
Revolutionizing ADHD Therapy: The Power of Advanced Language Models

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Abstract

The Cognitive ADHD Remediation and engagement Language Model (CARE-LM) is a novel approach to ADHD treatment, blending the Chain of Thoughts and Active Retrieval Augmented Generation within a Large Language Model. This innovative model is designed to offer highly specific and adaptive interactions, crucial for addressing the varied cognitive and behavioral needs of ADHD patients. CARE-LM excels in providing contextually relevant and personalized therapeutic engagement, demonstrating significant potential in enhancing ADHD therapy. This research details CARE-LM’s development and preliminary effectiveness, indicating its promise as a valuable tool in both clinical and home settings for ADHD management, and contributing to advancements in mental health technology.

1 Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition characterized by time blindness, lack of self-inhibition, restricted working memory, and impaired executive function, leading to challenges in planning, decision-making, and daily functioning [1]. While conventional strategies such as structuring the day, evaluating pros and cons, time-budgeting tasks, and working backward from goals are recommended for managing ADHD, emerging technologies offer new avenues for support. Despite the inherent capabilities of LLMs, such as defining activity structures, evaluating scenarios, generating diverse problem-solving ideas, and serving as a working memory for complex scenarios, they are not explicitly designed to address ADHD challenges. In this paper, we explore the potential of applying Large Language Models (LLMs) to assist individuals with ADHD and investigate three distinct approaches to enhance their effectiveness. The first approach involves rule-based prompt engineering, where we tailor prompts before users input queries, optimizing the LLM’s responses for ADHD-specific assistance. This includes chain-of-thought reasoning and prompt engineering. The second approach, prompt tuning, aims to design an augmented layer that retrieves domain-specific knowledge and augments the prompts by integrating relevant and scientifically supported literature on ADHD. This approach seeks to improve the quality of answers generated by the LLM by incorporating a knowledge base derived from current research and best practices. The third approach involves fine-tuning the LLM on ADHD literature directly and customizing the model to provide solutions aligned with the specific needs of individuals with ADHD.

We then evaluate the performance of the LLMs after each alteration and compare it to the performance of ChatGPT on initial prompts. The three main criteria include safety, relevance and effectiveness of the response. This way we capture if the model outputs address the time blindness, forgetfulness and

information processing challenges of an ADHD individual. By critically examining these approaches, we aim to contribute valuable insights into the potential applications of LLMs for ADHD support and provide guidance on optimizing their performance through innovative methodologies. This research lays the foundation for future developments in leveraging advanced language models to address the unique cognitive challenges faced by individuals with ADHD.

2 Related Work

Although the field of LLMs has become mainstream in recent years, applying LLMs to domain-specific tasks is still an open challenge. However, certain approaches are gaining steam. Literature that discusses the application of LLMs in a specific domain is as follows.

[10] investigated the sensitivity of GPT-3 to in-context examples. [11] showed that few-shot prompts suffer from order sensitivity and proposed efficient prompt ordering for text classification. [12] found that Prompt-based models often learn equally fast with misleading and irrelevant templates as they do with instructive ones. [13] showed that by adding reasoning steps to a few-shot prompts, LLM can perform better on reasoning tasks than task-specific fine-tuned models. [7] showed that besides exemplars, reasoning instruction also matters in prompts.

A recent paper surveyed major techniques to make LLMs domain specific[9]. It classified approaches into 3 main classes. First is the "External Augmentation" or "Black Box" approach where the query is not only passed to the LLM but also to a retriever model that looks at domain knowledge to extract the relevant information. The original query and the output of the retriever are then concatenated and passed to the LLM to generate an output. Specifically, it introduces a dynamic framework[6] that actively guides the retrieval and generation process to accommodate the unique challenges faced by individuals with ADHD, promoting a more accessible and supportive platform. The second method is called "Prompt crafting". For instance, discrete prompts are entered manually into the query. In this paper, we seek to apply few-shot prompt crafting whereby each query is augmented by a few prompts relevant to ADHD and creates a chain of thought so that the model output is restricted to this certain domain.

The third approach is to change the model itself. One way can be to augment the model with a layer that feeds in not only the user prompt but also a context from a domain-specific database. This is the Retrieval Augmented Generation method proposed in 2021[8]. It allows the model to understand the prompt with factual context from the retrieved database. Another way can be done by either training the LLM on domain-specific literature or by creating Adapter-based fine-tuning where certain layers are added in the model that restrict the output to the domain we desire. This requires access to the model and is thus not applicable to services like ChatGPT. To conduct fine-tuning of a large language model is computationally expensive, so an efficient method for fine-tuning exists whereby the LLM is quantized to weights of 4-bit floats and frozen, and the Low-Rank Adapter layers are trained on the new prompts[3]. In other words, the original model weights are frozen while a small set of trainable parameters are added to the model to obtain specific results.

