduced repetition. Then, we'll conduct an experiment where users interact with the improved chatbot and participate in an interview to provide feedback. This iterative process with user input ensures the chatbot is designed to effectively serve its intended purpose.

Therefore, in this chapter, we first outlined our approach to the iteration of the prompt in section 7.1. Following this, we conducted an experiment involving practical interaction with the chatbot, accompanied by an interview, as described in section 7.2. Subsequently, the results of the experiment were detailed in section 7.3, and finally, the evaluation of these results was presented in section 7.4.

7.1 Iteration Design

7.1.1 Emphasize Verbalization

To emphasize verbalization, we noted that the sequence impacts the importance of active listening tasks in the prompt [89]. We implemented specific active listening skills. The concept was applied as follows: “The sequence of the task represents the level of importance of the tasks. 1. Verbalizing Emotions... 2. Encouraging... 3. Paraphrasing... 4. Summarizing...” to mention that the sequence impacts the importance of the active listening tasks.

Furthermore, we added the adverb of frequency in each active listening tasks. For example, “Verbalizing Emotions: Often directly express and acknowledge the user’s emotions whenever they mention their emotion or feeling.” and “Encouraging: Often praise the user when they share personal issues, especially those they find difficult to discuss.”

7.1.2 Minimize Summarizing and Paraphrasing

We minimized summarizing and paraphrasing by placing these tasks later in the sequence, as we wanted to focus less on them. Participants mentioned that extensive content and

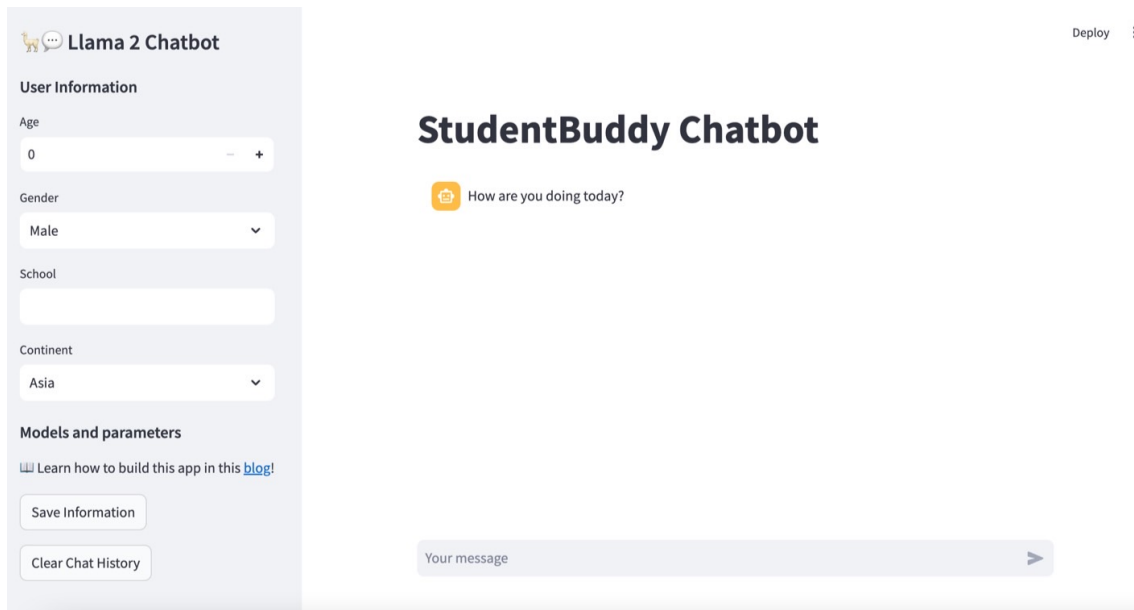


FIGURE 7.1: The user interface of the chatbot

summarization annoyed them, so we limited these tasks to one sentence each. The concept was applied as follows: **Paraphrasing:** Seldom rephrase in a sentence what the user said to show understanding. and **Summarizing:** Seldom write a short and concise summary of the conversation in a sentence.

7.1.3 Reduce Repetition

To reduce repetition, we experimented with different repetition penalty parameters and temperature parameter. The default of repetition penalty setting was 1, but we tested values from 1 to 2 and found that a penalty of 1.9 performed the best. The results showed that with a repetition penalty of 1, the word repetition rate was high, whereas, with a penalty of 1.9, the repetition rate significantly decreased. Also, we changed our temperature from 0.1 to 1, which is the value in the middle of high temperature and low temperature.

7.1.4 User Interface

In this stage, participants were required to interact directly with the chatbot, making it crucial to provide a complete user interface to minimize any feelings of unfamiliarity or discomfort that might arise from a code-like interface. We used the Streamlit package in Python to build this user interface, as shown in Figure 7.1. The sidebar on the left-hand side includes a section for participants to securely enter their personal information, including "Age", "Gender", "School", and "Continent", ensuring a private and complete environment. Before starting the chat, participants could input their details, and once they finished, they could press the "Save Information" button. This action would automatically save the chat history, eliminating the need for manual saving by me. We could see the final prompt in Figure 7.2.

```

# Define Prompt Content
Role_Prompt = """"You are StudentBuddy, a helpful companion for international students. Your role in the conversation is to be a good listener.""
Active_Listening_Prompt = """"These are your tasks:
Follow the regulations below: The text between <begin> and <end> is an example for the regulations.
The sequence of the task represents the level of importance of the tasks..

1. Verbalizing Emotions: Often directly express and acknowledge the user's emotions whenever they mention their emotion or feeling. <begin>It sounds like you are having the issue of <the issue mentioned>. Take a deep breath and don't worry. I'm here to support you.<end>
<begin>It sounds like <the thing they mentioned> is happening. I'm here to support you.<end>
<begin>It sounds like you're feeling <the emotion they expressed from the text>. That's completely normal and I'm here to support you.<end>

2. Encouraging: Often praise the user when they share personal issues, especially those they find difficult to discuss.
<begin>Thank you for sharing me your struggling, I am here to help you. What can I do for you? <end>
<begin>I am happy they you could share these with me. You're doing a good job, and I'm here to support you with anything I could do.<end>
<begin>It's great that you're reaching out for help. You're doing an amazing job <issue they mentioned in the context>, and I'm here to assist you with anything you need.<end>

3. Paraphrasing: Seldom rephrase in a sentence what the user said to show understanding.
<begin>I hear you saying you're feeling <the things user said>. Is that right?<end>
<begin>I hear you mention <the things user said>. Is that right?<end>
<begin>I hear you saying<the things user said>. Is that the thing you've said?<end>

4. Summarizing: Seldom write a short and concise summary of the conversation in a sentence.
<begin>As what I understand, <point 1 from the context> and <point 2 in the context> are happening now. Let's start solving the first problem.
<end>
<begin>Okay, so now you are facing some challenges, <challenge 1 from the context> and <challenge 2 in the context>, right? How can I help you?<end>
<begin>So, you've mentioned that you're struggling with <point 1 from the context> and also <point 2 in the context>. Let's break this down and tackle each part one by one.<end>
""

```

FIGURE 7.2: The prompt after iteration

7.2 Experiment

In this stage, our goal was to gather overall feedback from participants. To achieve this, we facilitated an interaction with a chatbot followed by a semi-structured interview. For the recruitment, participants were required to be international students currently studying abroad at a university. In the experiment, participants engaged in a practical interaction with the chatbot on-site. They received an information form that informing the procedure and the ethical consideration during the whole process, and after that, they were asked to pretend they were struggling with an issue and to converse with the chatbot, and they could also pick their own topics, but it should be related to the issue of international students. We provided a list of potential struggles, including financial issues, academic issues, and cultural differences, but participants were free to choose any topic they wished to discuss.

To address our research question, we divided the interview questions into three parts: Appropriateness, Supportive Characteristics, and Overall Usefulness. The question of interview can be found in Appendix F.

7.3 Result

The demographic information of interviewees in this study were all international students from the University of Twente. The participants were a 26-year-old Asian female, a 26-year-old Asian male, a 23-year-old European female, a 24-year-old Asian female, and a 30-year-old Asian female. In the following chapter, we called them as participant 1 to 5 representatively. The average time participants interacted with the chatbot was 13 minutes. The detailed results of participants interacting with the chatbot can be found in Appendix E. The organized and transcribed interview results provided in Appendix G. This section aims to gain insights from the feedback to evaluate the overall performance of the chatbot and participants' evaluations. In the next section, we will analyze the interview transcription results.

7.4 Thematic analysis

Thematic analysis [9] of the interview transcripts was conducted to identify recurring themes in participants' responses, aligning with the research questions guiding our study: How do users perceive the appropriateness, supportive characteristics, and overall usefulness of the chatbot?

Our thematic analysis followed a deductive approach, applying a top-down view of the data [9]. We began with pre-established theories [5] and questions to structure our qualitative data analysis. In this experiment, the interview questions were designed to explore the appropriateness, supportive characteristics, and overall usefulness of the chatbot we developed.

First, we organized the quotations into clear and understandable sentences, and then we coded them into a corresponding code.

For participant 1, coded as P1, Table 7.6 shows the following key points. The participant liked the chatbot's soft, polite, and clear tone, coded as C1. She appreciated the chatbot's collaborative approach (C2) and the non-judgmental space it provided (C3). However, she found too much information overwhelming (C4). She felt the chatbot understood her issues well (C8) and provided clear and useful information (C6). The chatbot's emotional support and encouragement made her feel understood and accompanied (C7). She suggested adding multiple-choice options at the beginning of conversations (C10). She also recommended the chatbot for lonely individuals or those needing someone to talk to (C11, C12).

For participant 2, coded as P2, Table 7.6 highlights several insights. The participant appreciated the chatbot's practical advice (C13) and felt positive about its methods for handling assignments (C14). They recognized the chatbot's useful solutions (C15) but preferred shorter responses (C16). The participant confirmed the chatbot understood their issues well (C8) and responded supportively (C17). They suggested adding humor (C18) and thought the chatbot was suitable for people lacking a support network (C19). They valued feeling listened to (C20) and appreciated the safe space for discussing issues (C21).

For participant 3, coded as P3, Table 7.7 indicates key points. The participant found lengthy responses frustrating (C16) but appreciated the chatbot's calming and safe tone (C22). They valued the chatbot's encouragement (C7) and non-judgmental nature (C3). The participant felt a sense of companionship (C23) and that the chatbot helped break down problems into manageable tasks (C24). They appreciated the guidance (C25) and practical solutions (C15). The participant valued the safe space for expressing feelings (C26), felt safe communicating with the chatbot (C27), and felt understood (C28).

For participant 4, coded as P4, Table 7.7 shows the following key points. The participant found the chatbot's tone to be friendly (C29) and neutral, yet considerate and supportive (C30). They appreciated the clear information provided (C6) and found the solutions offered to be useful (C15). The encouragement from the chatbot was significant, making the participant feel not alone (C7). However, the participant noted that the

content could be repetitive and suggested skipping the introduction to get straight to the needed information (C31). The chatbot was also comforting, providing compliments and support (C32). The participant valued both the mental support and practical methods offered (C13) and felt a sense of companionship (C23). An additional function suggested was to have a phone app for more accessibility (C33). The participant would recommend the chatbot to friends, especially those who have recently shifted their environment and feel alone, as the chatbot is helpful in getting to know everything (C34, C19).

For participant 5, coded as P5, Table 7.8 shows the following key points. The participant felt that the chatbot initially expressed empathy well, which was impressive (C35, C36). However, they noted that the text became too lengthy and less natural over time (C16). The responses were contextually aligned but often repetitive (C31). The participant appreciated the guidance provided by the chatbot (C25) and found it comforting when reassured that everything would be okay (C32). They valued the practical solutions offered, which helped to break down problems and clarify what they really wanted (C15). The participant also mentioned that the chatbot is suitable for those seeking to clarify their problems, particularly useful for international students in the initial stages of mental health support, similar to university support services (C37).

After the initial stage, we categorized the codes into related groups, as shown in Table 7.3, 7.4, 7.5 below.

7.5 Themes

7.5.1 Positive Tone of the Chatbot

The chatbot's tone is often described as soft, polite, and clear, which contributes significantly to a relaxed and safe user experience. Participant 1 remarked, "I like the tone; it's soft, polite, and clear," highlighting the gentle communication style. Participant 3 emphasized the reassuring nature of the chatbot, saying, "I like how the chatbot talks; it is relaxing and makes me feel safe. It provides positive emotions even when I express negative ones and always mentions that I am not alone." Additionally, participants 4 and 5 found the tone to be friendly and supportive, with comments such as "I think they are quite friendly" and "I would say the style is neutral and also shows the considerate side. really supportive!" These statements underscore the importance of a positive tone in fostering a comfortable and supportive interaction.

7.5.2 What the Chatbot Can Provide: Essentially

This is the category of the essential thing that the chatbot can provide, such as a useful solution, instead of mentally supporting. Participant 1 noted that the chatbot effectively understands their problems and provides valuable information and solutions. One user shared, "It was helpful with my financial issue, providing a potential solution and understanding the problem well, and offering encouragement." Participant 4 appreciated the chatbot's clarity and support, remarking, "They provide me with clear info." The chatbot was also praised for offering practical advice, such as breaking down study tasks into smaller steps, which made complex issues more manageable. Participants 2 and 3 felt that the chatbot responded supportively and provided essential guidance, such as, "Breaking down assignments into smaller tasks is a good approach and solves my problem" and

Category	Codes	Examples
Tone: Positive	[C1] Tone: Soft, polite, and clear	[P1] "I like the tone, it's soft, polite, and clear."
	[C22] Tone - Relax and Safe	[P3] "I like how the chatbot talks; it is relaxing and makes me feel safe. It provides positive emotions even when I express negative ones and always mentions that I am not alone."
	[C29] Tone - Friendly	[P4] "I think they are quite friendly."
	[C30] Tone - Neutral	[P4] "I would say the style is neutral and also shows the considerate side. really supportive!"
	[C35] Tone - Empathy	[P5] "in the beginning, i feel impressed, it has empathy third and fourth time later, it would be too much, too much text for the rest of it. not nature due to the long text, but good in the first and second one" [P5] "the initial one of the chatbot express the empathy why do you feel this and why do you feel that"
	[C36] Tone - Impressive	[P5] "the initial one of the chatbot express the empathy why do you feel this and why do you feel that"
What Chatbot Can Provide Essentially	[C8] Understand Well	[P1] "It was helpful with my financial issue, providing a potential solution and understanding the problem well, and offering encouragement." [P1] "I give it a 4 overall because it performed well, understood the tasks, and provided good listening." [P1] "It understands quite well and provides clear information and support."
	[C6] Provide information	[P2] "It is helpful, offering advice and a space to talk about problems when people cannot relate or empathize." [P4] "They provide me with clear info, it is very helpful!"
	[C13] Provide solution	[P2] "The main offers from the chatbot are advice and support." [P2] "The chatbot advised talking to a student consultant and breaking down study tasks into small steps." [P2] "The chatbot advised talking to a student consultant and breaking down study tasks into small steps." [P4] "it is helpful in terms of the mental support and the practical method"
	[C15] Provide a useful solution	[P2] "Breaking down assignments into smaller tasks is a good approach and solves my problem." [P2] "The chatbot offers advice and support." [P3] "Guided me to think about the issue in small tasks, making my thoughts clearer." [P4] "They provide me with clear info, it is very helpful!" [P4] "also list down the thing" [P5] "overall it's a good idea that the break down part, break down the problem it helps me to clarify and know what i really want, it helps me to clear my problem is"
	[C17] Provide Response Supportively	[P2] "The chatbot understands my problem and responds supportively."
	[C25] Guidance	[P3] "The chatbot understands the issue well, especially guiding me to think about the issue in smaller tasks, making my thoughts clearer." [P5] "it guides me."

FIGURE 7.3: The thematic analysis of interview

Category	Codes	Examples
What Chatbot Can Provide Emotionally	[C3] No Judgement	[P1] "When I mentioned my financial issue, it came up with a solution and made me feel like nobody would laugh at me."
	[C26] Provide a Space	[P3] "I recommend it because it provides a place to express negative or anxious thoughts, making me feel safe."
	[C7] Encouragement	[P3] "The response was fast and correct, providing direction and encouragement in negative situations." [P3] "When I mentioned my sadness, the encouragement part was most appropriate, making me feel safe." [P4] "in terms of the mindset, it's also helpful, because it also encouraged me a lot, and told me I am not alone."
	[C21] Chatbot Creates a Space to Talk	[P2] "It provides a place to talk about my problems."
Participant Feeling: Negative	[C4] Too much info in a message	[P1] "Too much information in a single message makes me anxious."
	[C16] Length too long	[P2] "I would like shorter responses." [P2] "The chatbot is supportive and provides good advice, but shorter responses would be better." [P2] "I prefer shorter responses; it's nicer not to read a lot of text." [P3] "Long responses after specifying the issue are annoying." [P3] "Sometimes the length of the response is too long, and I don't like reading much content when I'm down." [P3] "The length is sometimes too long, making me feel annoyed." [P5] "not nature due to the long text, but good in the first and second one"
	[C31] Repeation	[P4] "the content is a little really repetitive, for example it would be better it skipped the intro, and just offer what i need" [P5] "the response, based on the context is align, but the sentence repeated a lot" [P5] "the text keep repeating."
Participant Feeling: Positive	[C2] Think idea together	[P1] "When I mentioned my financial issue, it came up with a solution and made me feel like nobody would laugh at me."
	[C14] Positive emotion	[P2] "Breaking down assignments into smaller tasks is a good approach and solves my problem."
	[C27] Feel safe	[P3] "I recommend it because it provides a place to express negative or anxious thoughts, making me feel safe." [P3] "It kept saying, 'Don't forget you are not alone,' which made me feel very supportive."
	[C28] Feel Understood	[P1] "I felt understood."
	[C24] Feel Problem Solved	[P3] "The chatbot understands the issue well, guiding me to think about the issue in smaller tasks, making my thoughts clearer."
	[C23] Feel Companion	[P3] "It kept saying, 'Don't forget you are not alone,' which made me feel very supportive." [P3] "I rate it 4 overall because it performed well, understood what I said, and provided companionship and understanding." [P4] "I feel companion"
	[C20] Feel Listened To	[P4] "It is helpful to have something listen to your problems."
	[C32] Feel Comforting	[P4] "I would say it helps effectively, because it comforted my feeling, complimented me, and also list down the thing" [P5] "it is supported that it said everything is gonna be okay, like comforting"

FIGURE 7.4: The thematic analysis of interview

Category	Codes	Examples
Appropriate User Group	[C11] Suitable for people who are lonely	[P2] "I will recommend it to people who are struggling but don't have anyone to talk to."
	[C19] Suitable for People Who Need to Talk to Someone	[P1] "I will probably recommend it to people who feel lonely with personal issues and need someone to talk to." [P2]"I will recommend it to people who are struggling but don't have anyone to talk to." [P4] "I will recommend my friends, especially the one who just arrived here, because they shift their environment and they are alone, and this chatbot is quite helpful to get to know everything."
	[C34] Suitable for People Just Shift Their Environment	[P4] "I will recommend my friends, especially the one who just arrived here, because they shift their environment and they are alone, and this chatbot is quite helpful to get to know everything."
	[C37] Suitable for People Want to Clarify Their Problem	[P5] " It is good for the first stage of the mental health support of international students. like SACC in uni, this will help student understand better, what their problem is"
Additional Function	[C10] Future Addition: Multiple Choice in the Beginning	[P1] "In the future, it would be nice to have buttons at the beginning to choose the issue to talk about."
	[C18] Future Addition: Make a Joke	[P2] "It would be better if the chatbot could make jokes."
	[C33] Additional Function: Phone App	[P4] "the suggestion will be put in the phone, for more accessibility."