Using Large Language Models like ChatGPT to assist people with ADHD is an area of ongoing research. People with ADHD have found various use cases to help with their day-to-day activities using GPT [4]. Some of those use cases are:

1. Task Management[2]: ChatGPT has been utilized as a task manager where it helps in organizing and prioritizing to-do lists, breaking down tasks into manageable steps, and providing time estimates for each step. Such as ReAct[14] proposed by S. Yao. Moreover, it suggests approaches to enhance productivity and manage time more effectively.
2. Memory Aid: By logging and labeling past conversations, ChatGPT serves as a memory aid, allowing users to refer back to previous interactions as notes.
3. Job Search: LLMs can help accelerate the process of applying for jobs. They can provide very specific cover letters and resumes based on the job description. This is especially useful for people with ADHD as they struggle to maintain focus on such mundane tasks.
4. Educational Assistance: LLMs can explain a concept in different ways which can be quite useful. Prompts like ELI5 (Explain Like I am 5) can be useful to get a high-level overview of the topic in a short amount of time and then topics can be deep-dived based on the requirements.

5. Financial Planning: ChatGPT assists in financial planning by creating budgets based on input regarding monthly expenses, income, and financial goals. It also suggests ways to modify spending patterns to achieve financial objectives.

College Students with ADHD are usually said to have poor working memories [5]. LLMs can help with providing a second brain that can store all the essential data, freeing the ADHD mind for more creative thinking

The myriad ways in which ChatGPT has been employed to assist individuals with ADHD as per the ADDitude article, showcase the potential of large language models in augmenting support for individuals facing challenges in executive functions due to ADHD. However, the limitations in terms of outdated or inaccurate information highlight the importance of continuous development and possibly the integration of real-time information updating mechanisms to make such tools more reliable and effective in assisting.

3 Proposed Methods

The CARE-LM model represents an innovative approach in ADHD therapy, integrating Chain of Thought Prompting (Manual CoTs), Retrieval Augmented Generation (RAGs), and Large Language Models (LLM). This integration enables tailored responses to ADHD-related challenges and uses soft prompts for context-specific understanding. The model’s design facilitates more precise, contextually relevant interactions, vital for addressing the diverse cognitive and behavioral needs of individuals with ADHD. This unique combination in CARE-LM demonstrates significant potential for enhancing ADHD therapy, offering a more personalized and effective support system.

3.1 Chain of Thoughts Prompting

Manual CoT achieves stronger performance by eliciting the CoT reasoning ability with effective manual demonstrations. The demonstrations for the reasoning process are manually designed.

Manual Chain of Thought (Manual CoT) takes a different approach, emphasizing human intervention to enhance the model’s reasoning capabilities. To achieve stronger performance, Manual CoT involves the creation of effective manual demonstrations that illustrate the reasoning process. By manually designing demonstrations that showcase the desired chain of thought, this method aims to guide the model toward more accurate and contextually relevant responses.

Therefore in this paper, we used a well-designed example consisting of all the safety, effectiveness, and sub-tasking we are looking for in an ideal answer.

3.2 Retrieval Augmented Generation

3.2.1 Basic Retrieval Augmented Generation

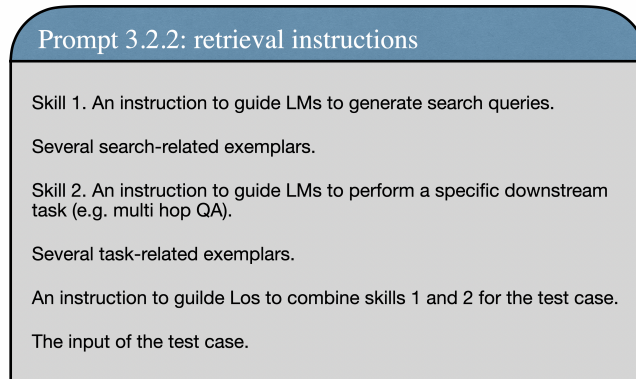
To make our model ethically responsible and safe for ADHD users, we wish to generate content that is not only relevant but also based on best practices of the field and current research. To this end, we augment our model with ADHD literature. After gathering the data, in text format, we break down all documents into chunks of 1000 words. This collection of chunks is then embedded as vectors and stored in a vector database for later retrieval. Now, when a user enters a prompt, it is first converted into an embedding, a similarity search is conducted with the vector database, and top-k documents similar to the query are retrieved. The retrieved document embeddings are then converted to text, and concatenated as context with the original prompt. This augmented input is sent to the LLM and obtains a literature-relevant answer.

3.2.2 Active Retrieval Augmented Generation

To address the unique challenges associated with ADHD in the context of long-form generation, we advocate for the integration of active retrieval augmented generation. It is a generic framework that actively decides when and what to retrieve through the generation process, resulting in the interleaving of retrieval and generation. Individuals with ADHD often face difficulties in maintaining focus and organizing thoughts, making traditional long-form generation processes challenging for them. The proposed framework offers a tailored solution by actively guiding the retrieval and generation process.

By dynamically deciding when and what to retrieve, the framework accommodates the fluctuating attention spans of individuals with ADHD, promoting a more structured and step-by-step approach. The interleaving of retrieval and generation not only supports the cognitive needs of those with ADHD but also ensures that the information flow remains engaging and conducive to sustained attention. This approach aligns with the cognitive characteristics of ADHD, providing a more accessible and supportive platform for individuals with ADHD to participate in and benefit from the long-form generation process.

In the context of a downstream task, we organize the prompt by placing search-related instructions and exemplars at the outset as skill 1, followed by instructions and exemplars specific to the downstream task as skill 2. The objective is to prompt language models to integrate both skills when generating search queries during task execution. The prompt structure is illustrated in Prompt 3.2.2



3.3 Finetuning

For Fine-tuning the model, we use the QLoRA method[3] whereby a small set of trainable parameters are added to the quantized Llama-7b model. The prompts are in the following format "<User query> | <Response> <Sub-divided tasks> <Time Budget for sub-tasks> <Best Practices>". For instance, one prompt may look like as follows.

- User:
 - Help me make a Pizza.
- Agent:
 - Buy pizza base, sauce, cheese and tomato topping (shopping time - 1hr)
 - Heat the oven to 450F (30 mins)
 - Add sauce, cheese and toppings on top of the base (5 mins)
 - Wait for pizza to cook (30 mins)
 - Carefully take out the pizza using mittens and let it cool (5 mins)
 - Turn off the oven (1 min)

We used the PEFT library to fine-tune the Llama-7B model locally.

3.4 Prompt Engineering

3.4.1 Tailoring Responses to ADHD-Related Challenges

Prompt engineering is a method used to craft inputs for language models, such as GPT-3.5 and Llama, which encourages the generation of responses that are more aligned with specific contexts or constraints. In the context of ADHD, prompt engineering entails designing prompts that accommodate executive functioning challenges, like maintaining attention, task organization, and emotion regulation.

For individuals with ADHD, well-engineered prompts can be the key to transitioning from generic responses to ones that are precise and offer actionable guidance. With GPT-3.5 and Llama, we can

engineer these prompts to tap into a deeper understanding of ADHD cognitive profiles. Techniques from ADHD management strategies are utilized, including breaking down tasks into smaller, more manageable sub-tasks, providing clear cues for time management, and structuring prompts to direct attention effectively.

3.4.2 Utilizing Soft Prompts for Context-Specific Understanding

Soft prompts are subtle yet impactful in guiding the output of a language model. They offer context and direct the model's responses without being overly prescriptive. This approach is particularly effective for complex or sensitive subjects where the subtleties of the situation might not be adequately addressed by a rigid prompt. Soft prompts function by gently directing the model's "thought process," allowing it to weigh a broader array of factors and produce more nuanced answers.

Thus, in this paper, we created soft prompts to offer general guidance to the LLM as to how the answer should look like, without restricting its scope too much.

4 Experiments

In this paper, we evaluate the safety, effectiveness, sub-tasking and time-budgeting of each of the following prompts.

- Work: "How can I effectively delegate tasks to my team?"
- Study: "How can I study for GRE?"
- Dating: "Help me organize a first date with someone."
- Daily Tasks: "Help me clean and organize my room."
- Driving: "What are the key things to remember when driving in snowy conditions?"
- Cooking: "Help me cook fried rice."
- Exercise: "Help me create a workout."
- Travel Planning: "Help me organize a week-long trip to Vegas."
- Financial Management: "What are the basics of creating a budget?"
- Shopping: "How can I shop for a Christmas celebration?"

4.1 Prompt Engineering

To empirically assess the effectiveness of prompt engineering, we conducted a series of experiments. Our methodology involved the crafting of two sets of prompts: a general set and an engineered set, specifically designed to assist individuals with ADHD.