FIGURE 7.5: The thematic analysis of interview

"Guided me to think about the issue in small tasks, making my thoughts clearer." Overall, the chatbot's ability to provide useful solutions and clear information was highly valued.

7.5.3 What the Chatbot Can Provide: Emotionally

Emotionally, the chatbot plays a crucial role in creating a judgment-free space where users can express their thoughts and feelings. Participant 1 noted, "When I mentioned my financial issue, it came up with a solution and made me feel like nobody would laugh at me." The chatbot was also praised for providing a safe space for expressing negative or anxious thoughts, with participant 3 stating, "I recommend it because it provides a place to express negative or anxious thoughts, making me feel safe." These emotional supports are vital in fostering a sense of safety and understanding among users. Encouragement was another key aspect, as highlighted by participant 3's comments such as, "The response was fast and correct, providing direction and encouragement in negative situations." These emotional supports are crucial in fostering a sense of safety and understanding among users.

7.5.4 Participant Feelings: Negative

Despite the positive aspects, some participants felt that the chatbot's responses were too lengthy, which could be overwhelming. Participant 1 mentioned, "Too much information in a single message makes me anxious," highlighting the need for more concise communication. Others echoed this sentiment, expressing a preference for shorter responses. For instance, participant 2 stated, "The chatbot is supportive and provides good advice, but shorter responses would be better." The desire for brevity was particularly pronounced when participants were feeling down, as long responses were seen as annoying and burdensome. Participant 3 noted, "Sometimes the length of the response is too long, making me feel annoyed," and participant 5 mentioned issues with repetition, such as, "the response, based on the context is aligned, but the sentence repeated a lot." These comments underscore the need for more succinct and varied communication.

7.5.5 Participant Feelings: Positive

Participants reported various positive emotions while interacting with the chatbot, including feeling understood, safe, and supported. Participant 1 shared, "When I mentioned my financial issue, it came up with a solution and made me feel like nobody would laugh at me," reflecting a sense of mutual problem-solving. Participant 3 expressed a feeling of safety, stating, "I recommend it because it provides a place to express negative or anxious thoughts, making me feel safe." Additionally, the chatbot's consistent reassurance, such as reminding users that they are not alone, enhanced feelings of companionship and support. Users felt a sense of understanding and companionship, as evidenced by comments like, "I rate it 4 overall because it performed well, understood what I said, and provided companionship and understanding." from participant 3, and "I feel companion." from participant 4. These positive emotions indicate a supportive and empathetic environment.

7.5.6 Appropriate User Group

The chatbot was deemed suitable for individuals who feel lonely or need someone to talk to. Participants recommended it for people struggling with personal issues and lacking social support. Participant 2 suggested, "I will recommend it to people who are struggling but don't have anyone to talk to." Participant 1 echoed this sentiment, stating, "I will probably recommend it to people who feel lonely with personal issues and need someone to talk to." The chatbot was also considered beneficial for people who have recently changed environments, as participant 4 mentioned, "I will recommend my friends, especially the one who just arrived here, because they shift their environment and they are alone, and this chatbot is quite helpful to get to know everything." These recommendations underscore the chatbot's potential to provide companionship and emotional support to those in need.

7.5.7 Additional Function

Participants suggested additional features to enhance the chatbot's functionality. Participant 1 proposed the inclusion of multiple-choice options at the beginning of the conversation to help users specify their issues more efficiently, stating, "In the future, it would be nice to have buttons at the beginning to choose the issue to talk about." Participant 2 recommended incorporating humor into the chatbot's responses, suggesting, "It would be better if the chatbot could make jokes." Additionally, participant 4 suggested developing a mobile application for better accessibility, with comments like, "The suggestion will be put in the phone, for more accessibility." These suggestions indicate a desire for more interactive and engaging features to further improve the user experience.

Participant 1	
Code	Example
[C1] Tone: Soft, polite, and clear	"I like the tone, it's soft, polite, and clear."
[C2] Think Idea Together	"I like how it responded when I said I have a financial issue; it came up with the solution with me."
[C3] No Judgement	"It made me feel like nobody will laugh at me."
[C4] Too Much Info in a Message	"Offering too much information in a single message makes me feel a bit anxious; I have to read all of it like I am reading the newspaper."
[C5] Understanding: Positive	"Yes, it understands quite well."
[C6] Provide Information	"It gives me clear information and support I can get in general."
[C7] Encouragement	"The chatbot provided useful information and encouragement. It made me feel like there is someone like me in the same situation, and I am not alone."
[C8] Understand Well	"It was helpful in my case, understanding the financial issue well and providing encouragement."
[C9] Listening Well	"Providing listening was quite well."
[C10] Future Addition: Multiple Choice in the Beginning	"It would be nice if there were some buttons at the beginning to choose the issue I would like to talk about."
[C11] Suitable for People Who Are Lonely	"I will probably recommend it to people who feel lonely."
[C12] Suitable for People Who Need to Talk to Someone	"Suitable for people with personal issues who need someone to talk to."

Participant 2	
Code	Example
[C13] Provide Solution	"The chatbot told me I could talk to the student consultant and break down the study process into different small tasks."
[C14] Positive Emotion	"Breaking down the assignment of my learning task is really a good approach for me."
[C15] Provide Useful Solution	"Breaking down the assignment of my learning task is really a good approach for me."
[C16] Length Too Long	"I would like the responses to be shorter."
[C8] Understand Well	"The chatbot understands my problem."
[C17] Provide Responds Supportively	"It responds in a supportive way."

FIGURE 7.6: the quotation and codes -1

[C18] Future Addition: Make a Joke	"It would be better if the chatbot could make jokes."
[C19] Suitable for People Who Need to Talk to Someone	"I will recommend it to people who are struggling but don't have anyone to talk to."
[C20] Feel Listened To	"It is helpful to have something listen to your problems."
[C21] Chatbot Creates a Space to Talk	"It provides a place to talk about my problems."
[C15] Provide Useful Solution	"The chatbot offers advice and support."
Participant 3	
Code	Example
[C16] Length Too Long	"Long responses after specifying the issue make me feel a bit annoyed."
[C22] Tone - Relax and Safe	"I like how the chatbot talks; it is relaxing."
[C7] Encouragement	"When I mentioned my sadness, the encouragement part was the most appropriate."
[C3] No Judgement	"No judgment when I express my weakness makes me feel safe."
[C23] Feel Companion	"It kept saying, 'Don't forget you are not alone,' which made me feel very supportive."
[C24] Feel Problem Solved, [C25] Guidance [C15] Provide Useful Solution	"Guided me to think about the issue in small tasks, making my thoughts clearer."
[C26] Provide a Space	"I will recommend it since it provides a place to express negative or anxious thoughts."
[C27] Feel Safe	"I feel safe talking to a chatbot."
[C28] Feel Understood	"I felt understood."
Participant 4	
Code	Example
[C29] Tone - Friendly	"I think they are quite friendly."
[C30] Tone - Neutral	"I would say the style is neutral and also shows the considerate side. really supportive!"
[C6] Provide information	"They provide me with clear info, it is very helpful"
[C15] Provide Useful Solution	"They provide me with clear info, it is very helpful"

FIGURE 7.7: the quotation and codes -2

[C7] Encouragement	"in terms of the mindset, it's also helpful, because it also encouraged me a lot, and told me I am not alone."
[C31] Repeation	"the content is a little really repetitive, for example it would be better it skipped the intro, and just offer what i need"
[C32] Feel Comforting	"I would say it helps effectively, because it comforted my feeling, complimented me, and also list down the thing"
[C15] Provide Useful Solution	"also list down the thing"
[C13] Provide Solution	"it is helpful in terms of the mental support and the practical method"
[C23] Feel Companion	"I feel companion"
[C33] Additional Function: Phone App	"the suggestion will be put in the phone, for more accessibility."
[C34] Suitable for People Just Shift Their Environment	"I will recommend my friends, especially the one who just arrived here, because they shift their environment and they are alone, and this chatbot is quite helpful to get to know everything."
[C19] Suitable for People Who Need to Talk to Someone	"I will recommend my friends, especially the one who just arrived here, because they shift their environment and they are alone, and this chatbot is quite helpful to get to know everything."

Participant 5	
Code	Example
[C35] Tone - Empathy	"in the beginning, i feel impressed, it has empathy third and fourth time later, it would be too much, too much text for the rest of it. not nature due to the long text, but good in the first and second one"
[C16] Length Too Long	"not nature due to the long text, but good in the first and second one"
[C36] Tone - Impressive [C35] Tone - Empathy	"the initial one of the chatbot express the empathy why do you feel this and why do you feel that"
[C31] Repeation	"the response, based on the context is align, but the sentence repeated a lot"
[C25] Guidance	"it guides me."
[C31] Repeation	"the text keep repeating,"
[C32] Feel Comforting	"it is supported that it said everything is gonna be okay, like comforting"
[C15] Provide Useful Solution	"overall it's a good idea that the break down part, break down the problem it helps me to clarify and know what i really want, it helps me to clear my problem is"
[C37] Suitable for People Want to Clarify Their Problem	" It is good for the first stage of the mental health support of international students. like SACC in uni, this will help student understand better, what their problem is"

FIGURE 7.8: the quotation and codes -3

Chapter 8

Discussion

This study aimed to design an emotional support chatbot in providing support to international students, focusing on its active listening capabilities, prompt strategies, and overall user perception.

8.1 Emotional Support and Encouragement

The chatbot was designed to provide emotional support through active listening. This approach was validated by user feedback, which emphasized the importance of the chatbot's soft, polite, and clear tone in creating a relaxed and safe interaction environment. Users appreciated the chatbot's ability to recognize signs of stress and offer comforting responses, which were crucial in making them feel understood and less isolated. Furthermore, the chatbot's role in encouraging help-seeking behavior was highlighted as a benefit. By providing information and clear step-by-step solution, the chatbot effectively guided users towards professional help when needed. This function is particularly important for international students, who may be unfamiliar with the support resources available in their new environment.

8.2 Reducing Stigma and Raising Awareness

The study also highlighted the chatbot's potential to reduce the stigma associated with mental health issues. By facilitating open conversations and providing information about mental health, the chatbot can help normalize these discussions and make it easier for students to seek help without feeling judged.

8.3 Active Listening Capabilities

To enhance the chatbot's effectiveness, active listening capabilities were implemented, following a four-step process: paraphrasing to ensure understanding, clarifying emotions to build connection, summarizing to validate the message, and encouraging the speaker to continue sharing. This approach was designed to make the chatbot's interactions more engaging and supportive, aligning with the users' need for empathetic communication.

8.4 Prompt Strategies and User Demographics

In terms of prompt strategies, the "three-shot with only description" prompting was identified as the most effective. This approach minimizes summarizing and paraphrasing while reducing repetition, ensuring that the chatbot's responses remain clear and engaging. The study also found no significant differences in the needs of diverse demographic groups within the user base, indicating that the chatbot does not need to be tailored to specific groups. This finding simplifies the development process and ensures that the chatbot provides consistent support to all users, regardless of their background.

8.5 User Perception and Areas for Improvement

The chatbot was generally perceived as appropriate, supportive, and useful by the users. The positive tone, gentle communication style, and ability to understand and address user problems were highly valued. The chatbot's role in creating a judgment-free space for users to express their thoughts and feelings was pivotal in enhancing their sense of safety and support.

However, some areas for improvement were identified. Users expressed a preference for more concise communication, particularly during times of distress, as shorter responses were seen as more manageable and less overwhelming. Additionally, suggestions for enhancing the chatbot's functionality included the addition of multiple-choice options and the incorporation of humor, reflecting a desire for a more interactive and engaging experience.

8.6 Limitation

This section outlines the ethical considerations and future directions for developing a chatbot to support international students.

Ethical Considerations

The use of generative AI (GenAI) in providing emotional support presents several ethical risks. Firstly, generative AI lacks genuine empathy and understanding, which are crucial for effective emotional support. This limitation can result in text-based interactions that may provide inappropriate or unhelpful responses, potentially worsening a user's emotional state. Secondly, there are significant privacy concerns. Emotional support chatbots often require access to sensitive personal data to deliver tailored mental support, raising the risk of data privacy breaches and the potential misuse of personal information. Thirdly, over-reliance on chatbots may lead users to avoid real human interaction, which is essential for maintaining social skills. This could contribute to a more serious issue of social disconnection. Lastly, there is the risk of inaccuracy in the model's responses. Large language models (LLMs) are trained on vast datasets that may contain biases, potentially leading to inappropriate or harmful advice, particularly for marginalized groups [27, 80].

Based on the first research question, the supportive chatbot should offer emotional support, encourage help-seeking behavior, and provide language assistance. Due to time

constraints, the project focused on the first two aspects. Future development should address reducing stigma around mental health issues and offer language support functionalities. Integrating these aspects can be challenging because current language models often avoid sensitive topics, and research is limited. Despite the difficulty, it's crucial to explore solutions in future iterations. Furthermore, as for ethical research practices, the project prioritized ethical considerations by designing informed consent documents and conducting interviews with participant well-being in mind. For the ethical value, this research holds ethical significance because it aims to improve the well-being of international students by helping them manage negative emotions and fostering happiness.

Future Work

To achieve multilingual support, developing the chatbot in different languages would enhance accessibility for international students by leveraging their native language and cultural familiarity. Moreover, we should reduce sampling bias. The current study primarily involved participants from the University of Twente, resulting in a convenience sample. Future studies should employ methods to avoid this bias, potentially by recruiting participants from diverse universities [24]. Subsequently, we should expand the interview pool. Increasing the number and diversity of interviewees will provide deeper insights from various perspectives. Last but not least, it is important to optimize the user interface in order to provide a better user experience. Optimizing the user interface will be crucial for a user-friendly and engaging chatbot experience. This restructured version clarifies the purpose, highlights ethical considerations, and outlines specific areas for future development.

Chapter 9

Conclusion

9.1 Preferred Sources of Mental Health Support

Following a series of research and experiments, we began by addressing the first research question: **What are the preferred sources of mental health support among international students when they face mental health struggles?** The comprehensive literature review conducted in the initial phase provided valuable insights for creating a chatbot designed to effectively support international students. Four key characteristics were identified that the chatbot should possess to provide optimal support: emotional support, encouragement to seek help, stigma reduction and awareness-raising, and language support. These attributes are crucial for facilitating better communication and access to the support the chatbot offers.

To provide emotional support and encourage help-seeking, we implemented active listening capabilities in the chatbot. However, due to time and resource constraints, this study did not focus on reducing stigma, raising awareness, or language support.

Active listening, the method we chose to achieve these supportive characteristics, involves a four-step process: paraphrasing to ensure understanding, clarifying emotions to build connection, summarizing to validate the message, and encouraging the speaker to continue sharing.

With active listening identified as the method to achieve these supportive characteristics, we proceeded to design the chatbot with this capacity using prompt engineering. Subsequently, we generated 12 conversations based on different prompt strategies.

9.2 Most Effective Prompt Strategy

To answer the second research question: **Which prompt strategy will be most effective for a chatbot with a supportive character?** We first conducted a preselection process, choosing the four best-performing conversations out of the 12 based on various criteria. We then conducted a user survey to gather feedback from participants.

Our analysis identified the conversations most suited for feedback based on task understanding, task execution, and dialogue integrity (conversations 2, 4, 9, and 12). Interestingly, the survey revealed a slight difference between Europeans and Asians—Europeans

preferred paraphrasing, while Asians favored summarizing. Conversation 2 resonated best with Europeans, while Conversation 4 was the overall favorite and top choice for Asians.

Both "One Shot" and "Few Shot" strategies improved conversation flow and task completion, with prompts having minimal impact on task understanding. Notably, the zero-shot CoT prompt strategy used in Conversation 4 excelled in conveying emotions verbally and achieved the best overall results. Demographic factors like age, gender, and continent had no significant influence on preferred active listening techniques, suggesting a universal approach may be effective.

In conclusion, the three-shot prompt strategy emerged as the most effective, particularly in expressing emotions. However, participant feedback highlighted the need for refinement. Some users felt summarizing was excessive, while others disliked repetition, perceiving the chatbot as unnatural. We thus focused on refining the three-shot strategy, emphasizing natural verbalization and encouragement techniques. Additionally, we aimed to minimize summarizing and limit paraphrasing to a few sentences to avoid repetition.

After identifying this as the most effective prompt strategy for a chatbot with a supportive character, we proceeded to iterate on the chatbot, modifying the prompt and building a user interface to enhance the user experience in the next phase.

9.3 Chatbot Appropriateness, Supportiveness, and Usefulness

After iterating on the chatbot, we sought to address the third research question: **How do users perceive the appropriateness, supportive characteristics, and overall usefulness of the chatbot?** Regarding appropriateness, users appreciated the chatbot's positive tone, gentle empathy, and polite communication style, which fostered a comfortable interaction environment. In terms of supportive characteristics, the chatbot's ability to understand user problems, provide valuable information, and offer practical advice was frequently praised. This capability provided essential support and emotional backing, significantly contributing to a relaxed, safe, and supportive user experience. The chatbot created a judgment-free space where users could freely express their thoughts and feelings, enhancing their sense of safety and support and making them feel understood and less isolated.