For instance, consider the following prompt:

General Prompt: "Help me cook a sweet potato."

Engineered Prompt: "Help me cook a sweet potato. Consider that the user has ADHD, so outline a step-by-step approach for this individual with the process broken down into manageable sub-tasks without feeling overwhelmed, and include time estimates for each step along with strategies for maintaining focus. Remember to address any safety concerns or issues that might arise due to forgetfulness. Other best practices for ADHD can also be included."

Ideal Response: "This guide is designed to help you bake a sweet potato by breaking down the process into manageable sub-tasks. Each step includes a time estimate and a safety measure to ensure a safe and enjoyable cooking experience."

Step 1: Preparing the Sweet Potato

- Task: Wash and Dry
- Sub-tasks:
 - (a) Rinse the sweet potato under cold water.
 - (b) Scrub the skin with a clean brush to remove any dirt.

- (c) Pat the sweet potato dry with a towel.
- Time Estimate: 5 minutes
- Safety Measure: Ensure the sweet potato is thoroughly dried to prevent steam burns when baking.

Step 2: Preheating the Oven

- Task: Preheat Oven
- Sub-task:
 - (a) Turn on the oven to 425°F (220°C).
 - (b) Wait for the oven to reach the desired temperature.
- Time Estimate: 10-15 minutes
- Safety Measure: Stay in the kitchen while the oven is preheating to monitor any unusual smells or smoke.

Step 3: Preparing the Sweet Potato for Baking

- Task: Poking Holes and Oiling
- Sub-tasks:
 - (a) Poke holes in the sweet potato using a fork (about 8-10 times).
 - (b) Lightly oil the skin if desired for a crispier texture.
- Time Estimate: 5 minutes
- Safety Measure: Poke holes gently to avoid slipping and injuring yourself.

Step 4: Baking the Sweet Potato

- Task: Bake
- Sub-tasks:
 - (a) Place the sweet potato on a baking sheet.
 - (b) Put the baking sheet in the oven.
 - (c) Bake for 45-50 minutes.
- Time Estimate: 45-50 minutes
- Safety Measure: Use oven mitts when placing the sweet potato in the oven and when removing it.

Step 5: Checking Doneness

- Task: Test Sweet Potato
- Sub-task:
 - (a) Insert a fork into the sweet potato; it should slide in easily if done.
- Time Estimate: 2 minutes
- Safety Measure: Be careful of steam when testing the sweet potato.

Step 6: Serving

- Task: Remove and Serve
- Sub-tasks:
 - (a) Remove the sweet potato from the oven using oven mitts.
 - (b) Cut open the top and fluff the inside with a fork.
 - (c) Add toppings if desired (like butter, cinnamon, or brown sugar).
- Time Estimate: 5 minutes
- Safety Measure: Let the sweet potato cool for a few minutes before cutting into it to avoid burns.

Additional Tips

- Set Timers: Use a kitchen timer or your phone to remind you when to check the oven.
- Stay Organized: Keep your work area clean and organized to avoid distractions.

- **Safety First:** Always stay in the kitchen while the oven is on, and don't forget to turn it off after use."

The objective was to determine whether the engineered prompts would result in responses that provide more precise and actionable advice for those with ADHD, as opposed to the more generic responses elicited by standard prompts. The responses were then evaluated for their adherence to safety protocols, incorporation of time budgeting, and inclusion of sub-tasking with effective ADHD management strategies.

4.2 Chain of Thoughts Prompting

In this experiment, we use Auto CoT to implement Chain-of-Thoughts prompting. We craft a sample answer for the prompt "Help me cook a sweet potato" such that it breaks down each task into subtasks, includes time-budgeting, and reminds the user about their safety during the process. We then add the above-listed prompts and evaluate the response of the LLM in terms of criteria mentioned above.

4.3 RAG: Retrieval Augmented Generation

We use the tools Langchain, Llama2-7b-chat model, MongoDB, and FAISS vector db to conduct this experiment. We collect the data relevant to ADHD. It includes 25 high-quality research papers on coping with ADHD, 25 online articles with best practices for ADHD and 50 books on ADHD covering strategies for managing education, parenting, work and marriage for people with ADHD. All documents are converted to text chunks and each chunk is stored in the MongoDB database.

We choose the top 4 documents after retrieval and use the "stuff" pipeline in the Langchain module to create the custom prompt. Due to computational limitations, other methods such as "refine" and "map-reduce" could not be implemented.