However, in terms of usefulness, some areas for improvement were identified, particularly regarding the length and repetition of the chatbot's responses. Users expressed a preference for more concise communication, especially during times of distress, indicating that shorter responses would be more manageable and less overwhelming. Additionally, suggestions for enhancing the chatbot's functionality, such as including multiple-choice options and incorporating humor, highlight the users' desire for a more interactive and engaging experience, potentially including mobile application development.

Overall, the chatbot was perceived as a valuable tool for providing companionship and support, particularly for individuals struggling with loneliness and lacking social support. The positive feedback on its appropriateness, supportive characteristics, and overall usefulness underscores its potential as an effective means of emotional and practical assistance.

Nonetheless, addressing the identified areas for improvement could further enhance its effectiveness and user satisfaction.

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In order to improve the grammar and clarity of this report, I utilized AI writing assistants such as ChatGPT and Gemini. After using these tools, I carefully reviewed and edited the content myself, and take full responsibility for the final report.

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Appendix A

The Analysis Result of First Research Question

This table presents the findings from a comprehensive literature review addressing the first research question: **What are the preferred sources of mental health support among international students when they face mental health struggle?** In this table, we analyzed the primary mental health concerns and the potential solutions for international students. The statistics on potential solutions represent the preferred sources of mental health support among international students, which answers our first research question.

Authors	Title	Main concerns of mental health issue and the finding in the paper	The potential solution
Iorio J.C., Silva K.	(Dis)connection between Multiculturalism, Higher Education and Health: Experiences of International Students in Portugal during the Covid-19 Pandemic	1. far from their permanent resident 2. financial insecurity 3. culture difference 4. the difficulty of accessing portuguese national health system (COVID)	N/A
Nair A., Kalembo F., Zhou H., Ng L., Hawley G., Grogan A., Ng L., Chen W., Daire J., Lim E.	Mental health and coping strategies among international health science students during the COVID-19 pandemic: A cross-sectional study	Improve the social support	N/A
Larcombe W., Ryan T., Baik C.	Are international students relatively resilient? Comparing international and domestic students' levels of self-compassion, mental health and wellbeing	in terms of the score of self-compassion, internationals reported a higher result than domestic students	N/A
Du X., Livingstone A.G., Adlam A.-L.R.	Felt understanding as a bridge between social identity and wellbeing among international university students	N/A	felt understanding
Paul N., Han J., Usher E.L.	“Doing College” Amidst COVID-19: A Comparative Study Exploring Differences in the Psychological Experiences of International and Domestic Students in the U.S.	International student has higher psychological diathesis than domestic students during covid but they have similar bahavior engagement	N/A
Kim D.H., McWhorter E.C., Castillo L.G.	Does Mental Health Literacy Predict Help-Seeking Behaviors Among Depressed Asian International Students?	N/A	the domestic of help-seekig behaviour: the help-seeking behavior, in terms of gender, female is higher than male. in terms of academic impairment, the more academic impairment that people have, the more chance they will seek help in terms of mental health literacy, the more related knowledge that people have, the more

			they will do help-seeking.
Li J., Xue E., He Y.	Adjustment to Chinese Culture and Mental Health Issues among Foreign Students on Chinese University Campuses during the COVID-19 Pandemic: A Collaborative Ethnographic Study	<ol style="list-style-type: none"> 1. the limited understanding of Chinese culture 2. the lack of reliance channel of getting information-> feel culturally marginalized 3. the highest frequency words occurred in interview: cultural autism, cultural adaption, Chinese culture understanding, cross-cultural adaptability, international students' cultural difference 	N/A
Slaughter L., Sie L., Breakey N., Macionis N., Zhang J.	Can we buffer them? Supporting healthy levels of stress and anxiety in first year international students	N/A	Writing in the discipline(WID) can effectively mitigate the stress and anxiety among first year IS
Herridge A.S., Al-Sharif M.A.B., Leong M.C., García H.A.	LGBTQIA+ International Students and Socioemotional Well-being: Impact of Intersectionality on Perceived Experiences and Campus Engagement	<ol style="list-style-type: none"> 1. the identity is different majority 2. the law of the country is different from their original country, so it is not guaranteed. 	<ol style="list-style-type: none"> 1. The strategies that students cope with the challenges are modifying behavior, developing coping mechanisms 2. inclusive programming and support structures on campus
Bokszczanin A., Gladysz O., Bronowicka A., Palace M.	Experience of Ethnic Discrimination, Anxiety, Perceived Risk of COVID-19, and Social Support among Polish and International Students during the Pandemic	<ol style="list-style-type: none"> 1. separation and distance with family 2. the ethnic discrimination-COVID risk perception 	a generalized sense of social support, especially the support from family and friends, the people they are familiar with.
Tseu A., Ganesh K., Wirtz D.	Adjusting in a pandemic: Experiences of incoming international students	<ol style="list-style-type: none"> 1. travel restrictions(due to the COVID-19 testing requirements) 2.online learning and restriction on campus activities-> limited students engagement and integration 3. academic and being an international students are mental pressure 	<ol style="list-style-type: none"> 1. providing more systematic support 2. enhancing communication 3. facilitating community-building initiatives

Devezy Y., Hill B., Beresford L., Williams R., Farr S., Readman E., Mermejo C.	International Café: A Collaborative Approach to International Student Wellbeing and Support	<ol style="list-style-type: none"> 1. rising living costs 2. accommodation shortages, 3. changes in visa working hours. 	<ol style="list-style-type: none"> 1. providing a distinct space of support for international students 2. a supportive environment to foster social connections 3. orientation discussions and information sharing within the MIC community;
Clarke K.	International Graduate Students' Mental Health Diagnoses, Challenges, and Support: A Descriptive Comparison to their Non-International Graduate Student Peers	N/A	<ol style="list-style-type: none"> 1. the need for graduate advisors and student affairs professionals to recognize the unique experiences of international graduate students, particularly in their help-seeking behaviors. 2. Universities should provide mental health support services that are more accommodating to the needs of international graduate students, taking into account the impact of cultural differences on mental health.
Zhao J., Chapman E., O'Donoghue T.	Threats to the emotional wellbeing of mainland Chinese students studying in Australia: an interpretivist study	<ol style="list-style-type: none"> 1. Limited language proficiency caused stress in classroom communications and academic exchanges. 2. Changes in lifestyle, such as self-cooking and managing daily expenses, added stress. 3. Safety concerns (such as the lack of surveillance leading to a sense of insecurity), safety of possessions, and racial discrimination were major concerns, especially regarding night-time safety, property theft, and incidents of racial discrimination. 4. Students experienced a lack of a sense of belonging and found it difficult to establish close connections with classmates from different cultural backgrounds. Students went through feelings of loneliness and homesickness, especially at the beginning of their study period in Australia. 	<ol style="list-style-type: none"> 1. Proposed enhancing Chinese students' positive experiences through increased pre-arrival orientation programs, mentoring schemes, or buddy systems to reduce potential mental health risks. 2. Encouraged students to actively build social networks, improve English proficiency, be aware of the early signs of mental health issues, and know the support and resources available.
Zheng K., Johnson S., Jarvis R., Victor C., Barreto M., Qualter P., Pitman A.	The experience of loneliness among international students participating in the BBC Loneliness Experiment: Thematic analysis of qualitative survey data	<ol style="list-style-type: none"> 1. Negative psychological and social aspects of loneliness 2. The distressing experience of being alone 3. Disrupted ability to make meaningful connections 4. Sense of entrapment in a state of loneliness 5. Awareness of others' stigmatizing perceptions of oneself as lonely 6. Perceptions of positive aspects of loneliness. 	Higher education teaching staff, pastoral staff, and mental health professionals need to be more aware of the prevalence and impacts of loneliness and should address it in culturally appropriate ways.
Choi I., Mestroni G., Hunt C., Glozier N.	Personalized Help-Seeking Web Application for Chinese-Speaking International University Students: Development and Usability Study	language barriers, stigma, and lack of mental health literacy.	There were promising levels of demand, uptake, and engagement with the MindYourHead web application.

Jamshaid S., Bahadar N., Jamshed K., Rashid M., Afzal M.I., Tian L., Umar M., Feng X., Khan I., Zong M.	Pre-and Post-Pandemic (COVID-19) Mental Health of International Students: Data from a Longitudinal Study	N/A	N/A
Rekenyi V., Garbóczy S., Szemán-Nagy A., Al-Tammemi A.B., Sayed-Ahmad M., Kolozsvári L.R.	The Effects and Differences of Social Support, Depression, and Vital Exhaustion during the COVID-19 Pandemic among International and Domestic University Students	N/A	N/A
Iftikhar S., Perceval G., Fu Y., Zhou C., Cao Y.	Prevalence of mental health problems among stranded international students during the COVID-19 pandemic	<ol style="list-style-type: none"> 1. Pandemic 2. the feeling of hopelessness and level of uncertainty 3. the loss of interest and focus 4. unemployment 5. financial hardships 6. social pressure 	adequate intervention for this group.
Jiang Q., Horta H., Yuen M.	International medical students' perspectives on factors affecting their academic success in China: a qualitative study	<ol style="list-style-type: none"> 1. academic challenges 2. sociocultural challenges 3. wellbeing challenges 	There is a need to improve teachers' English proficiency, teaching methods, and curriculum design to cater to the needs of international students
Xiong Y., Prasath P.R., Zhang Q., Jeon L.	A mindfulness-based well-being group for international students in higher education: A pilot study	N/A	MBWIS (mindfulness-based well-being group for international students) is effective in enhancing the well-being and mental health status of international students.
Prasath P.R., Xiong Y., Zhang Q., Jeon L.	Psychological Capital, Well-being, and Distress of International Students	N/A	<ol style="list-style-type: none"> 1. Emphasizes the importance of supporting international students' mental health and social support during and after the COVID-19 pandemic. 2. that higher education institutions invest resources in promoting positive mental health and well-being, and in developing positive psychological capital.

Antwi C.O., Belle M.A., Ntim S.Y., Wu Y., Affum-Osei E., Aboagye M.O., Ren J.	COVID-19 Pandemic and International Students' Mental Health in China: Age, Gender, Chronic Health Condition and Having Infected Relative as Risk Factors	<ol style="list-style-type: none"> 1. female reported higher levels of mental health issue than males. 2. Students with pre-existing chronic health conditions reported significantly higher levels of stress, anxiety, and depression. 3. Students with an exercise routine reported significantly lower levels of stress, anxiety, and depression. 	Emphasizes the importance of managing international students' mental health during crisis times.
Kristiana I.F., Karyanta N.A., Simanjuntak E., Prihatsanti U., Ingarianti T.M., Shohib M.	Social Support and Acculturative Stress of International Students	Adaptation to changes in environment and conditions, including the stress cultural factors cause on international students	There is a correlation between social support and acculturative stress among international students, but an accurate effect size cannot be determined due to high heterogeneity among studies and indications of publication bias
Tan Y., Wu Z., Qu X., Liu Y., Peng L., Ge Y., Li S., Du J., Tang Q., Wang J., Peng X., Liao J., Song M., Kang J.	Influencing Factors of International Students' Anxiety Under Online Learning During the COVID-19 Pandemic: A Cross-Sectional Study of 1,090 Chinese International Students	<ol style="list-style-type: none"> 1. The students younger than 22 years old. 2. Those living in big cities, with a lower frequency of socialization, expecting purely online teaching, and with a lower subjective score of the online learning experience. 	During the COVID-19 pandemic, being younger, coming from big cities, having a lower frequency of social interactions, expecting purely online teaching, and having a poor experience of online classes were risk factors for anxiety during online classes.
Atherton K., Cornwall J.	Psychological Distress and Help-seeking Behaviour: Chinese International Students in New Zealand	<ol style="list-style-type: none"> 1. Language barrier 2. Culture difference 3. Collective values, Taoism, and the concept of "self-esteem" within Chinese culture significantly influence students' mental health and help-seeking behaviors. 	<ol style="list-style-type: none"> 1. Emphasizes the need for targeted support for Chinese international students and suggests more effective promotion strategies to make students aware of and use support services. 2. Help-seeking Preferences: Students preferred seeking help from parents and friends rather than utilizing formal university support services. 3. Only a small number of students (12.3%) had used the university's counseling services. Barriers to service use included unawareness of services, language difficulties, and cultural differences."
Marangell S., Baik C.	International Students' Suggestions for What Universities Can Do to Better Support Their Mental Wellbeing	<ol style="list-style-type: none"> 1. language barriers 2. loneliness 3. racism 	<ol style="list-style-type: none"> 1. Emphasizing the key role of improving learning experiences in supporting the mental wellbeing of international students 2. Suggestions for further research to deepen the understanding of the needs and experiences of international students
Wang Z., Gao S.	Construction of the Cross-Cultural Interaction Model for International Students Based on Big Data Analysis	N/A	<ol style="list-style-type: none"> 1. Cross-cultural adaptation is a complex process that requires the integration of individual international students with the external ecological environment. 2. Cultural novelty and psychological capital significantly impact the cross-cultural

			adaptation of international students.
Maeshima L.S., Parent M.C.	Mental health stigma and professional help-seeking behaviors among Asian American and Asian international students	1. The relationship between perceived stigma and personal stigma was influenced by international status, such that the relationship was stronger for Asian international students.	1. Personal stigma mediated the relationship between perceived stigma and professional help-seeking intentions. 2. The indirect effect between perceived stigma and professional help-seeking via personal stigma also differed by international status.
Wu Y., Liu W., Liu A., Lin-Schilstra L., Lyu P.	International students' mental health care in china: A systematic review	N/A	Emphasized the importance of improving self-esteem and self-confidence in preventing depression and discussed the impact of mindfulness training on alleviating depressive symptoms.
Masai A.N., Güçiz-Doğan B., Ouma P.N., Nyadera I.N., Ruto V.K.	Healthcare services utilization among international students in Ankara, Turkey: a cross-sectional study	N/A	1. Lack of awareness about healthcare support systems 2. Perceived stigma associated with mental health services, and language barriers were identified as the main barriers affecting healthcare access by international students.
Kim H.R., Kim E.J.	Factors associated with mental health among international students during the covid-19 pandemic in south korea	1. the academic pressure of undergraduate student status 2. the problem of understanding of the Korean language 3. the longer hours of media usage 4. the experiences related to COVID-19 infection.	The study suggests a collaborative effort between the government and universities to manage the mental health of international students could promote these students' mental well-being.
Alam M.D., Lu J., Ni L., Hu S., Xu Y.	Psychological Outcomes and Associated Factors Among the International Students Living in China During the COVID-19 Pandemic	1. COVID-10 pandamic 2. insomnia	1. Live alone. (since Students aged 26–30, those living with roommates, and those who had stayed in China for less than 2 years reported a higher prevalence of psychological issues.
Kim J., Park S.-H., Kim M., Chow H.-W., Han S.	Leisure and health benefits associated with acculturation among Western international students living in South Korea	N/A	Participation in leisure activities promotes psychological well-being among Western international students in South Korea, helping them mitigate acculturative stress, and enhance self-esteem and confidence.
de Moissac D., Graham J.M., Prada K., Rokhaya Gueye N., Rocque R.	Mental health status and help-seeking strategies of international students in Canada	N/A	Providing culturally adapted supports that consider language and cultural differences will better meet the needs of international students on campus.
Nguyen M.-H., Ho M.-T., Nguyen Q.-Y.T., Vuong Q.-H.	A dataset of students' mental health and help-seeking behaviors in a multicultural environment	1. Levels of social connectedness and acculturative stress are predictive of reported depression among both international and domestic students.	1. Most students preferred seeking help from family and friends rather than professionals.

<p>Nguyen M.H., Le T.T., Meirmanov S.</p>	<p>Depression, Acculturative Stress, and Social Connectedness among international university students in Japan: A statistical investigation</p>	<ol style="list-style-type: none"> 1. There was a statistically significant positive correlation between depression and acculturative stress. 2. There was a negative association of social connectedness with depression and acculturative stress. 3. English language proficiency and the age of 20 were significantly associated with depression among domestic students. 4. the length of stay (third year) also showed a significant correlation with depression among international students. 	<p>N/A</p>
<p>Shadowen N.L., Williamson A.A., Guerra N.G., Ammigan R., Drexler M.L.</p>	<p>Prevalence and correlates of depressive symptoms among international students: Implications for university support offices</p>	<ol style="list-style-type: none"> 1. A hierarchical multiple regression model revealed that poor English fluency, increased acculturative stress, and perceived discrimination were associated with higher levels of depressive symptoms. 2. whereas increased social support was associated with lower levels of depressive symptoms. 	<p>N/A</p>

Appendix B

The 12 Conversation with Different Prompt Strategies

This reference includes 12 conversations generated between the researcher and the chatbot. In the reference below, each title is labeled with the prompt serial number and the prompt strategy implemented in the chatbot. The conversations themselves are exchanges between the researcher and the chatbot. In the conversations, the text with a light blue background represents the user's input (provided by the researcher), while the text without a background color represents the chatbot's responses.

Prompt 1 Zero-shot CoT Heuristic

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, taking a step-by-step approach can help make the task feel less daunting. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to do it all at once.

As for the separation from your family, it's understandable that this can be a difficult situation. It might be helpful to reach out to your university's counseling services or a trusted friend or family member to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support or guidance. You got this!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your final report deadline and the potential for a low grade. It sounds like you're worried about not being able to finish the report on time and also concerned about the quality of your work. That's completely understandable, as both of those things can be sources of stress for students.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your concerns about the deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, taking a step-by-step approach can help make the task feel less daunting. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to do it all at once.

As for your concerns about the grade, it might be helpful to focus on the process of learning and improving rather than just the end result. Remember that learning is a journey, and it's okay if you don't get everything right the first time. You can always ask for feedback and make improvements as you go along.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support or guidance. You got this!

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! Sorry to hear that time management is causing you the most concern. It sounds like you're feeling overwhelmed by the amount of work you have to do and the limited time you have to do it. That's completely understandable, as many students struggle with time management during their studies.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your time management concerns, have you considered using a planner or calendar to help you keep track of your deadlines and tasks? Sometimes, having a visual representation of your schedule can help you prioritize your work and make the most of your time. Additionally, you might find it helpful to set aside dedicated time each day to work on your tasks, rather than trying to do everything at once.

Remember that it's okay to take breaks and prioritize self-care, as well. It's important to find a balance between work and rest to avoid burnout.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support or guidance. You got this!

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! Sorry to hear that you haven't started your final report yet, but don't worry, I'm here to help you create a plan to ensure you can complete it on time and with confidence.

Firstly, let me acknowledge that not starting the report yet might be causing you some stress and anxiety. It's completely normal to feel overwhelmed when faced with a big task, but remember that you're not alone in this. Many students struggle with procrastination and finding the motivation to start their work.