Next, we evaluate the results with 10 prompts that cover topics such as cooking, education, socialization, workspace organization, marriage, and so on. The results are then evaluated on four metrics listed in table 1. Safety metric implies that the model output suggests solutions that are not harmful to the user, and follow current best practices rather than stereotypical answers to the problem. Essentially it ensures the safety of the user and is considerate of the user's condition. Relevance implies that the answer should be relevant to the prompt and suggest solutions relevant to the task. Effectiveness measures if the solution includes strategies relevant to ADHD such as sub-tasks, time-budgeting, visual aids, and so on.

4.4 FLARE: Forward-Looking Active REtrieval Augmented Generation

We validate our method on one of the most advanced GPT-3.5 and LLaMA LMs by iteratively querying their API. Since we focus on the integration of retrieval and generation. We can offer a hypothetical scenario of how a forward-looking active retrieval[6] and generation model could be employed to enhance prompt tuning for ADHD. To leverage FLARE for prompt tuning in ADHD support, the model is designed to anticipate the specific needs and challenges of individuals with ADHD during the generation process. The following steps illustrate how FLARE could be used to retrieve information and generate tuned prompts. Before the user input is provided, FLARE actively retrieves relevant information from a database of ADHD-specific literature and guidance. Based on anticipating ADHD-specific challenges, FLARE dynamically generates tuned prompts that are specifically tailored to address the unique needs of individuals with ADHD.

Multi-tasking Management:

- *General Prompt:* "Explain how the individual can efficiently handle multitasking in a manner that minimizes stress."
- *Tuned Prompt:* "Developing a step-by-step plan for individuals with ADHD to manage multiple tasks without feeling overwhelmed, including time estimates for each step and strategies to sustain concentration."

Achieve Academic Success:

- *General Prompt:* "Describe the strategies an individual could employ to attain academic success despite tendencies towards underachievement."

Tuned Prompt: "Provide a plan for enhancing the academic performance of a student with ADHD through the establishment of specific, measurable goals, the creation of a structured study schedule, and the utilization of visual aids for progress tracking."

4.5 Fine-tuning

We created 50 prompts for fine-tuning the quantized Llama-7B model LLM with the QLoRA method using the PEFT library. We augment this dataset by using CHatGPT to rephrase the prompts and get 200 prompts. The 200 prompts are divided into a batch size of 8 and used for QLoRA fine-tuning. Then we input the same set of 10 prompts used in the RAG experiment to evaluate the performance of the LLaMA model in terms of relevance, effectiveness, and time budgeting. Note that these ratings are to be given by human evaluators on a scale of 1-10.

4.6 Evaluation

In our evaluation, we integrated a theoretical framework based on cognitive models relevant to ADHD, providing a foundational basis for assessing the efficacy of each approach. We employed a mixed-methods analysis, combining statistical metrics with qualitative assessments to evaluate the safety, effectiveness, sub-task handling, and time efficiency as shown in our results table.

Prompt engineering performed the best, and this can be because each time the LLM had a very clear idea as to what exactly is needed in the response. The coT method did slightly worse because although the LLM could see the ideal response, yet may not have been able to deduce the essentials from the sample answer. RAG performed the worst, and although it was able to correctly retrieve the relevant documents for a task, the text in the documents was not too specific. The expectation was that the retrieved documents would allow the model to infer the best practices needed for the given task. Although the retrieved documents did contain the importance of time management, visual aids, etc, the model did not incorporate them too strongly in the answer. Finally, fine-tuning did slightly better than the RAG as it successfully broke down the tasks into sub-tasks but time estimates were largely missing from the answer. Since the prompts always consisted of sub-tasks and time, we had expected both to show up in the responses as well.

The limitations of this evaluation, from a theoretical standpoint, include the following issues. Firstly, it was done on a small set of prompts by human evaluators. Secondly, the data for fine-tuning was small so the model may not have learned much from that. Thirdly, the RAG model directly used books and articles without any pre-processing, so a lot of the retrieved data was the four most relevant pages from these documents. A more granular approach could be taken to improve the RAG results.