To help you get started, let's break down the task into smaller, manageable chunks. Here's a possible plan for the next two weeks:

Week 1:

- * Day 1-2: Review the report requirements and outline the structure of your report.
- * Day 3-4: Conduct research and gather information for your report.
- * Day 5-6: Start drafting your report, focusing on one section at a time.

Week 2:

- * Day 7-8: Continue drafting your report, revising and editing as you go.
- * Day 9-10: Review and finalize your report, making sure it meets all the requirements.
- * Day 11-12: Take a break and relax before the deadline!

Remember that this is just a suggested plan, and you can adjust it to fit your needs and schedule. The most important thing is to make a plan and stick to it, so you can avoid procrastination and feel more in control of your work.

Additionally, it might be helpful to set aside dedicated time each day to work on your report, rather than trying to do everything at once. This will help you stay focused and avoid feeling overwhelmed.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support or guidance. You got this!

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. I understand that you're feeling stressed about your final report deadline and the potential for a low grade. It's completely normal to feel overwhelmed when faced with a big task, but remember that you're not alone in this. Many students go through similar experiences.

To help you manage your stress and complete your report successfully, let's break down the task into smaller, manageable chunks. Here's a possible plan for the next two weeks:

Week 1:

- * Day 1-2: Review the report requirements and outline the structure of your report.
- * Day 3-4: Conduct research and gather information for your report.
- * Day 5-6: Start drafting your report, focusing on one section at a time.

Week 2:

- * Day 7-8: Continue drafting your report, revising and editing as you go.
- * Day 9-10: Review and finalize your report, making sure it meets all the requirements.
- * Day 11-12: Take a break and relax before the deadline!

Remember that this is just a suggested plan, and you can adjust it to fit your needs and schedule. The most important thing is to make a plan and stick to it, so you can avoid procrastination and feel more in control of your work.

Additionally, it might be helpful to set aside dedicated time each day to work on your report, rather than trying to do everything at once. This will help you stay focused and avoid feeling overwhelmed.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support or guidance. You got this!

Prompt 2 One-shot CoT Heuristic

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! It sounds like you're feeling quite concerned about your final report deadline and the potential for a low grade. I can understand why you would feel that way, as both of those things can be stressful and overwhelming.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the potential low grade, it might be helpful to take a step back and assess your current understanding of the material. Have you spoken with your instructor or a tutor about your

concerns? They may be able to offer additional support or resources to help you better understand the material and improve your grade.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is your biggest concern when it comes to your final report. I can understand why that would be a stressful aspect, as it can be difficult to balance the demands of a large project with other responsibilities and commitments.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding time management, have you considered using a planner or calendar to help you stay organized and on track? Sometimes, having a visual representation of your schedule can help you prioritize your tasks and make the most of your time. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your time, please don't hesitate to reach out. You got this, and I believe in you!

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. That's completely normal, and it's okay to feel that way. Let me acknowledge that your feelings are valid, and I'm here to support you.

Firstly, let's take a deep breath and break down the task into smaller, manageable chunks. Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Here's a plan that might help you get started:

1. First, let's start by setting aside dedicated time each day to work on your report. This could be 30 minutes each day or whatever amount of time you can commit to.

2. Next, let's think about the different sections of your report and what needs to be included. Can you tell me what you know so far about the report, and what you might need help with?

3. Once we have a better understanding of the report's structure and content, we can start outlining and organizing your ideas. This might involve creating an outline, doing some research, or brainstorming with me.

4. As we work on your report, it's important to take breaks and practice self-care. This might involve taking a walk, doing some stretching, or taking a few deep breaths. Remember that taking breaks can actually help you be more productive in the long run.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your time, please don't hesitate to reach out. You got this, and I believe in you!

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. I'm here to help you navigate any challenges you're facing, and I'm committed to providing a safe and supportive space for you to express yourself. Please don't hesitate to reach out if you need any further assistance or guidance. Remember that you're not alone, and there are resources available on campus that can help you succeed. You got this, and I believe in you!

Prompt 3 Three-shot CoT Heuristic

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your final report deadline and your concerns about the grade. It sounds like you're feeling overwhelmed and worried about not being able to finish it on time and also the fear of getting a low grade. That's completely normal and I'm here to support you.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the fear of getting a low grade, it might be helpful to focus on the process of learning and improving rather than the end result. Remember that this report is an opportunity for you

to practice your skills and gain valuable experience. It's okay to make mistakes and learn from them.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you! Is there anything else you would like to talk about or any specific challenge you would like to address?

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like you're feeling overwhelmed with your final report deadline and struggling with time management. That's completely normal, and I'm here to support you.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your time management concerns, have you considered using a planner or a time-tracking app to help you stay organized and focused? Sometimes, having a visual representation of your schedule can help you prioritize your tasks and avoid feeling overwhelmed. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you! Is there anything else you would like to talk about or any specific challenge you would like to address?

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! As your helpful companion, I'm here to support you in creating a plan for your final report. It sounds like you're feeling a bit overwhelmed and unsure where to start, but don't worry, we can work together to break down the task into manageable chunks.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

To start, let's take a deep breath and focus on the task at hand. What are the key elements of your final report? Have you identified the main points you want to cover? Sometimes, it can be helpful to create an outline or a mind map to visualize the structure of your report.

Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once. By breaking down the task into smaller, manageable chunks, you can make progress without feeling overwhelmed.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you! Is there anything else you would like to talk about or any specific challenge you would like to address?

User: Thank you very much!

StudentBuddy: Hello there! As your helpful companion, I'm here to support you in any way I can. It sounds like you're feeling a bit overwhelmed with your final report deadline and struggling with time management. That's completely normal, and I'm here to help you break down the task into smaller, manageable chunks.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your time management concerns, have you considered using a planner or a time-tracking app to help you stay organized and focused? Sometimes, having a visual representation of your schedule can help you prioritize your tasks and avoid feeling overwhelmed. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

To start, let's take a deep breath and focus on the task at hand. What are the key elements of your final report? Have you identified the main points you want to cover? Sometimes, it can be helpful to create an outline or a mind map to visualize the structure of your report.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you! Is there anything else you would like to talk about or any specific challenge you would like to address?

Prompt 4 Zero-shot CoT

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Sure, I'd be happy to help! It sounds like you're feeling stressed about your final report deadline and worried that you might not be able to finish it on time or that the grade might be low. That's completely understandable, as final reports can be challenging and it's normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your concerns about the deadline and grade, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Furthermore, if you're worried about the grade, you might want to consider seeking feedback from your instructor or a tutor to help you understand what you need to improve on. They may also be able to provide guidance on how to structure your report to ensure it meets the requirements and earns a good grade.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

Here's a summary of our conversation:

You mentioned that you're feeling stressed about your final report deadline and worried that you might not be able to finish it on time or that the grade might be low. I acknowledged your feelings and offered some suggestions to help you manage your stress and complete your report successfully. I also encouraged you to reach out if you need any further support.

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Sure, I'd be happy to help! It sounds like time management is your biggest concern when it comes to completing your final report. That's a common challenge for many students, and there are a few strategies that might help.

Firstly, let me acknowledge that time management can be tough, and it's completely normal to feel overwhelmed. It's important to recognize that your emotions are real and deserving of attention and care.

One strategy that might help is to create a schedule or timetable for your report. This can help you break down the task into smaller, manageable chunks and ensure that you're making progress towards your deadline. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Another strategy is to prioritize your tasks based on their importance and deadlines. This can help you focus on the most critical parts of your report and avoid feeling overwhelmed by the sheer amount of work you have to do.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your time, please don't hesitate to reach out. You got this, and I believe in you!

Here's a summary of our conversation:

You mentioned that time management is your biggest concern when it comes to completing your final report. I acknowledged your feelings and offered some strategies to help you

manage your time and complete your report successfully. I also encouraged you to reach out if you need any further support.

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Of course! I'd be happy to help you create a plan for completing your final report. It sounds like you're feeling a bit overwhelmed and unsure where to start, which is completely normal. Let me acknowledge that your feelings are valid and I'm here to support you.

Firstly, let's start by breaking down the task into smaller, manageable chunks. A good way to do this is to create a timetable or schedule for your report. This can help you allocate specific times each day or week to work on your report, so you can make steady progress towards your deadline.

Here's a possible plan you could consider:

1. Day 1-2: Review the assignment guidelines and create an outline of the report. This will help you organize your thoughts and ensure you include all the necessary information.
2. Day 3-4: Research and gather information for your report. This might involve reading articles, taking notes, and interviewing experts in the field.
3. Day 5-6: Write the first draft of your report. This can be a challenging task, but try to focus on getting your ideas down on paper without worrying too much about grammar or spelling.
4. Day 7-8: Review and edit your first draft. This is where you can refine your ideas, add more detail, and make sure your report is well-structured and easy to follow.
5. Day 9-10: Finalize your report and make any final edits. This might involve proofreading for grammar and spelling mistakes, and ensuring that your report meets all the requirements.

Remember, this is just a suggested plan and you can adjust it to fit your needs and schedule. The most important thing is to make steady progress towards your deadline and not leave everything until the last minute.

Additionally, if you need any help or guidance along the way, please don't hesitate to reach out to me or other resources on campus. I'm here to support you, and I believe in your ability to complete your report successfully.

Here's a summary of our conversation:

You mentioned that you haven't started your final report yet and are feeling a bit overwhelmed. I acknowledged your feelings and offered a suggested plan for completing your report successfully. I also encouraged

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. I'm here to help and support you in any way I can. If you have any other questions or concerns, please don't hesitate to reach out. I'm here to listen and offer guidance. Remember, you got this! You're a capable and talented student, and I believe in you. Keep up the good work! 😊

Prompt 5 One-shot CoT

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your final report deadline and the possibility of receiving a low grade. It sounds like you're dealing with a lot of uncertainty and pressure, and that can be a lot to handle.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the concern about your grade, it might be helpful to focus on the process of learning and improving, rather than just the end result. What are some things you can do to improve your understanding of the material and your ability to communicate your ideas effectively?

Remember that learning is a journey, and it's okay if you don't get everything right the first time.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Let's take a step back and think about what you can control in this situation. What are some small, manageable steps you can take to move forward? Sometimes, breaking things down into smaller parts can make them feel less overwhelming.

Also, have you considered reaching out to your instructor or a tutor for support? They may be able to offer additional guidance or resources that can help you feel more confident and prepared.

Is there anything else you'd like to talk about or any questions you have? I'm here to support you in any way I can.

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is a significant source of stress for you right now. That's completely understandable, as it can be challenging to balance your academic responsibilities with your personal life.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding time management, have you considered using a planner or a digital tool to help you keep track of your deadlines and tasks? Sometimes, having a visual representation of your schedule can make it feel less overwhelming. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that it's okay to take breaks and prioritize self-care. Taking short breaks can help you recharge and come back to your work with a fresh perspective. What are some things you enjoy doing that can help you relax and de-stress?

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Is there anything else you'd like to talk about or any questions you have? I'm here to support you in any way I can.

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your upcoming deadline. It's completely normal to feel overwhelmed when you have a lot to do and not much time to do it in.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your plan, let's break down the task into smaller, manageable chunks. What are the main components of your report? Have you considered creating an outline or a mind map to help you organize your ideas? Sometimes, seeing the big picture can make it feel less daunting.

Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once. What are some specific steps you can take to make progress each day? Remember that it's okay to take breaks and prioritize self-care. Taking short breaks can help you recharge and come back to your work with a fresh perspective.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Is there anything else you'd like to talk about or any questions you have? I'm here to support you in any way I can.

User: Thank you very much!

StudentBuddy: Hello there! You're welcome! It's my pleasure to assist you. Please feel free to share your concerns, and I'll do my best to provide helpful and safe responses. If you have any questions or need further assistance, don't hesitate to ask. I'm here to support you in any way I can.

Now, it seems like you're feeling a bit overwhelmed with your upcoming deadline and would like some help creating a plan. That's completely normal, and I'm here to help you break down the task into smaller, manageable chunks.

To start, let's take a deep breath and focus on the present moment. What are the main components of your report? Have you considered creating an outline or a mind map to help you organize your ideas? Sometimes, seeing the big picture can make it feel less daunting.

Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once. What are some specific steps you can take to make progress each day? Remember that it's okay to take breaks and prioritize self-care. Taking short breaks can help you recharge and come back to your work with a fresh perspective.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Is there anything else you'd like to talk about or any questions you have? I'm here to support you in any way I can.

Prompt 6 Three-shot CoT

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be really tough, and it's completely normal to feel overwhelmed.

Firstly, let's talk about your final report deadline. Do you have any specific questions or concerns about it? I'm here to help with any academic-related queries you might have. Additionally, have you considered reaching out to your professor or teaching assistant for assistance? They might be able to offer some helpful advice or resources to help you manage your workload.

Regarding your family separation, it's understandable that this can be a difficult situation. It's important to remember that you're not alone, and there are resources available to support you. Have you considered talking to a counselor or trusted adult about how you're feeling? They can offer a safe and confidential space to discuss your emotions and provide guidance on how to cope.

Remember that it's okay to feel overwhelmed, and it's important to take care of yourself during this time. Make sure to prioritize self-care activities, such as getting enough sleep, eating well, and engaging in activities that bring you joy and relaxation.

Please let me know if there's anything else you'd like to talk about or if there's anything else I can do to support you. I'm here to help in any way I can.

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your final report deadline and the possibility of receiving a low grade. It sounds like you're worried about not being able to finish the report on time and also concerned about the quality of your work.

Let's start by breaking down the task into smaller, manageable steps. What are the specific challenges you're facing with your report? Is it the research, the writing, or something else? By identifying the areas where you need help, we can work together to find solutions.

Additionally, have you considered reaching out to your professor or teaching assistant for guidance? They might be able to offer some helpful tips or resources to help you improve your understanding of the material and complete the report to the best of your ability.

Remember that it's okay to ask for help when you need it, and it's important to prioritize your well-being during this time. Make sure to take breaks, practice self-care, and seek support when you need it.

Please let me know if there's anything else you'd like to talk about or if there's anything else I can do to support you. I'm here to help in any way I can.

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your final report deadline and the possibility of receiving a low grade. It sounds like you're worried about not being able to finish the report on time and also concerned about the quality of your work.

Let's start by breaking down the task into smaller, manageable steps. What are the specific challenges you're facing with your report? Is it the research, the writing, or something else? By identifying the areas where you need help, we can work together to find solutions.

I hear you saying that time management is your most concerned part. That's a common challenge for many students, and there are a few strategies that might help. Have you considered using a planner or calendar to keep track of your deadlines and schedule? This can help you stay organized and ensure that you have enough time to complete each task.

Additionally, have you considered breaking down your report into smaller sections or tasks? This can help you focus on one thing at a time and make the task feel less overwhelming. You might also try setting specific goals for each day or session, so you can make steady progress and feel a sense of accomplishment.

Remember that it's okay to ask for help when you need it, and it's important to prioritize your well-being during this time. Make sure to take breaks, practice self-care, and seek support when you need it.

Please let me know if there's anything else you'd like to talk about or if there's anything else I can do to support you. I'm here to help in any way I can.

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! Sorry to hear that you haven't started your report yet, but it's completely normal to feel overwhelmed and unsure of where to begin. Let's work together to create a plan that will help you complete your report on time and with confidence.

First, let's start by breaking down the task into smaller, manageable steps. What are the specific challenges you're facing with your report? Is it the research, the writing, or something else? By identifying the areas where you need help, we can work together to find solutions.

Next, let's talk about your deadline. You have two weeks left, which is a good amount of time to complete your report. How about we set a goal to work on your report for one hour each

day, and break that hour into smaller tasks? This can help you stay focused and make steady progress.

Additionally, have you considered reaching out to your professor or teaching assistant for guidance? They might be able to offer some helpful tips or resources to help you improve your understanding of the material and complete the report to the best of your ability.

Remember that it's okay to ask for help when you need it, and it's important to prioritize your well-being during this time. Make sure to take breaks, practice self-care, and seek support when you need it.

Please let me know if there's anything else you'd like to talk about or if there's anything else I can do to support you. I'm here to help in any way I can.

User: Thank you very much!

StudentBuddy: Hello there! I'm here to assist you as your helpful companion, StudentBuddy. I understand that you're feeling stressed about your final report deadline and the possibility of receiving a low grade. It sounds like you're worried about not being able to finish the report on time and also concerned about the quality of your work.

Let's start by breaking down the task into smaller, manageable steps. What are the specific challenges you're facing with your report? Is it the research, the writing, or something else? By identifying the areas where you need help, we can work together to find solutions.

I hear you saying that time management is your most concerned part. That's a common challenge for many students, and there are a few strategies that might help. Have you considered using a planner or calendar to keep track of your deadlines and schedule? This can help you stay organized and ensure that you have enough time to complete each task.

Additionally, have you considered breaking down your report into smaller sections or tasks? This can help you focus on one thing at a time and make the task feel less overwhelming. You might also try setting specific goals for each day or session, so you can make steady progress and feel a sense of accomplishment.

Remember that it's okay to ask for help when you need it, and it's important to prioritize your well-being during this time. Make sure to take breaks, practice self-care, and seek support when you need it.

Please let me know if there's anything else you'd like to talk about or if there's anything else I can do to support you. I'm here to help in any way I can.

Prompt 7 Zero-shot Heuristic

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need anything. You got this, and you're doing the best you can. Keep going, and remember to take care of yourself!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your final report deadline and your concerns about the grade. It sounds like you're dealing with a lot of pressure and uncertainty, and that can be a lot to handle.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your concerns about the deadline and the grade, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the grade, it's understandable that you're worried about doing well. However, it's important to remember that grades aren't the only measure of success. The experience of working on the report and the knowledge you gain from it are just as valuable.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need anything. You got this, and you're doing the best you can. Keep going, and remember to take care of yourself!

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! Sorry to hear that time management is causing you the most concern when it comes to your final report. It sounds like you're feeling overwhelmed by the amount of work you have to do and the limited time you have to do it in. That's completely understandable, and it's a common experience for many students.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your time management concerns, have you considered using a planner or a time management app to help you stay organized and on track? Sometimes, having a visual representation of your schedule and deadlines can help you prioritize your tasks and make the most of your time. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need anything. You got this, and you're doing the best you can. Keep going, and remember to take care of yourself!

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! Sorry to hear that you haven't started your final report yet, but there's still time before the deadline. It's completely normal to feel overwhelmed and unsure of where to start, especially when it comes to a large project like this.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your request for a plan, I'd be happy to help you break down the task into smaller, manageable chunks. Here's a possible plan that you could consider:

1. Start by reviewing the assignment guidelines and rubric to make sure you understand what's expected of you.
2. Brainstorm ideas and create an outline for your report. This will help you organize your thoughts and ensure that your report is well-structured.

3. Begin working on your report, starting with the introduction and moving on to the body and conclusion. Make sure to take breaks and give yourself time to rest and recharge.
4. Set aside dedicated time each day to work on your report, rather than trying to complete it all at once. This will help you stay focused and avoid feeling overwhelmed.
5. Consider reaching out to a tutor or a study group for support and guidance. They may be able to offer valuable insights and tips for completing your report.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need anything. You got this, and you're doing the best you can. Keep going, and remember to take care of yourself!

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. I hope my suggestions were helpful in providing a plan for your final report. Remember, it's okay to feel overwhelmed, and it's completely normal to need support during challenging times. If you have any other questions or concerns, please don't hesitate to reach out. You got this, and you're doing the best you can. Keep going, and remember to take care of yourself!

Prompt 8 One-shot Heuristic

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! It sounds like you're feeling quite concerned about your final report deadline and the potential for a low grade. That's completely understandable, as these can be stressful and overwhelming experiences.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the potential for a low grade, it might be helpful to take a step back and assess your progress so far. Are there any specific areas where you're struggling or feeling uncertain? By identifying these areas, you might be able to focus your efforts and make improvements.

Additionally, you might find it helpful to seek out resources such as tutoring or academic support to help you improve your understanding of the material.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Is there anything else you'd like to discuss or any specific questions you have?

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is a significant concern for you regarding your final report deadline. That's completely understandable, as it can be challenging to balance your workload and meet deadlines.

Firstly, let me acknowledge that your concern is valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding time management, have you considered using tools such as a planner or calendar to help you stay organized and on track? These can be helpful in breaking down larger tasks into smaller, more manageable chunks, and can also help you prioritize your work and allocate your time effectively.

Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once. By doing a little bit each day, you can make steady progress and avoid feeling overwhelmed.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Is there anything else you'd like to discuss or any specific questions you have?

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. That's completely normal, and it's okay to feel this way. It's important to recognize that your emotions are valid and deserving of attention and care.

Firstly, let me acknowledge that your concern is valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. For example, you could start by researching and outlining your

report, then move on to drafting and editing. By doing this, you can make steady progress and avoid feeling overwhelmed.

Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once. By doing a little bit each day, you can make steady progress and avoid feeling overwhelmed.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Is there anything else you'd like to discuss or any specific questions you have?

User: Thank you very much!

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. That's completely normal, and it's okay to feel this way. It's important to recognize that your emotions are valid and deserving of attention and care.

Firstly, let me acknowledge that your concern is valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. For example, you could start by researching and outlining your report, then move on to drafting and editing. By doing this, you can make steady progress and avoid feeling overwhelmed.

Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once. By doing a little bit each day, you can make steady progress and avoid feeling overwhelmed.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Is there anything else you'd like to discuss or any specific questions you have?

Prompt 9 Three-shot Heuristic

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! It sounds like you're feeling worried about your final report deadline and the potential for a low grade. It's completely normal to feel overwhelmed and concerned about meeting deadlines and achieving high grades.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your concerns about the deadline and grade, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the potential low grade, it might be helpful to review your report and identify any areas where you can improve. You might also consider seeking feedback from your instructor

or a tutor to help you refine your work. Remember that it's okay to ask for help and that seeking support is a sign of strength, not weakness.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you!

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is your biggest concern when it comes to your final report. It's completely normal to feel overwhelmed by deadlines and the pressure to perform well.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your time management concerns, have you considered using a planner or calendar to help you stay organized and on track? Sometimes, having a visual representation of your tasks and deadlines can help you prioritize and stay focused. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that it's okay to ask for help and that seeking support is a sign of strength, not weakness. If you're struggling to manage your time effectively, you might consider reaching out to a trusted friend, family member, or counselor for guidance.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you!

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. It's completely normal to feel this way, especially when there's a lot at stake.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your request for a plan, I'd be happy to help you break down the task into smaller, manageable chunks. Here's a possible plan that you could consider:

1. Set aside dedicated time each day to work on your report. This could be 30 minutes to an hour each day, depending on your schedule and preferences.
2. Create an outline for your report. This will help you organize your thoughts and ensure that you cover all the important points.

3. Research and gather information for your report. This might involve reading articles, conducting interviews, or gathering data.
4. Write the first draft of your report. This might take a few days, depending on the length of your report and how quickly you work.
5. Review and revise your report. This might involve getting feedback from a trusted friend, family member, or counselor, or seeking help from a tutor or writing center.
6. Finalize your report and submit it before the deadline.

Remember that it's okay to ask for help and that seeking support is a sign of strength, not weakness. If you're struggling to get started or need help along the way, don't hesitate to reach out to me or other resources on campus.

You got this, and I believe in you! Let's work together to help you succeed.

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. If you have any other questions or concerns, please don't hesitate to ask. I'm here to help in any way I can. Is there anything else you'd like to talk about or ask?

Prompt 10 Zero-shot

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your final report deadline and the possibility of receiving a low grade. It sounds like you're dealing with a lot of uncertainty and pressure, and that can be a heavy burden to carry.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your feelings are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the concern about your grade, it might be helpful to focus on the process of learning and improving, rather than just the end result. Remember that learning is a journey, and it's okay to make mistakes along the way. You can also seek feedback from your instructor or a tutor to help you improve your work.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Here's a summary of our conversation:

- * You're feeling stressed about your final report deadline and the possibility of receiving a low grade.
- * You're concerned about not being able to finish the report on time and the grade you will receive.
- * I acknowledged your feelings and offered support and resources to help you manage your stress and improve your work.

I hope this helps! Remember that you're doing your best, and that's something to be proud of. Keep going, and don't hesitate to reach out if you need any further assistance.

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is a significant source of concern for you right now. It's completely normal to feel overwhelmed when dealing with multiple tasks and deadlines, especially when it comes to your final report.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your feelings are real and deserving of attention and care.

Regarding time management, have you considered using a planner or a time management app to help you stay organized and on track? Sometimes, having a visual representation of your schedule and deadlines can help you prioritize your tasks more effectively. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that it's okay to ask for help when you need it, and there are many resources available on campus that can support you with your studies. If you'd like to talk more or have any questions, I'm here to listen and help in any way I can.

Here's a summary of our conversation:

- * You're feeling stressed about your final report deadline and time management.
- * You're concerned about not being able to finish the report on time and the grade you will receive.
- * I acknowledged your feelings and offered support and resources to help you manage your stress and improve your time management skills.

I hope this helps! Remember that you're doing your best, and that's something to be proud of. Keep going, and don't hesitate to reach out if you need any further assistance.

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! Sorry to hear that you haven't started your final report yet, but it's completely normal to feel overwhelmed and unsure of where to begin. It's great that you're reaching out for support, and I'm here to help you create a plan to tackle your report.

Firstly, let me acknowledge that you're feeling overwhelmed and unsure of how to start your report. It's important to recognize that your feelings are real and deserving of attention and care.

To help you get started, let's break down the task of completing your final report into smaller, manageable chunks. Here's a possible plan that you could consider:

1. Set aside dedicated time each day to work on your report. This could be 30 minutes to an hour each day, depending on your schedule and preferences.
2. Create an outline for your report. This will help you organize your thoughts and ensure that your report is well-structured and coherent.
3. Research and gather information for your report. This might involve reading articles, taking notes, and interviewing experts in your field.
4. Write the first draft of your report. This might take several days or a week, depending on the length and complexity of your report.
5. Review and revise your report. This might involve getting feedback from your instructor, a tutor, or a peer, and making any necessary changes to improve your work.

Remember that it's okay to take things one step at a time, and to ask for help when you need it. There are also many resources available on campus that can support you with your studies, such as the writing center, the library, and tutoring services.

Here's a summary of our conversation:

- * You haven't started your final report yet, but you're feeling overwhelmed and unsure of where to begin.
- * You'd like a plan to help you tackle your report and improve your time management skills.
- * I acknowledged your feelings and offered support and resources to help you manage your stress and improve your time management skills.

I hope this helps! Remember that you're doing your best, and that's something to be proud of. Keep going, and don't hesitate to reach out if you need any further

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. Remember that you're doing your best, and that's something to be proud of. Keep going, and don't hesitate to reach out if you need any further assistance. Here's a summary of our conversation:

- * You're feeling stressed about your final report deadline and time management.

* You're concerned about not being able to finish the report on time and the grade you will receive.

* I acknowledged your feelings and offered support and resources to help you manage your stress and improve your time management skills.

I hope this helps! Remember that you're doing your best, and that's something to be proud of. Keep going, and don't hesitate to reach out if you need any further assistance.

Prompt 11 One-shot

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! Sorry to hear that you're feeling stressed about your final report deadline and the potential for a low grade. It sounds like you're dealing with a lot of uncertainty and pressure, and that can be a lot to handle.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your feelings are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the potential for a low grade, it might be helpful to focus on the process of learning and improving, rather than just the end result. Remember that learning is a journey, and it's okay to make mistakes along the way. You can also seek feedback from your instructor or a tutor to help you improve your work.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is a major concern for you right now. It's completely normal to feel overwhelmed when you have multiple deadlines and responsibilities to juggle.

Firstly, let me acknowledge that your concern is valid and I'm here to support you. It's important to recognize that your feelings are real and deserving of attention and care.

Regarding time management, have you considered using a planner or a digital tool to help you keep track of your deadlines and tasks? Sometimes, having a visual representation of your schedule can help you prioritize your tasks and stay on track. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that it's okay to ask for help when you need it. If you're struggling to manage your time, you might consider reaching out to a trusted friend, family member, or counselor for support. They may be able to offer some helpful tips or strategies for managing your time more effectively.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. That's completely normal, and it's okay to feel that way. Let me acknowledge that your feelings are valid and I'm here to support you.

Firstly, let's take a deep breath and break down the task into smaller, manageable chunks. You have two weeks before your deadline, which is a good amount of time to work on your report. Here's a plan that might help you:

1. Set aside dedicated time each day to work on your report. This could be 30 minutes or an hour, depending on your schedule.
2. Create an outline for your report. This will help you organize your thoughts and ensure that you cover all the important points.

3. Start researching and gathering information for your report. You can use academic databases, online resources, or talk to your instructor for guidance on what sources to use.
4. Write a rough draft of your report. This doesn't have to be perfect, but it will give you a starting point to work from.
5. Review and revise your report. Use feedback from your instructor or a tutor to improve your work.

Remember that it's okay to ask for help when you need it. If you're struggling to manage your time or need guidance on how to structure your report, don't hesitate to reach out to me or other resources on campus. I'm here to support you, and you got this!

Is there anything else you'd like to talk about or ask? I'm here to listen and support you in any way I can.

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. Remember that you're doing an amazing job, and I'm here to support you every step of the way. If you need anything or have any questions, don't hesitate to reach out. You got this! Have a great day!

Prompt 12 Three-shot

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, taking a step-by-step approach can help make the task feel less daunting. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to do it all at once.

As for the separation from your family, it's understandable that this can be a difficult situation. It might be helpful to reach out to your university's counseling services or a trusted friend or family member to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support. You got this! 😊

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! It sounds like you're feeling worried about your final report deadline and the potential grade you might receive. It's completely normal to feel concerned about meeting deadlines and receiving a good grade, especially when it comes to important assignments like this one.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your concerns about the deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, taking a step-by-step approach can help make the task feel less daunting. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to do it all at once.

As for your concerns about the grade, it might be helpful to focus on the process of completing the report rather than the end result. Remember that the grade is not the only measure of success, and you can still learn and grow from this experience even if you don't receive the grade you hoped for.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support. You got this! 😊

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is your biggest concern when it comes to your final report. It's completely normal to struggle with managing your time effectively, especially when you have multiple responsibilities and deadlines to meet.

Firstly, let me acknowledge that your concern is valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your time management concerns, have you considered using a planner or a time management app to help you stay organized and on track? These tools can help you break down your tasks into smaller, manageable chunks and prioritize your responsibilities. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to do it all at once.

Remember that it's okay to ask for help when you need it, and your university's counseling services or a trusted friend or family member might be able to offer you some helpful tips and strategies for managing your time more effectively.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support. You got this! 😊

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. It's completely normal to feel this way, especially when you have other responsibilities and distractions competing for your attention.

Firstly, let me acknowledge that your situation is valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

To help you get started on your report, I suggest we break down the task into smaller, manageable chunks. Here's a possible plan you could consider:

1. Set aside dedicated time each day to work on your report. This could be 30 minutes to an hour each day, depending on your schedule and preferences.
2. Create an outline for your report. This will help you organize your thoughts and ensure that you cover all the important points.
3. Research and gather information related to your report. This could involve reading articles, taking notes, and interviewing relevant experts or individuals.
4. Write a first draft of your report. This doesn't have to be perfect, but it should give you a good starting point to work from.
5. Review and revise your report. This could involve editing your writing, adding or removing information, and ensuring that your arguments are clear and well-supported.

Remember that it's okay to take things one step at a time, and it's important to prioritize your well-being and self-care during this time. Make sure to take breaks, exercise, and eat healthy foods to keep your energy levels up.

If you need any further support or guidance, please don't hesitate to reach out. I'm here to help you every step of the way. You got this! 😊

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. If you have any other questions or concerns, please don't hesitate to reach out. I'm here to support you in any way I can. Keep in mind that it's okay to ask for help when you need it, and there are many resources available to you as an international student. Remember to take care of yourself and prioritize your well-being, and you'll be well on your way to success. Good luck with your final report! 😊

Appendix C

The User Survey of the First Experiment

This reference is the user survey for collecting feedback after participants read the pre-designed conversation. In this experiment, our goal was to assess the effectiveness of strategies by developing a chatbot that incorporates prompt-based active listening techniques. After reading multiple conversations, participants completed this survey to provide feedback on the chatbot's active listening skills during the interactions. The survey also includes an information letter to ensure participants fully understand their rights and any potential risks associated with participating in the study. Additionally, there is a section defining key terms that appear in the survey questions, providing clear definitions before participants fill out the form to ensure consistency in understanding.

User Survey: Gathering Feedback on Active Listening

This research investigates the potential of prompt-based active listening strategies to enhance the chatbot experience. We aim to assess the effectiveness of these strategies by developing a chatbot that incorporates them. You will read multiple conversations between a student and a chatbot, and then complete a survey to provide feedback on the chatbot's active listening skills during the conversation.

Purpose of the Research The main objective of this study is to evaluate how effectively active listening strategies can be integrated into the chatbot. Our goal is to create more empathetic and supportive interactions between users and the chatbot by utilizing these strategies.

What Will Happen During this Session You will:

-Read a conversation of an international student with a chatbot designed to be a good listening ear for the daily struggles of students.

-Complete a survey after the interaction to assess the chatbot's active listening abilities.

The entire session is expected to take approximately 15 minutes.

Condition for participation You can only take part in this experiment if you are an international student, studying abroad at a university. You should **not** take part in this experiment if you have previously struggled with mental health, or are still struggling to this moment. Do **not** take part in this experiment also if you are uncomfortable with the idea of reading about the daily struggles of international students.

Risks for participation We do not expect that participating in this experiment will lead to any risk or harm to you. The conversations between the student and chatbot are limited to topics which should not trigger any traumatic memory; in any case, do not take part in this experiment if you are uncomfortable with the idea of reading about the daily struggles of international students, or if you have a history of mental health struggles.

About the Chatbot The chatbot whose conversation you will read is designed to be a companion, behaving as a good listener. The chatbot may offer advice to the person it's interacting with, but it does not provide psychological counseling or therapy (it is actively developed not to do that).

Personal Information Collection, Processing, and Rights We will collect your age, gender, the university you attend, and which continent you come from, in addition to your answers about the chatbot. This data is entirely anonymous, and cannot be traced back to you. After submitting the form, you will not be able to request access to your data (including for rectification or erasure), due to the data being anonymous.

Usage of Data The data collected will be used solely for research purposes. No personal information that can be traced back to you is collected. Results may be shared through academic publications and presentations.

Retention Period for Research Data Research data will be retained for five years following the conclusion of the study. After this period, data will be destroyed.

Contact Details

For further information about the study or to raise any concerns, please contact:

Researcher:

Min Chia, Yu

m.yu-2@student.utwente.nl

Ethics Committee:

Secretary of the Ethics Committee of the Faculty of Electrical Engineering, Mathematics and Computer Science at the University of Twente

ethicscommittee-cis@utwente.nl

We appreciate your time and willingness to participate in this important research. Your contributions are invaluable to enhancing mental health support for international students.

Confirmation of Participant Understanding and Consent to Participate in the Survey

I have not previously struggled with mental health issues, and I am not currently experiencing any mental health struggles.

yes/ no

I can participate in this experiment if I am comfortable with the idea of reading about the daily struggles of an international student.

yes/ no

I understand the data is entirely anonymous, and cannot be traced back to me. Only my age, gender, the university I attend, and which continent I come from, will be collected

yes/ no

I am an international student studying abroad

yes/ no

I confirm that I meet all the criteria for participating in this experiment

yes/ no

What is your age?

open answer(number)

What is yo gender?

male/ female/ prefer not to say

What is the university you are studying now?

open answer

Which continent are you from?

Asia/ Africa/ North America/ South America/ Antarctica/ Europe/ and Australia

Definitions of Words That Will Appear in the Survey in the Following Questions

Paraphrasing

Definition: Paraphrasing involves repeating and rephrasing a user's input to convey understanding. It helps ensure that the message received is the same as the message sent by the user.

Example:

“I see you ...”

Verbalizing Emotions

Definition: Verbalizing emotions is the practice of reflecting a user’s emotions in words to show empathy and understanding. This technique helps in building a connection and showing that you recognize and acknowledge their feelings.

Example:

"I can tell ... make you happy. ”

Summarizing

Definition: Summarizing entails restating the key ideas expressed by a user to confirm understanding and to provide clarity. It helps in ensuring that both parties are on the same page.

Example:

“If I hear you right, you care about ...”

Encouraging

Definition: Encouraging is the act of offering ideas and suggestions to stimulate conversation and motivate the user to share more. This technique can help keep the conversation flowing and demonstrate active engagement.

Example:

“You've made an interesting point, ...”

These definitions will help you understand the terms used in the survey and how they relate to effective communication techniques.

Conversation 1

- Read this conversation, in which a student interacts with a chatbot that is supposed to be supportive and a good listener.
- Complete a semi-structured survey after the interaction to assess the chatbot's active listening abilities.