Approach	Safety	Effectiveness	Sub-tasks	Time Estimates
Prompt	10	10	10	10
CoT	8	10	8	10
RAG	0	10	0	0
Fine-tuning	0	10	4	3 (partial)

Table 1: Assessment of Different Approaches

5 Conclusion

The investigation into various approaches for prompt engineering reveals diverse strengths and limitations. Standard prompts, while safe and effective, may lack specificity for ADHD challenges. Prompt Engineering yielded the best results, but it is not a scalable approach since for each problem the prompts will have to be carefully crafted. Chain of Thought (CoT) and Fine-tuning show promise in addressing more complex tasks but require further optimization for safety and time efficiency. Retrieval-augmented generation (RAG), despite its factual accuracy, struggles with practical solutions and sub-task management. The ideal approach, therefore, seems to be a composite method that integrates the best elements of each technique. This strategy could potentially offer a more nuanced and effective support system for individuals with ADHD, balancing safety, detail, and efficiency. Future research should focus on refining this composite approach, especially in real-world scenarios, to maximize its benefit for ADHD management.

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Appendix

In this appendix, we present detailed examples of the prompt engineering approach utilized for the 10 prompts listed in our experiments section.

A Work

General Prompt: "How can I effectively delegate tasks to my team?"

Response: "This guide is designed to help you effectively delegate tasks to your team by breaking down the delegation process into manageable sub-tasks. Each step includes a time estimate and key considerations to ensure an efficient and productive delegation experience.

Step 1: Identifying Delegable Tasks

- Task: Determine Which Tasks to Delegate
- Sub-tasks:
 - (a) Review your current task list and workload.
 - (b) Identify tasks that can be completed by team members.
- Time Estimate: 15 minutes
- Key Consideration: Choose tasks that fit the skills and development goals of your team members.

Step 2: Selecting Team Members for Tasks

- Task: Assign Tasks to Suitable Team Members
- Sub-tasks:
 - (a) Consider each team member's skills, experience, and workload.
 - (b) Match tasks to team members based on these criteria.
- Time Estimate: 20 minutes
- Key Consideration: Ensure fair distribution of tasks and avoid overloading any single team member.

Step 3: Communicating Expectations and Details

- Task: Clearly Communicate Task Requirements
- Sub-tasks:
 - (a) Explain the task objectives and expected outcomes.
 - (b) Provide all necessary resources and information.
 - (c) Set clear deadlines and checkpoints.
- Time Estimate: 10 minutes per team member
- Key Consideration: Ensure clarity and understanding, offering guidance as needed.

Step 4: Monitoring Progress and Providing Support

- Task: Oversee Task Progress
- Sub-tasks:
 - (a) Schedule regular check-ins to assess progress.
 - (b) Offer support and resources as necessary.
 - (c) Provide constructive feedback and encouragement.
- Time Estimate: Varies based on task complexity
- Key Consideration: Balance providing support with respecting team members' autonomy.

Step 5: Reviewing and Reflecting on the Outcome

- Task: Evaluate Task Completion
- Sub-tasks:

- (a) Review the completed tasks against set objectives.
- (b) Discuss outcomes and lessons learned with team members.
- (c) Acknowledge successes and identify areas for improvement.
- Time Estimate: 15 minutes
- Key Consideration: Use the review as a learning experience for future delegations.

Additional Tips

- Encourage Open Communication: Foster an environment where team members feel comfortable discussing challenges.
- Recognize Achievements: Acknowledge and appreciate the efforts and achievements of your team.
- Reflect and Adjust: Regularly reflect on your delegation approach and make adjustments as needed."

B Study

General Prompt: "How can I study for the GRE?"

Response: "This guide is designed to help you prepare for the GRE by breaking down the study process into manageable sub-tasks. Each step includes a time estimate and key considerations to ensure an effective and focused study experience.

Step 1: Understanding the GRE Format and Content

- Task: Familiarize Yourself with the Exam
- Sub-tasks:
 - (a) Research the GRE format, including sections and types of questions.
 - (b) Understand the scoring system and the test's time constraints.
- Time Estimate: 2 hours
- Key Consideration: Knowing the exam structure helps in crafting a targeted study plan.

Step 2: Setting a Study Schedule

- Task: Create a Study Plan
- Sub-tasks:
 - (a) Determine the amount of study time you have before the exam.
 - (b) Break down your study schedule into daily and weekly goals.
- Time Estimate: 1 hour
- Key Consideration: A consistent study schedule helps in maintaining focus and progress.

Step 3: Gathering Study Materials

- Task: Collect Required Resources
- Sub-tasks:
 - (a) Choose reputable GRE preparation books and online resources.
 - (b) Gather practice tests for regular self-evaluation.
- Time Estimate: 2 hours
- Key Consideration: Quality materials are crucial for effective preparation.

Step 4: Studying for Each Section

- Task: Systematic Study of GRE Sections
- Sub-tasks:
 - (a) Dedicate specific time to Verbal Reasoning, Quantitative Reasoning, and Analytical Writing.
 - (b) Use a mix of learning techniques, like reading, note-taking, and problem-solving.