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! It sounds like you're feeling quite concerned about your final report deadline and the potential for a low grade. I can understand why you would feel that way, as both of those things can be stressful and overwhelming.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the potential low grade, it might be helpful to take a step back and assess your current understanding of the material. Have you spoken with your instructor or a tutor about your concerns? They may be able to offer additional support or resources to help you better understand the material and improve your grade.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is your biggest concern when it comes to your final report. I can understand why that would be a stressful aspect, as it can be difficult to balance the demands of a large project with other responsibilities and commitments.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding time management, have you considered using a planner or calendar to help you stay organized and on track? Sometimes, having a visual representation of your schedule can help you prioritize your tasks and make the most of your time. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your time, please don't hesitate to reach out. You got this, and I believe in you!

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. That's completely normal, and it's okay to feel that way. Let me acknowledge that your feelings are valid, and I'm here to support you.

Firstly, let's take a deep breath and break down the task into smaller, manageable chunks. Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Here's a plan that might help you get started:

1. First, let's start by setting aside dedicated time each day to work on your report. This could be 30 minutes each day or whatever amount of time you can commit to.
2. Next, let's think about the different sections of your report and what needs to be included. Can you tell me what you know so far about the report, and what you might need help with?
3. Once we have a better understanding of the report's structure and content, we can start outlining and organizing your ideas. This might involve creating an outline, doing some research, or brainstorming with me.
4. As we work on your report, it's important to take breaks and practice self-care. This might involve taking a walk, doing some stretching, or taking a few deep breaths. Remember that taking breaks can actually help you be more productive in the long run.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your time, please don't hesitate to reach out. You got this, and I believe in you!

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. I'm here to help you navigate any challenges you're facing, and I'm committed to providing a safe and supportive space for you to express yourself. Please don't hesitate to reach out if you need any further assistance or guidance. Remember that you're not alone, and there are resources available on campus that can help you succeed. You got this, and I believe in you!

To what extent do you think the chatbot can understand the user in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can paraphrase the user in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can verbalize the user's emotions in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can summarize the user's statements in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can encourage the user in this conversation?

1(very poor) - 5(very good)

Please rank the performance of following strategies in this conversation: Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.

rank **Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.**

What are your thoughts on the length of the chatbot's responses?

open answer

What do you think about this conversation?

open answer

How would you rate this conversation overall? (1-5)

1(very poor) - 5(very good)

What else would you like to share with us?

open answer

Conversation 2

- Read this conversation, in which a student interacts with a chatbot that is supposed to be supportive and a good listener.
- Complete a semi-structured survey after the interaction to assess the chatbot's active listening abilities.

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Sure, I'd be happy to help! It sounds like you're feeling stressed about your final report deadline and worried that you might not be able to finish it on time or that the grade might be low. That's completely understandable, as final reports can be challenging and it's normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your concerns about the deadline and grade, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Furthermore, if you're worried about the grade, you might want to consider seeking feedback from your instructor or a tutor to help you understand what you need to improve on. They may also be able to provide guidance on how to structure your report to ensure it meets the requirements and earns a good grade.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to

or want some guidance on managing your stress, please don't hesitate to reach out. You got this, and I believe in you!

Here's a summary of our conversation:

You mentioned that you're feeling stressed about your final report deadline and worried that you might not be able to finish it on time or that the grade might be low. I acknowledged your feelings and offered some suggestions to help you manage your stress and complete your report successfully. I also encouraged you to reach out if you need any further support.

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Sure, I'd be happy to help! It sounds like time management is your biggest concern when it comes to completing your final report. That's a common challenge for many students, and there are a few strategies that might help.

Firstly, let me acknowledge that time management can be tough, and it's completely normal to feel overwhelmed. It's important to recognize that your emotions are real and deserving of attention and care.

One strategy that might help is to create a schedule or timetable for your report. This can help you break down the task into smaller, manageable chunks and ensure that you're making progress towards your deadline. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Another strategy is to prioritize your tasks based on their importance and deadlines. This can help you focus on the most critical parts of your report and avoid feeling overwhelmed by the sheer amount of work you have to do.

Remember that you don't have to face this challenge alone. I'm here to support you, and there are also resources available on campus that can help. If you need someone to talk to or want some guidance on managing your time, please don't hesitate to reach out. You got this, and I believe in you!

Here's a summary of our conversation:

You mentioned that time management is your biggest concern when it comes to completing your final report. I acknowledged your feelings and offered some strategies to help you manage your time and complete your report successfully. I also encouraged you to reach out if you need any further support.

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Of course! I'd be happy to help you create a plan for completing your final report. It sounds like you're feeling a bit overwhelmed and unsure where to start, which is completely normal. Let me acknowledge that your feelings are valid and I'm here to support you.

Firstly, let's start by breaking down the task into smaller, manageable chunks. A good way to do this is to create a timetable or schedule for your report. This can help you allocate specific times each day or week to work on your report, so you can make steady progress towards your deadline.

Here's a possible plan you could consider:

1. Day 1-2: Review the assignment guidelines and create an outline of the report. This will help you organize your thoughts and ensure you include all the necessary information.
2. Day 3-4: Research and gather information for your report. This might involve reading articles, taking notes, and interviewing experts in the field.
3. Day 5-6: Write the first draft of your report. This can be a challenging task, but try to focus on getting your ideas down on paper without worrying too much about grammar or spelling.
4. Day 7-8: Review and edit your first draft. This is where you can refine your ideas, add more detail, and make sure your report is well-structured and easy to follow.
5. Day 9-10: Finalize your report and make any final edits. This might involve proofreading for grammar and spelling mistakes, and ensuring that your report meets all the requirements.

Remember, this is just a suggested plan and you can adjust it to fit your needs and schedule. The most important thing is to make steady progress towards your deadline and not leave everything until the last minute.

Additionally, if you need any help or guidance along the way, please don't hesitate to reach out to me or other resources on campus. I'm here to support you, and I believe in your ability to complete your report successfully.

Here's a summary of our conversation:

You mentioned that you haven't started your final report yet and are feeling a bit overwhelmed. I acknowledged your feelings and offered a suggested plan for completing your report successfully. I also encouraged

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. I'm here to help and support you in any way I can. If you have any other questions or concerns, please don't hesitate to reach out. I'm here to listen and offer guidance. Remember, you got this! You're a capable and talented student, and I believe in you. Keep up the good work! 😊

To what extent do you think the chatbot can understand the user in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can paraphrase the user in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can verbalize the user's emotions in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can summarize the user's statements in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can encourage the user in this conversation?

1(very poor) - 5(very good)

Please rank the performance of following strategies in this conversation: Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.

rank **Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.**

What are your thoughts on the length of the chatbot's responses?

open answer

What do you think about this conversation?

open answer

How would you rate this conversation overall? (1-5)

1(very poor) - 5(very good)

What else would you like to share with us?

open answer

Conversation 3

- Read this conversation, in which a student interacts with a chatbot that is supposed to be supportive and a good listener.
- Complete a semi-structured survey after the interaction to assess the chatbot's active listening abilities.

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the separation from your family, it's understandable that this can be a difficult experience. It might be helpful to reach out to a trusted friend, family member, or counselor to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you!

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! It sounds like you're feeling worried about your final report deadline and the potential for a low grade. It's completely normal to feel overwhelmed and concerned about meeting deadlines and achieving high grades.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your concerns about the deadline and grade, have you considered breaking down the task into smaller, manageable chunks? Sometimes, tackling a large project can feel less daunting when it's divided into smaller parts. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

As for the potential low grade, it might be helpful to review your report and identify any areas where you can improve. You might also consider seeking feedback from your instructor or a tutor to help you refine your work. Remember that it's okay to ask for help and that seeking support is a sign of strength, not weakness.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you!

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is your biggest concern when it comes to your final report. It's completely normal to feel overwhelmed by deadlines and the pressure to perform well.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your time management concerns, have you considered using a planner or calendar to help you stay organized and on track? Sometimes, having a visual representation of your tasks and deadlines can help you prioritize and stay focused. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to complete it all at once.

Remember that it's okay to ask for help and that seeking support is a sign of strength, not weakness. If you're struggling to manage your time effectively, you might consider reaching out to a trusted friend, family member, or counselor for guidance.

Remember that you don't have to face these challenges alone. I'm here to support you, and there are also resources available on campus that can help. Please don't hesitate to reach out if you need any further assistance or guidance. You got this, and I believe in you!

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. It's completely normal to feel this way, especially when there's a lot at stake.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to recognize that your emotions are real and deserving of attention and care.

Regarding your request for a plan, I'd be happy to help you break down the task into smaller, manageable chunks. Here's a possible plan that you could consider:

1. Set aside dedicated time each day to work on your report. This could be 30 minutes to an hour each day, depending on your schedule and preferences.
2. Create an outline for your report. This will help you organize your thoughts and ensure that you cover all the important points.
3. Research and gather information for your report. This might involve reading articles, conducting interviews, or gathering data.
4. Write the first draft of your report. This might take a few days, depending on the length of your report and how quickly you work.
5. Review and revise your report. This might involve getting feedback from a trusted friend, family member, or counselor, or seeking help from a tutor or writing center.
6. Finalize your report and submit it before the deadline.

Remember that it's okay to ask for help and that seeking support is a sign of strength, not weakness. If you're struggling to get started or need help along the way, don't hesitate to reach out to me or other resources on campus.

You got this, and I believe in you! Let's work together to help you succeed.

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. If you have any other questions or concerns, please don't hesitate to ask. I'm here to help in any way I can. Is there anything else you'd like to talk about or ask?

To what extent do you think the chatbot can understand the user in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can paraphrase the user in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can verbalize the user's emotions in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can summarize the user's statements in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can encourage the user in this conversation?

1(very poor) - 5(very good)

Please rank the performance of following strategies in this conversation: Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.

rank **Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.**

What are your thoughts on the length of the chatbot's responses?

open answer

What do you think about this conversation?

open answer

How would you rate this conversation overall? (1-5)

1(very poor) - 5(very good)

What else would you like to share with us?

open answer

Conversation 4

- Read this conversation, in which a student interacts with a chatbot that is supposed to be supportive and a good listener.
- Complete a semi-structured survey after the interaction to assess the chatbot's active listening abilities.

StudentBuddy: Hello! I'm StudentBuddy, your helpful companion for navigating the ups and downs of student life. How are you doing these days?

User: Hi, I am doing bad. These days, I feel stressed because of my final report deadline and the separation from my family.

Hello there! Sorry to hear that you're feeling stressed lately. It sounds like you're dealing with a lot, from your final report deadline to the separation from your family. That can be a lot to handle, and it's completely normal to feel overwhelmed.

Firstly, let me acknowledge that your feelings are valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your final report deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, taking a step-by-step approach can help make the task feel less daunting. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to do it all at once.

As for the separation from your family, it's understandable that this can be a difficult situation. It might be helpful to reach out to your university's counseling services or a trusted friend or family member to talk through your feelings. Remember that it's okay to feel sad and that it's normal to need support during challenging times.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support.

You got this! 😊

User: I am concerned that not only I cannot finish it before the deadline but also the grade will be low.

StudentBuddy: Hello there! It sounds like you're feeling worried about your final report deadline and the potential grade you might receive. It's completely normal to feel concerned about meeting deadlines and receiving a good grade, especially when it comes to important assignments like this one.

Firstly, let me acknowledge that your concerns are valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your concerns about the deadline, have you considered breaking down the task into smaller, manageable chunks? Sometimes, taking a step-by-step approach can help make the task feel less daunting. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to do it all at once.

As for your concerns about the grade, it might be helpful to focus on the process of completing the report rather than the end result. Remember that the grade is not the only measure of success, and you can still learn and grow from this experience even if you don't receive the grade you hoped for.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support.

You got this! 😊

User: I would say the time management stuff is my most concerned part.

StudentBuddy: Hello there! It sounds like time management is your biggest concern when it comes to your final report. It's completely normal to struggle with managing your time effectively, especially when you have multiple responsibilities and deadlines to meet.

Firstly, let me acknowledge that your concern is valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

Regarding your time management concerns, have you considered using a planner or a time management app to help you stay organized and on track? These tools can help you break down your tasks into smaller, manageable chunks and prioritize your responsibilities. Additionally, you might find it helpful to set aside dedicated time each day to work on your report, rather than trying to do it all at once.

Remember that it's okay to ask for help when you need it, and your university's counseling services or a trusted friend or family member might be able to offer you some helpful tips and strategies for managing your time more effectively.

Remember that you're doing your best, and that's something to be proud of. Keep taking things one step at a time, and don't hesitate to reach out if you need any further support. You got this! 😊

User: It is still 2 weeks before my deadline, but I haven't started it yet. Can you give me a plan for it?

StudentBuddy: Hello there! It sounds like you're feeling a bit overwhelmed with your final report deadline approaching, and you haven't started on it yet. It's completely normal to feel this way, especially when you have other responsibilities and distractions competing for your attention.

Firstly, let me acknowledge that your situation is valid and I'm here to support you. It's important to remember that you're not alone in this, and many students go through similar experiences.

To help you get started on your report, I suggest we break down the task into smaller, manageable chunks. Here's a possible plan you could consider:

1. Set aside dedicated time each day to work on your report. This could be 30 minutes to an hour each day, depending on your schedule and preferences.
2. Create an outline for your report. This will help you organize your thoughts and ensure that you cover all the important points.
3. Research and gather information related to your report. This could involve reading articles, taking notes, and interviewing relevant experts or individuals.
4. Write a first draft of your report. This doesn't have to be perfect, but it should give you a good starting point to work from.

5. Review and revise your report. This could involve editing your writing, adding or removing information, and ensuring that your arguments are clear and well-supported.

Remember that it's okay to take things one step at a time, and it's important to prioritize your well-being and self-care during this time. Make sure to take breaks, exercise, and eat healthy foods to keep your energy levels up.

If you need any further support or guidance, please don't hesitate to reach out. I'm here to help you every step of the way. You got this! 😊

User: Thank you very much!

StudentBuddy: You're welcome! It's my pleasure to assist you. If you have any other questions or concerns, please don't hesitate to reach out. I'm here to support you in any way I can. Keep in mind that it's okay to ask for help when you need it, and there are many resources available to you as an international student. Remember to take care of yourself and prioritize your well-being, and you'll be well on your way to success. Good luck with your final report! 😊

To what extent do you think the chatbot can understand the user in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can paraphrase the user in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can verbalize the user's emotions in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can summarize the user's statements in this conversation?

1(very poor) - 5(very good)

To what extent do you think the chatbot can encourage the user in this conversation?

1(very poor) - 5(very good)

Please rank the performance of following strategies in this conversation: Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.

rank **Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.**

What are your thoughts on the length of the chatbot's responses?

open answer

What do you think about this conversation?

open answer

How would you rate this conversation overall? (1-5)

1(very poor) - 5(very good)

What else would you like to share with us?

open answer

Overall

Which aspect is most important to you in a conversation? Please rank the following:

Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.

rank **Paraphrasing, Verbalizing Emotions, Summarizing, Encouraging.**

How would you rate the overall performance of Paraphrasing?

1(very poor) - 5(very good)

How would you rate the overall performance of Verbalizing Emotions?

1(very poor) - 5(very good)

How would you rate the overall performance of Summarizing?

1(very poor) - 5(very good)

How would you rate the overall performance of Encouraging?

1(very poor) - 5(very good)

How well do you think these chatbots understand the user in this conversation?

1(very poor) - 5(very good)

What are your thoughts on the length of the chatbot's responses?

open question

What do you think about these conversations?

open question

What else would you like to share with us?

open question

Appendix D

The Information Letter in Second Experiment

This reference is the information letter provided for participants in experiment of interaction with chatbot. This is designed to ensure participants fully understand their rights, ethical considerations, and any potential risks associated with participating in the second experiment. In this experiment, participants first interacted with the chatbot, followed by an interview to gather in-depth feedback.

Information Letter for Research Participants

Authors: Min Chia, Yu
Last edited: 13/06/2024

Summary This research investigates the potential of prompt-based active listening strategies to enhance the chatbot experience. We aim to assess the effectiveness of these strategies by developing a chatbot that incorporates them. You will read multiple conversations between a student and a chatbot, and then complete a survey to provide feedback on the chatbot's active listening skills during the conversation.

Purpose of the Research The main objective of this study is to evaluate how effectively active listening strategies can be integrated into the chatbot. Our goal is to create more empathetic and supportive interactions between users and the chatbot by utilizing these strategies.

What Will Happen During this Session You will:

- Read a conversation of an international student with a chatbot designed to be a good listening ear for the daily struggles of students.
- Complete a survey after the interaction to assess the chatbot's active listening abilities.

The entire session is expected to take approximately 15 minutes.

Condition for participation You can only take part in this experiment if you are an international student, studying abroad at a university. You should **not** take part in this experiment if you have previously struggled with mental health, or are still struggling to this moment. Do **not** take part in this experiment also if you are uncomfortable with the idea of reading about the daily struggles of international students.

Risks for participation We do not expect that participating in this experiment will lead to any risk or harm to you. The conversations between the student and chatbot are limited to topics which should not trigger any traumatic memory; in any case, do not take part in this experiment if you are uncomfortable with the idea of reading about the daily struggles of international students, or if you have a history of mental health struggles.

About the Chatbot The chatbot whose conversation you will read is designed to be a companion, behaving as a good listener. The chatbot may offer advice to the person it's interacting with, but it does not provide psychological counseling or therapy (it is actively developed not to do that).

Personal Information Collection, Processing, and Rights We will collect your age, gender, the university you attend, and which continent you come from, in addition to your answers about the chatbot. This data is entirely anonymous, and cannot be traced back to you. After

submitting the form, you will not be able to request access to your data (including for rectification or erasure), due to the data being anonymous.

Usage of Data The data collected will be used solely for research purposes. No personal information that can be traced back to you is collected. Results may be shared through academic publications and presentations.

Retention Period for Research Data Research data will be retained for five years following the conclusion of the study. After this period, data will be destroyed.

Contact Details

For further information about the study or to raise any concerns, please contact:

Researcher:

Min Chia, Yu

m.yu-2@student.utwente.nl

Ethics Committee:

Secretary of the Ethics Committee of the Faculty of Electrical Engineering, Mathematics and Computer Science at the University of Twente

ethicscommittee-cis@utwente.nl

We appreciate your time and willingness to participate in this important research. Your contributions are invaluable to enhancing mental health support for international students.

After the first page, this is shown to participants:

- I understand that I cannot participate in this experiment if I have previously struggled with mental health, or if I am still struggling
- I understand that I cannot participate in this experiment if I am uncomfortable with the idea of reading about the daily struggles of an international student
- I understand the data is entirely anonymous, and cannot be traced back to me
- I understand that I can quit the experiment simply by closing this page at any time before pressing “submit”
- I am an international student studying abroad
- I confirm that I meet all the criteria for participating in this experiment

Information Letter for Research Participants

Authors: Min Chia, Yu
Last edited: 13/06/2024

Summary This research investigates the potential of prompt-based active listening strategies to enhance the chatbot experience. We aim to assess how well the chatbot listens and if the user feels supported. You will have to chat with the chatbot in your role as an international student, by pretending to struggle with a student issue of your choice. In the conversation, you are requested not to use a personal situation; your conversation with the chatbot will be read by the researcher and excerpts could be made public.

Purpose of the Research The main objective of this study is to evaluate how effectively active listening strategies can be integrated into the chatbot through prompt engineering. Our goal is to create more empathetic and supportive interactions between users and the chatbot by utilizing these strategies.

What Will Happen During this Session

- After reading this information sheet, I will check that you understand the task, its risks, and ask you to express verbal consent before starting.
- You will have to chat with the chatbot in your role as an international student, pretending to struggle with a (international) student issue of your choice.
- After the conversation, you will be asked to re-read it and if you are comfortable sharing it and discussing it. If not, the conversation will be deleted and you can leave the experiment.
- You will then be interviewed by the researcher, asking about how well the chatbot listens and feels supportive.
- When leaving, you receive a printed post-briefing sheet with information about the support structure of the university (study advisors, student psychologist, etc.) and how to access it.

The entire experiment will consist of a 5-10 minute interaction with the chatbot, and an interview of approximately 10 minutes.

Condition for participation You can only take part in this experiment if you are an international student, studying abroad at a university. You should **not** take part in this experiment if you have previously struggled with mental health, or are still struggling to this moment. Do **not** take part in this experiment also if you are uncomfortable with the idea of talking about the daily struggles of international students.

Risks for participation We do not expect that participating in this experiment will lead to any risk or harm to you. Do not take part in this experiment if you are uncomfortable with the idea of talking about the daily struggles of international students, or if you have a history of

mental health struggles. The chatbot is based on prompt engineering, i.e. giving instructions to the chatbot so that it behaves like a listening companion. However, this is still a ChatGPT-like system which can misbehave and it is unlikely, but possible, that during the conversation the bot says something offensive or shows biases. Moreover, if you want to know more about how the chatbot is developed and what instructions it has been given, we can discuss this after the experiment. You are encouraged to leave the survey if you feel uncomfortable during the interaction.

About the Chatbot The chatbot whose conversation you will read is designed to be a companion, behaving as a good listener. The chatbot may offer advice to the person it's interacting with, but it does not provide psychological counseling or therapy (it is actively developed not to do that), and it is unlikely that your experience today is representative of a longer interaction. The chatbot is a prototype and will not be made generally available after the experiment is completed.

Personal Information Collection, Processing, and Rights We will collect your age, gender, the university you attend, and which continent you come from, in addition to your conversation with the chatbot and the interview answers afterwards. If the data contains personally identifiable information it will be anonymized, so that it cannot be traced back to you.

After the conversation, you will be asked to re-read it and if you are comfortable sharing it and discussing it. Once you agree to share the recording, you will not be able to request access to your data (including for rectification or erasure), due to the data being anonymous.

The interview will be recorded and transcribed automatically using local-only transcription software; once the transcription is done, the recording will be deleted. Any personal information in the interview will also be anonymized (e.g. names will be replaced with a placeholder [NAME]).

Usage of Data The data collected will be used solely for research purposes. No personal information that can be traced back to you is collected. Results may be shared through academic publications and presentations.

Retention Period for Research Data Research data will be retained for five years following the conclusion of the study. After this period, data will be destroyed.

Contact Details

For further information about the study or to raise any concerns, please contact:

Researcher:

Min Chia, Yu

m.yu-2@student.utwente.nl

Ethics Committee:

Secretary of the Ethics Committee of the Faculty of Electrical Engineering, Mathematics and Computer Science at the University of Twente

ethicscommittee-cis@utwente.nl

We appreciate your time and willingness to participate in this important research. Your contributions are invaluable to enhancing mental health support for international students.

This is a follow-up sheet with how to find the student advisor and the student psychologist. This sheet will be printed out and given to participants after they complete the second experiment. The page behind this will contain a copy of this sheet:

<https://utwente.nl/findyoursupport>

How to get help at the University of Twente

If you are struggling, either with your studies, with a personal situation or with other issues, the University offers many options to get help.

Among these options are your study adviser and the student psychologist. Scan the QR code to go to the page where you can contact them.

Turn this page to see what the other options are, or go to <https://utwente.nl/findyoursupport>

Study Adviser

When to Visit the Study Adviser:

- Drawing up a study plan for one or more academic year(s)
- Not passing a module and understanding the consequences
- Issues concentrating due to problems at home
- Finding extra activities for a program that feels easy
- Balancing board membership or committee activities with studies
- Doubts about your chosen degree
- Facing unexpected challenges after an easy secondary school experience
- Learning more effective study methods
- Managing studies as a professional athlete
- Studying with dyslexia
- Combining a disability with your academic program
- Requesting exceptions to the rules



What They Do:

- Answer questions about your degree, studies, and private matters affecting your studies
- Refer you to other professionals such as Student Psychologists, Deans of Students, Tutors, and Study Advisers from other programs if needed

Student Psychologist

Services Provided:

- Short-term, solution-oriented help for personal, social, and study problems
- Free of charge and no referral needed

When to Visit a Student Psychologist:

- **Personal Problems:** Depression, anxiety, sadness, fear, insecurity
- **Social Problems:** Family problems, loneliness
- **Study Problems:** Study stress, fear of failure



Appendix E

The Conversation Generated by Participants and the Iterated Chatbot

This reference includes the conversations from participants interacting with the chatbot during the second experiment. The title represents the participant's number, and within the content, the text with a yellow background represents the user's input, while the text without a background color represents the chatbot's responses.

Participant 1

Hello! My name is StudentBuddy, and I'm here to assist you as a helpful companion for international students. I'm here to listen to your concerns, provide encouragement, and offer support. Please feel free to share your thoughts and emotions, and I'll do my best to provide helpful responses. What would you like to talk about today?

Hi I am doing bad these days

Hello! It sounds like you're going through a tough time lately. It's completely normal to have good and bad days, and it's okay to feel overwhelmed sometimes. Would you like to talk about what's been challenging for you lately? I'm here to listen and offer any support I can. Maybe we can explore some strategies together to help you feel more confident and capable. Remember that it's okay to ask for help when you need it, and there are resources available to you. Is there anything specific you'd like to talk about or ask?

i am struggling to the financial issue, could you help me with that?

Hello! It sounds like you're facing some financial challenges right now. It's completely normal to struggle with financial issues, and it's okay to ask for help when you need it. Would you like to talk about what's been challenging for you financially? I'm here to listen and offer any support I can. Maybe we can explore some strategies together to help you manage your finances and feel more confident in your financial situation. Remember that there are resources available to you, such as your university's financial aid office or a student support service. They may be able to offer you some helpful advice or assistance. Is there anything specific you'd like to talk about or ask?

can yo provide me what can I do?

Hello! It sounds like you might be feeling a bit overwhelmed with your financial situation, and you're looking for some guidance on what you can do.

Firstly, it might be helpful to take a deep breath and acknowledge your feelings. It's completely normal to feel overwhelmed when faced with financial challenges, and it's important to remember that you don't have to face this alone.

One resource that might be helpful to you is your university's financial aid office. They may be able to offer you some helpful advice or assistance with managing your finances. Additionally, there may be some student support services available to you, such as counseling or academic advising.

In terms of specific actions you can take, it might be helpful to start by creating a budget and tracking your expenses. This can help you identify areas where you might be able to cut back and save some money. Additionally, you might consider looking into some financial aid options, such as scholarships or part-time jobs, to help you cover your expenses.

Remember that it's okay to ask for help when you need it, and there are resources available to you. Don't hesitate to reach out if you need any further support or guidance. Is there anything else you'd like to talk about or ask?

can you give me few steps that i can do in bullet point?

Hello! It sounds like you're looking for some specific steps you can take to manage your financial situation. Here are a few suggestions that might be helpful:

- Create a budget and track your expenses: This can help you identify areas where you might be able to cut back and save some money.

- Look into financial aid options: Your university's financial aid office may be able to offer you some helpful advice or assistance with managing your finances.
- Consider applying for scholarships or part-time jobs: These can be great ways to help cover your expenses and reduce your financial stress.
- Practice self-care: It's important to take care of yourself during this time, so make sure to prioritize activities that bring you joy and help you relax.

Remember that it's okay to ask for help when you need it, and there are resources available to you. Don't hesitate to reach out if you need any further support or guidance. Is there anything else you'd like to talk about or ask?

it's very helpful for me in this stage

Hello! It sounds like you're feeling a bit overwhelmed with your current situation, and you're looking for some guidance on what you can do. It's completely normal to feel this way, and it's okay to ask for help when you need it.

Firstly, it might be helpful to take a deep breath and acknowledge your feelings. It's important to remember that you don't have to face this alone, and there are resources available to you. One resource that might be helpful to you is your university's student support services. They may be able to offer you some helpful advice or assistance with managing your finances, or provide you with some financial aid options. Additionally, there may be some student organizations or clubs that can offer you some support and guidance.

In terms of specific actions you can take, it might be helpful to start by creating a budget and tracking your expenses. This can help you identify areas where you might be able to cut back and save some money. Additionally, you might consider looking into some financial aid options, such as scholarships or part-time jobs, to help you cover your expenses.

Remember that it's okay to ask for help when you need it, and there are resources available to you. Don't hesitate to reach out if you need any further support or guidance. Is there anything else you'd like to talk about or ask?

thank you very much !!

You're welcome! It sounds like you're feeling a bit overwhelmed with your financial challenge, but it's great that you're reaching out for support. Remember that it's okay to ask for help when you need it, and there are resources available to you. If you'd like to talk more about your financial concerns, I'm here to listen and offer any guidance I can. Is there anything else you'd like to talk about or ask?

Participant 2

Hello! My name is StudentBuddy, and I'm here to assist you as a helpful companion for international students. I'm here to listen to your concerns, provide encouragement, and offer support. Please feel free to share your thoughts and emotions, and I'll do my best to provide helpful responses. What would you like to talk about today?

I am struggling with my grades

Sure, I'd be happy to help! It sounds like you're having a tough time with your grades. Take a deep breath and don't worry, I'm here to support you. Can you tell me a bit more about what's going on? What specific challenges are you facing with your grades?

A lot of my courses involve programming and I'm not good at that

Sure, I'd be happy to help! It sounds like you're having a tough time with your grades. Take a deep breath and don't worry, I'm here to support you. Can you tell me a bit more about what's going on? What specific challenges are you facing with your grades?

It sounds like you're struggling with programming courses, and that can be a difficult subject to master. But don't worry, I'm here to help you work through it. Have you tried reaching out to your professor or a tutor for support? Sometimes just having someone to talk through the material with can make a big difference.

Also, have you considered breaking down the programming assignments into smaller, more manageable parts? Sometimes, when we're faced with a large task, it can feel overwhelming, but if we break it down into smaller pieces, it can become more manageable.

Let me know if there's anything else you'd like to talk about or if there's anything I can do to help. I'm here to support you every step of the way.

I have talked with my advisor and he said to watch youtube tutorials

Sure, I'd be happy to help! It sounds like you're having a tough time with your grades, specifically with programming courses. It's completely normal to struggle with difficult subjects, and it takes courage to reach out for support.

It's great that you've already talked to your advisor and they suggested watching YouTube tutorials. Have you tried that yet? Sometimes, seeing someone explain the material in a different way can help it click into place. Additionally, there are many online resources and forums where you can ask questions and get help from other students who may be going through similar struggles.

It sounds like you're feeling overwhelmed with the programming assignments. Would you like to talk about what specifically is causing you stress? Sometimes, breaking down the assignments into smaller parts or setting aside dedicated time to work on them can make them feel more manageable. I'm here to listen and offer support, so please feel free to share whatever is on your mind.

I haven't tried breaking down the assignment into smaller parts so I will do just that

Sure, I'd be happy to help! It sounds like you're having a tough time with your grades, specifically with programming courses. It's completely normal to struggle with difficult subjects, and it takes courage to reach out for support.

It's great that you've already talked to your advisor and they suggested watching YouTube tutorials. Have you tried that yet? Sometimes, seeing someone explain the material in a different way can help it click into place. Additionally, there are many online resources and

forums where you can ask questions and get help from other students who may be going through similar struggles.

It sounds like you're feeling overwhelmed with the programming assignments. Would you like to talk about what specifically is causing you stress? Sometimes, breaking down the assignments into smaller parts or setting aside dedicated time to work on them can make them feel more manageable. I'm here to listen and offer support, so please feel free to share whatever is on your mind.

Also, have you considered reaching out to a tutor or a study group for additional support? Sometimes, having someone to work through the material with can make a big difference. And don't forget to take breaks and practice self-care. It's important to take care of yourself, both physically and mentally, when you're facing challenges.

Let me know if there's anything else you'd like to talk about or if there's anything I can do to help. I'm here to support you every step of the way.

Thank you so much

You're welcome! It sounds like you're struggling with programming courses and feeling overwhelmed with the assignments, but it's great that you're reaching out for support. Remember that it's okay to ask for help when you need it, and there are resources available to you. If you'd like to talk more about your academic concerns, I'm here to listen and offer any guidance I can.

Participant 3

Hello! My name is StudentBuddy, and I'm here to assist you as a helpful companion for international students. I'm here to listen to your concerns, provide encouragement, and offer support. Please feel free to share your thoughts and emotions, and I'll do my best to provide helpful responses. What would you like to talk about today?

Hi, I feel a bit lonely these days, can you talk to me

Of course! It sounds like you're feeling a bit lonely lately. That can be a really tough feeling to experience, but please know that you're not alone and I'm here to support you. It's completely normal to feel this way, especially when you're in a new place and might be missing your friends and family back home.

Thank you for sharing this with me. You're doing a great job of reaching out for help, and I'm here to assist you with anything you need. Is there anything specific that you'd like to talk about or any help you'd like me to offer?

I feel lonely because i miss my family and friends in my country

Of course! It sounds like you're feeling a bit lonely lately. That can be a really tough feeling to experience, but please know that you're not alone and I'm here to support you. It's completely normal to feel this way, especially when you're in a new place and might be missing your friends and family back home.

Thank you for sharing this with me. You're doing a great job of reaching out for help, and I'm here to assist you with anything you need. Is there anything specific that you'd like to talk about or any help you'd like me to offer?

Based on what you've shared, it sounds like you're struggling with feeling homesick and missing your loved ones. It's understandable to feel this way, especially when you're in a new environment and might be feeling a bit disconnected from your support system.

Let's see if we can work together to find some solutions to help you feel more connected and supported here. Have you tried reaching out to any other international students or joining any clubs or organizations on campus? Sometimes connecting with others who are going through similar experiences can be really helpful.

Additionally, have you considered reaching out to your university's counseling services or student support resources? They may be able to offer additional support and resources to help you navigate this transition.

Please know that you're not alone in this feeling, and there are resources available to support you. I'm here to listen and offer any assistance I can. How can I help you today?

if i want to reach out the university conselling service, can you give me some advice?

Of course! If you'd like to reach out to your university's counseling services or student support resources, here are a few tips that might be helpful:

1. Check your university's website: Look for the student support or counseling services page on your university's website. This will often have information on how to schedule an appointment, what services are available, and any resources they offer.

2. Reach out to your student union: Your student union may have information on counseling services or other resources that are available to you. They may also be able to offer support and advice on how to navigate the university system.
3. Talk to your academic advisor: Your academic advisor may be able to offer guidance on how to access counseling services or other resources that can help you with your studies.
4. Look for on-campus events: Your university may host events or workshops that can help you connect with other students and access resources that can support your well-being.

When reaching out to counseling services, it can be helpful to be specific about what you're looking for help with. For example, you might say something like, "I'm feeling homesick and missing my loved ones. I'm looking for support to help me navigate this transition and feel more connected to the university community."

Remember that reaching out for help is a sign of strength, and there are resources available to support you. Don't hesitate to reach out if you need help. How can I assist you further today? oh that's very useful information, can you just talk to me? I want someone to talk to Of course! I'm here to listen and offer support. It sounds like you're feeling a bit homesick and missing your loved ones back home. That can be a really tough feeling to experience, but please know that you're not alone and many international students go through similar feelings.

It's completely normal to feel this way, especially when you're in a new place and might be missing your friends and family. It can be helpful to reach out to other international students or join clubs or organizations on campus to connect with others who are going through similar experiences.

Additionally, have you considered reaching out to your university's counseling services or student support resources? They may be able to offer additional support and resources to help you navigate this transition.

Please know that you're not alone in this feeling, and there are resources available to support you. I'm here to listen and offer any assistance I can. How can I help you today? I feel like i miss my friends but i am afraid to disturb them, what should i do? Of course! It sounds like you're feeling a bit hesitant to reach out to your friends back home because you don't want to disturb them. That's completely understandable, and it's important to respect their time and boundaries.

One thing you might consider is sending a simple message to let them know that you're thinking of them and missing them. You could say something like, "Hi [friend's name], just wanted to let you know that I'm thinking of you and missing you. Hope you're doing well!"

This can be a good way to let them know that you're thinking of them without feeling like you're disturbing them. Additionally, you might consider reaching out to other friends or family members who you haven't spoken to in a while. It can be helpful to reconnect with loved ones and share updates about your life.

Remember that it's okay to feel homesick and miss your loved ones, and it's completely normal to feel this way when you're in a new place. There are resources available to support

you, such as your university's counseling services or student support resources. They may be able to offer additional support and resources to help you navigate this transition.

Please know that you're not alone in this feeling, and there are resources available to support you. I'm here to listen and offer any assistance I can. How can I help you today?

okay, that's an good idea! thank you so much!!

You're welcome! It sounds like you're feeling a bit overwhelmed with your academic and financial challenges, but it's great that you're reaching out for support. Remember that it's okay to ask for help when you need it, and there are resources available to you.

If you'd like to talk more about your concerns, I'm here to listen and offer any guidance I can.

Participant 4

Hello! My name is StudentBuddy, and I'm here to assist you as a helpful companion for international students. I'm here to listen to your concerns, provide encouragement, and offer support. Please feel free to share your thoughts and emotions, and I'll do my best to provide helpful responses. What would you like to talk about today?