- Time Estimate: Varies based on personal pace and exam date
- Key Consideration: Focus on areas of weakness while reinforcing strengths.

Step 5: Regular Practice Tests and Review

- Task: Take Practice Tests
- Sub-tasks:
 - (a) Schedule regular practice tests to track your progress.
 - (b) Review your answers to understand and improve on your mistakes.
- Time Estimate: 3-4 hours per practice test
- Key Consideration: Practice tests simulate the exam environment and improve time management.

Step 6: Maintaining Health and Well-being

- Task: Take Care of Your Physical and Mental Health
- Sub-tasks:
 - (a) Ensure a balanced diet, regular exercise, and adequate sleep.
 - (b) Take breaks and engage in stress-relieving activities.
- Time Estimate: Daily commitment
- Key Consideration: A healthy body and mind are crucial for effective studying and exam performance.

Additional Tips

- Stay Motivated: Keep your goal in mind and remember why you're taking the GRE.
- Seek Support: Don't hesitate to ask for help from tutors or study groups if needed.
- Stay Positive: Maintain a positive attitude throughout your preparation."

C Dating

General Prompt: "Help me organize a first date with someone."

Response: "This guide is designed to help you organize a first date by breaking down the planning process into manageable sub-tasks. Each step includes key considerations and a time estimate to ensure a thoughtful and enjoyable first-date experience."

Step 1: Choosing the Date and Time

- Task: Set a Date and Time
- Sub-tasks:
 - (a) Consider both your schedules to find a suitable day and time.
 - (b) Ensure the timing is convenient and not rushed for either party.
- Time Estimate: 30 minutes
- Key Consideration: A mutually convenient time shows respect for each other's schedules.

Step 2: Selecting the Venue

- Task: Choose an Appropriate Location
- Sub-tasks:
 - (a) Research potential venues such as a casual café, a park for a walk, or a quiet restaurant.
 - (b) Consider the atmosphere and noise level to ensure a place conducive to conversation.
- Time Estimate: 1 hour
- Key Consideration: The venue should be comfortable and agreeable to both parties.

Step 3: Planning the Activity

- Task: Decide on a Date Activity
- Sub-tasks:
 - (a) Choose an activity that allows for interaction, such as a short walk, a coffee date, or a museum visit.
 - (b) Avoid overly complex or high-pressure activities for a first date.
- Time Estimate: 45 minutes
- Key Consideration: An engaging, low-pressure activity can make the date more enjoyable.

Step 4: Preparing for the Date

- Task: Get Ready for the Date
- Sub-tasks:
 - (a) Plan your outfit, aiming for something comfortable yet presentable.
 - (b) Consider personal grooming, such as a haircut or a simple fragrance.
- Time Estimate: 2 hours
- Key Consideration: Presenting yourself well shows that you value the date and the person.

Step 5: Confirming the Details

- Task: Finalize and Confirm Date Details
- Sub-tasks:
 - (a) Reconfirm the date, time, and place with your date a day before.
 - (b) Plan your route to the venue to arrive on time.
- Time Estimate: 30 minutes
- Key Consideration: Confirming details shows organization and respect for your date's time.

Step 6: Being Mentally Prepared

- Task: Prepare Yourself Mentally
- Sub-tasks:
 - (a) Reflect on your intentions and what you hope to learn about the person.
 - (b) Remind yourself to stay open-minded and be a good listener.
- Time Estimate: 30 minutes
- Key Consideration: Mental preparation can help reduce anxiety and lead to more genuine interaction.

Additional Tips

- Be Yourself: Authenticity is key to a meaningful connection.
- Have Fun: Remember, the goal of a first date is to get to know someone and enjoy the time together.
- Follow Up: If the date goes well, don't hesitate to express your interest in meeting again."

D Daily Tasks:

General Prompt: "Help me clean and organize my room."

Response: "This guide is designed to help you clean and organize your room by breaking down the process into manageable sub-tasks. Each step includes a time estimate and key considerations to ensure an efficient and effective cleaning and organizing experience."

Step 1: Decluttering the Room

- Task: Remove Unnecessary Items
- Sub-tasks:

- (a) Go through all items in the room and decide what to keep, donate, or discard.
- (b) Clear the floor and flat surfaces of clutter.
- Time Estimate: 30 minutes
- Key Consideration: Decluttering makes cleaning easier and improves room aesthetics.