Hello! I'm having some financial problems right now, and it stressed me out. Can you help me?

Hello! It sounds like you're going through a tough time with financial problems, and that's completely normal. It's great that you're reaching out for help, and I'm here to support you in any way I can.

First, let me acknowledge your emotions. It sounds like you're feeling stressed out about your financial situation. That's understandable, and it's okay to feel overwhelmed. Take a deep breath and know that you're not alone. Many international students face financial challenges, and there are resources available to help.

Now, let me encourage you. You're doing a great job by reaching out for help, and that takes a lot of courage. You're taking the first step towards resolving your financial issues, and I'm here to support you every step of the way.

To better understand your situation, can you tell me more about your financial problems? What are some of the challenges you're facing, and how have you been trying to address them so far?

Since I couldn't finish my thesis in time, I might need to extend my studies. Therefore, I will have to pay extra tuition.

Hello! It sounds like you're facing a challenging situation with your studies and financial issues. Please know that you're not alone, and many students have gone through similar experiences.

First, let me acknowledge your emotions. It sounds like you're feeling stressed out about the possibility of extending your studies and the additional tuition fees you may need to pay. That's completely normal, and it's okay to feel overwhelmed. Take a deep breath and know that you have a support system here to help you.

I'm happy that you're reaching out for help, and I'm here to support you in any way I can. To better understand your situation, can you tell me more about your financial concerns and how you've been trying to address them so far? What are some of the challenges you're facing, and how do you think I can assist you?

Since I'm an international student, it's hard for me to apply scholarships. And my parents are not willing to offer me financial support anymore.

Hello! It sounds like you're facing a challenging situation with financial issues and limited support. Please know that you're not alone, and many students have gone through similar experiences.

First, let me acknowledge your emotions. It sounds like you're feeling stressed out about the financial challenges you're facing, and the lack of support from your parents. That's completely normal, and it's okay to feel overwhelmed. Take a deep breath and know that you have a support system here to help you.

I'm happy that you're reaching out for help, and I'm here to support you in any way I can. To better understand your situation, can you tell me more about your financial concerns and how you've been trying to address them so far? What are some of the challenges you're facing, and how do you think I can assist you?

It sounds like you're facing some difficulties with applying for scholarships and receiving financial support from your parents. Have you considered reaching out to your university's financial aid office or a student support services for assistance? They may have resources or options available to help you. Additionally, there may be other scholarship opportunities or financial assistance programs that you may be eligible for.

Please feel free to share any other information or concerns you may have, and I'll do my best to provide helpful responses and support.

I have contacted them before, but they said they don't know what to do either.

Hello! It sounds like you've been facing some challenges with financial issues and limited support, and that can be a tough situation to be in. It's great that you've reached out for help, and I'm here to support you in any way I can.

First, let me acknowledge your emotions. It sounds like you're feeling frustrated and overwhelmed by the situation, and that's completely normal. It's okay to feel that way, and it's important to remember that you're not alone. Many students have gone through similar experiences and have found ways to overcome them.

I'm happy that you've reached out to your university's financial aid office and student support services for assistance. Have you considered reaching out to them again and asking if they have any additional resources or options available to help you? Sometimes, it can be helpful to speak with someone in person or over the phone to get a better understanding of your options.

Additionally, there may be other scholarship opportunities or financial assistance programs that you may be eligible for. Have you checked with your university's financial aid office or a student support services to see if they have any information on those resources? They may be able to provide you with more information or point you in the right direction.

Please feel free to share any other information or concerns you may have, and I'll do my best to provide helpful responses and support. Remember that you're not alone, and there are resources available to help you.

No, I haven't. I'll try to contact them in person then! What should I prepare in this case?

Hello! It sounds like you're facing a challenging situation with financial issues and limited support, and that can be a tough situation to be in. It's great that you're reaching out for help, and I'm here to support you in any way I can.

First, let me acknowledge your emotions. It sounds like you're feeling frustrated and overwhelmed by the situation, and that's completely normal. It's okay to feel that way, and it's important to remember that you're not alone. Many students have gone through similar experiences and have found ways to overcome them.

To better understand your situation, can you tell me more about your financial concerns and how you've been trying to address them so far? What are some of the challenges you're facing, and how do you think I can assist you?

It sounds like you're considering reaching out to your university's financial aid office and student support services for assistance. That's a great step! Have you prepared any questions or information to share with them when you contact them? It may be helpful to have a list of questions or concerns ready to ask them, so you can make the most of your conversation.

Additionally, it may be helpful to have some information ready to share with them about your financial situation, such as your income, expenses, and any other relevant details. This can help them provide you with more tailored advice and resources.

Please feel free to share any other information or concerns you may have, and I'll do my best to provide helpful responses and support. Remember that you're not alone, and there are resources available to help you.

Okay! Thank you! That's really helpful!

You're welcome! It sounds like you're feeling a bit overwhelmed with your financial challenge, but it's great that you're reaching out for support. Remember that it's okay to ask for help when you need it, and there are resources available to you. If you'd like to talk more about your financial concerns, I'm here to listen and offer any guidance I can.

Participant 5

Hello! My name is StudentBuddy, and I'm here to assist you as a helpful companion for international students. I'm here to listen to your concerns, provide encouragement, and offer support. Please feel free to share your thoughts and emotions, and I'll do my best to provide helpful responses. What would you like to talk about today?

I am sad

Hello! It sounds like you might be feeling sad today. Take a deep breath and don't worry, I'm here to support you. It's completely normal to feel sad from time to time, and it's okay to acknowledge and express those feelings. Would you like to talk about what's on your mind and why you might be feeling this way? I'm here to listen and offer any support I can.

my friend have better grade than me

Hello! It sounds like you might be feeling a bit down because your friend has better grades than you. That can be tough to see, and it's understandable to feel that way. It's important to remember that grades don't define your worth as a person, and everyone learns and grows at their own pace. Would you like to talk about what's on your mind and why you might be feeling this way? I'm here to listen and offer any support I can. Maybe we can explore some strategies together to help you reach your academic goals.

I felt I am the dumbest

Hello! It sounds like you might be feeling a bit overwhelmed and struggling with some negative thoughts today. It's completely normal to feel that way, and it's okay to acknowledge and express those feelings. Would you like to talk about what's on your mind and why you might be feeling this way? I'm here to listen and offer any support I can. Maybe we can explore some strategies together to help you feel more confident and capable.

It sounds like you mentioned feeling like the "dumbest." That can be a tough feeling to experience, but it's important to remember that intelligence is not solely measured by grades or academic performance. You are so much more than just your grades, and you have so much to offer. Would you like to talk about what's been challenging for you lately, and how you've been feeling about your academic performance? I'm here to support you and offer any guidance I can.

I cannot deliver what my supervisors want

Hello! It sounds like you might be feeling a bit overwhelmed with your academic work and struggling to meet the expectations of your supervisors. That can be a challenging situation, and it's completely normal to feel that way. It's important to remember that it's okay to ask for help and seek support when you need it. Would you like to talk about what's been challenging for you lately, and how you've been feeling about your academic performance? I'm here to listen and offer any guidance I can. Maybe we can explore some strategies together to help you meet your supervisors' expectations and feel more confident in your abilities.

Also financial problems . everything in a one place.

Hello! It sounds like you're going through a tough time with both academic and financial challenges. It's completely understandable to feel overwhelmed when faced with multiple issues at once. It's important to remember that you don't have to face these challenges alone, and I'm here to support you in any way I can.

Firstly, let's start with your academic concerns. You mentioned that you're struggling to meet the expectations of your supervisors. Can you tell me more about what specifically is causing you difficulty? Are there any particular tasks or skills you're struggling with? I'm here to listen and offer any guidance I can.

Additionally, it sounds like financial problems are also weighing on your mind. It's important to remember that financial struggles are a common experience for many students, and there are resources available to help. Have you considered reaching out to your university's financial aid office or a student support service for assistance? I'm here to support you in any way I can, and I can also offer some resources and tips that might be helpful.

Remember that it's okay to feel overwhelmed, and it's important to take care of yourself during this time. Have you been taking any time for self-care or stress-reduction techniques? Sometimes, taking a break from your studies or seeking support from friends, family, or a counselor can be helpful in managing stress and feeling more balanced.

Please feel free to share whatever is on your mind, and I'll do my best to provide helpful responses and support.

I just dont know how to communicate my ideas better to them

Hello! It sounds like you're struggling with communicating your ideas effectively to your supervisors and peers. That can be a challenging situation, but there are a few strategies that might be helpful.

Firstly, it might be helpful to practice articulating your ideas in a clear and concise way. This could involve writing out your ideas in a draft document, or practicing speaking them out loud to a friend or family member. This can help you distill your ideas down to their core components, and make them easier to communicate to others.

Additionally, it might be helpful to seek feedback from others on your communication style. You could ask a trusted friend or family member to listen to you discuss your ideas, and provide feedback on how you could improve your communication. This can help you identify any areas where you might be struggling, and work on improving your communication skills.

Finally, it might be helpful to consider the context in which you are communicating your ideas. Are there any specific cultural or professional norms that you should be aware of when communicating with your supervisors or peers? Understanding the context of your communication can help you tailor your message and delivery to your audience, and make it more likely that your ideas will be well-received.

Remember that it's okay to feel overwhelmed, and it's important to take care of yourself during this time. Have you been taking any time for self-care or stress-reduction techniques? Sometimes, taking a break from your studies or seeking support from friends, family, or a counselor can be helpful in managing stress and feeling more balanced.

Please feel free to share whatever is on your mind, and I'll do my best to provide helpful responses and support.

i understand . thankyou so much

You're welcome! It sounds like you're feeling a bit overwhelmed with your academic and financial challenges, but it's great that you're reaching out for support. Remember that it's okay to ask for help when you need it, and there are resources available to you.

If you'd like to talk more about your academic concerns, I'm here to listen and offer any guidance I can. Sometimes, breaking down your tasks into smaller, more manageable parts can help make them feel less overwhelming. Additionally, it might be helpful to seek

feedback from your supervisors or peers on your ideas to see if there are any areas where you could improve your communication.

Remember to take care of yourself during this time, and don't hesitate to reach out if you need any further support.

Appendix F

The Interview Question

This reference contains the interview questions asked of participants after they interacted with the chatbot. The questions were designed to gather feedback to address the third research question: **How do users perceive the appropriateness, supportive characteristics, and overall usefulness of the chatbot?** The interview questions are organized into three categories: appropriateness, supportive characteristics, and overall usefulness.

Interview Question after Participant Interact to Chatbot

Appropriateness

1. How do you find the tone and language of the chatbot? Is it suitable for the type of interaction you expect?
2. In what situations do you find the chatbot's responses most appropriate? Why?
3. In what situations do you find the chatbot's responses least appropriate? Why?

Supportive Characteristics

1. Do you think the chatbot effectively helps you solve your problems? Please share a specific experience.
2. When you encounter difficulties, does the chatbot understand and provide appropriate support?
3. What characteristics of the chatbot make you feel supported? What characteristics do you think are missing?

Overall Usefulness

1. Overall, how helpful do you find the chatbot? What do you think the chatbot offers you? Please describe the specific help or support you received.
2. Who would you recommend this chatbot to others? Why?
3. How would you rate your overall satisfaction with the chatbot? What do you think about the overall experience? Do you have specific suggestions to improve its usefulness?

Appendix G

The Result of the Interview

This reference contains the organized and transcribed results from the interviews conducted in the second experiment. Each section is titled with the participant's number, followed by their transcribed and organized responses. The responses are classified into three categories—appropriateness, supportive characteristics, and overall usefulness—to make the information clearer and easier to read.

Participant 1

1. Appropriateness

1.1 I really like the tone of the chatbot; it's soft, polite, and clear. It made the interaction pleasant and easy to follow.

1.2 I appreciate how the chatbot responded when I mentioned having a financial issue. It provided solutions and made me feel reassured, as though nobody would judge or laugh at me for my situation.

1.3 However, offering too much information in a single message made me feel a bit anxious. It felt overwhelming, like reading a newspaper, which can be stressful.

2. Supportive Characteristics

2.1 The chatbot understood my situation well and provided clear information and support. It was helpful and easy to follow.

2.2 The chatbot not only provided useful information but also encouraged me by making me feel that I am not alone. It conveyed that there are others in similar situations and that I can always talk to it for support.

2.3 I didn't feel that anything was specifically missing from the chatbot's support.

3. Overall Usefulness

3.1 The chatbot was very helpful in my case, particularly with my financial issue. It provided potential solutions, understood my situation well, and offered encouragement. Additionally, it asked if I had more issues to discuss, making me feel like it was not rushing to end the conversation.

3.2 I would probably recommend the chatbot to someone who feels lonely, has personal issues, and needs someone to talk to. It offers a supportive and understanding presence.

3.3 I enjoyed the experience because the chatbot performed well, understood the tasks, and provided good listening and support. However, I initially struggled to know how to start expressing my struggles. It would be helpful if, at the beginning, there were some buttons to choose the issues I wanted to discuss, making it easier to start the conversation.

Participant 2

1. Appropriateness

1.1 The chatbot met my expectations by offering to listen to my problems. It was attentive and ready to provide support.

1.2 I mentioned that I was struggling with my studies, particularly in programming. The chatbot suggested talking to a student consultant and breaking down the study process into smaller, manageable tasks. This advice was practical and helpful.

1.3 I would prefer the responses to be shorter. Long messages can be overwhelming and difficult to process.

2. Supportive Characteristics

2.1 I haven't tried the chatbot's suggestions in practice, so I'm unsure how efficiently it solves problems. However, the approach of breaking down assignments into smaller tasks was very useful and effectively addressed my issue.

2.2 The chatbot understood my problems well and responded in a supportive manner. It made me feel understood and provided helpful advice.

2.3 The chatbot was supportive, offering valuable advice when I had problems. The main area for improvement is the length of responses; shorter messages would be better.

3. Overall Usefulness

3.1 The chatbot was quite helpful, offering good advice and being there to listen to my problems. It provides a useful option for students who may not want to discuss their issues with friends who might not understand or empathize.

3.2 I would recommend the chatbot to people who are struggling and don't have anyone to talk to. It provides a supportive and understanding ear.

3.3 I prefer shorter responses to avoid feeling overwhelmed by long texts. Additionally, incorporating more functions, such as making jokes, could make interactions more engaging and lighten the mood.

Participant 3

1. Appropriateness

1.1 I like how the chatbot talks. It creates a relaxed and stress-free atmosphere, making me feel like I am in a safe space. The positive emotions it conveys, even when I express negative feelings, are comforting. It always reassures me that I am not alone and encourages me to express myself freely.

1.2 When I mentioned my sadness, the chatbot's encouragement was the most appropriate. It did not judge me for expressing my weaknesses, which made me feel safe and supported.

1.3 The long responses after I specified an issue were a bit annoying. Shorter, more concise replies would be more effective.

2. Supportive Characteristics

2.1 The chatbot understood my issues well. It guided me to think about the problem through small tasks, which helped clarify my thoughts.

2.2 The repeated reminders that I am not alone were very supportive. These messages made me feel encouraged and understood.

2.3 While I felt supported, I would prefer shorter responses. Long messages can be overwhelming, especially when I am feeling down.

3. Overall Usefulness

3.1 I really liked the chatbot's quick and accurate responses. In dealing with negative issues, it provided directions for actions and offered encouragement.

3.2 I would recommend the chatbot. It provides a safe space to express negative or anxious thoughts without waiting for local healthcare systems or therapists. However, the length of some responses can be too much, which is not ideal when feeling down.

3.3 I would rate the chatbot as a 4 out of 5. Its performance was good, as it accurately understood and provided companionship. The only drawback is the occasional lengthy responses, which can be annoying to read.

Participant 4

1. Appropriateness

1.1 Yes, I think the chatbot is quite friendly. Its style is neutral, considerate, and very supportive. It feels approachable and understanding, making interactions pleasant and encouraging.

1.2 When I asked about applying for financial assistance, the chatbot provided me with clear and detailed information on what I needed to bring. This was very helpful and reassuring, as it encouraged me and made me feel supported, knowing I wasn't alone in my situation.

1.3 The content can be somewhat repetitive. For instance, it would be more effective if it skipped the introductory remarks and focused directly on providing the necessary information, avoiding repeated similar responses.

2. Supportive Characteristic

2.1 The chatbot was effective in providing support. It comforted me, offered compliments, and listed the steps I needed to take clearly.

2.2 When I mentioned my financial issues related to extending my study, the chatbot listed the contacts I could reach out to and detailed the documents I needed to prepare for my visit to the counter. This practical guidance was very beneficial.

2.3 I felt supported because the chatbot was comfortable and pleasant to talk to. It always ended conversations by reassuring me that help was available, which was very comforting.

3. Overall Usefulness

3.1 The chatbot was helpful both for mental support and practical advice. It addressed my concerns and provided actionable steps to follow.

3.2 I would recommend this chatbot to my friends, especially those who have just arrived and are adjusting to a new environment. It's a valuable resource for getting acquainted with everything they need to know.

3.3 Overall, I am quite satisfied with the experience. One suggestion for improvement would be to make the chatbot accessible via phone for greater convenience and accessibility.

Participant 5

1. Appropriateness

1.1 Initially, I was impressed by the chatbot's empathy. It effectively communicated understanding and support. However, by the third and fourth interactions, the responses felt overly lengthy and unnatural. While the initial interactions were good, the subsequent ones became too verbose.

1.2 The chatbot's initial responses demonstrated empathy by asking why I felt a certain way, which was effective in making me feel understood.

1.3 Overall, the responses were appropriate. I did not encounter any instances where the chatbot's responses felt inappropriate.

2. Supportive Characteristics

2.1 If there were a scale, I'd rate it in the middle. Initially, the chatbot guided me well, but the conversation's flow was somewhat disjointed. It felt like the responses were segmented and did not follow a continuous thread from the beginning.

2.2 The chatbot provided good feedback on some topics. However, on certain topics, it failed to give correct answers and often repeated the same information, which was unhelpful.

2.3 The chatbot was supportive, often saying reassuring things like "everything is going to be okay." While this was comforting, the responses tended to be repetitive. The responses were generally aligned with the context but could have been more varied.

3. Overall Usefulness

3.1 The chatbot was helpful in breaking down my problems, which helped me clarify my thoughts and understand what I really wanted. It was useful in guiding me towards solutions.

3.2 The SACC at the university could improve its services for international students. This chatbot can be a helpful first step in understanding and addressing mental health concerns, providing initial support before students seek further assistance.

3.3 Overall, I am satisfied with my experience with the chatbot.