Step 2: Dusting and Wiping Surfaces

- Task: Clean Surfaces
- Sub-tasks:
 - (a) Dust all surfaces, including shelves, desks, and window sills.
 - (b) Wipe down surfaces with a suitable cleaner.
- Time Estimate: 20 minutes
- Key Consideration: Regular dusting prevents allergen build-up and keeps the room fresh.

Step 3: Organizing Items

- Task: Arrange and Organize
- Sub-tasks:
 - (a) Organize books, clothes, and other items neatly.
 - (b) Use storage solutions like bins or drawers for smaller items.
- Time Estimate: 40 minutes
- Key Consideration: An organized space reduces stress and increases productivity.

Step 4: Vacuuming or Sweeping the Floor

- Task: Clean the Floor
- Sub-tasks:
 - (a) Vacuum carpeted areas or sweep and mop hard floors.
 - (b) Pay attention to corners and under furniture.
- Time Estimate: 15 minutes
- Key Consideration: Regular floor cleaning maintains hygiene and room appearance.

Step 5: Laundering and Arranging Bedding

- Task: Refresh the Bed
- Sub-tasks:
 - (a) Wash bed linens and pillowcases.
 - (b) Make the bed neatly.
- Time Estimate: 30 minutes (excluding laundry time)
- Key Consideration: Clean bedding enhances sleep quality and room ambiance.

Step 6: Final Touches and Maintenance

- Task: Add Finishing Touches
- Sub-tasks:
 - (a) Add or rearrange decorative items for a personal touch.
 - (b) Set a routine for regular upkeep of the room.
- Time Estimate: 15 minutes
- Key Consideration: Personalizing your space makes it more enjoyable and relaxing.

Additional Tips

- Stay Motivated: Play your favorite music or a podcast to make cleaning more enjoyable.
- Efficient Methods: Use efficient cleaning techniques, like working from top to bottom.
- Regular Upkeep: Regularly dedicate time to maintain the cleanliness and organization of your room."

E Driving:

General Prompt: "What are the key things to remember when driving in snowy conditions?"

Response: "This guide is designed to help you navigate driving in snowy conditions by highlighting key considerations and safety measures. Each point includes essential tips to ensure a safe and cautious driving experience in winter weather.

Tip 1: Vehicle Preparation

- Key Consideration: Ensure Your Vehicle is Ready
- Tips:
 - (a) Check your car's battery, brakes, and lights.
 - (b) Ensure your tires are suitable for snow and properly inflated.
 - (c) Keep the windshield and windows clear of ice and snow.
- Time Estimate for Preparation: 30 minutes
- Safety Measure: A well-prepared vehicle reduces the risk of breakdowns and accidents.

Tip 2: Driving Slowly and Carefully

- Key Consideration: Adjust Your Speed
- Tips:
 - (a) Reduce your speed to account for lower traction on snowy roads.
 - (b) Avoid sudden stops and sharp turns.
- Safety Measure: Slower speeds allow more reaction time and prevent skidding.

Tip 3: Maintaining Safe Following Distance

- Key Consideration: Increase Your Following Distance
- Tips:
 - (a) Keep a greater distance than usual between your car and the car in front.
 - (b) Allow for longer stopping distances on snowy roads.
- Safety Measure: Increased following distance helps prevent collisions in slippery conditions.

Tip 4: Using Lights and Signals Properly

- Key Consideration: Ensure Visibility
- Tips:
 - (a) Use low-beam headlights in heavy snow to reduce glare.
 - (b) Always use turn signals early to alert other drivers.
- Safety Measure: Proper use of lights and signals enhances visibility and communication with other drivers.

Tip 5: Handling Skids Calmly

- Key Consideration: Know How to Respond to Skids
- Tips:
 - (a) If you start to skid, steer gently in the direction you want to go and avoid overcorrecting.
 - (b) Do not slam on the brakes; this can make the skid worse.
- Safety Measure: Correct handling of skids can prevent loss of control and accidents.

Tip 6: Being Prepared for Emergencies

- Key Consideration: Carry Emergency Supplies
- Tips:
 - (a) Keep a winter emergency kit in your car including blankets, a flashlight, water, and snacks.

- (b) Have a plan in case you get stranded, like staying with your vehicle and calling for help.
- Safety Measure: Being prepared for emergencies can save lives in severe winter conditions.

Additional Tips

- Stay Informed: Check the weather forecast and road conditions before you travel.
- Avoid Unnecessary Trips: If conditions are bad, delay your travel when possible.
- Stay Calm and Focused: Keep your attention on the road and avoid distractions."

F Cooking:

General Prompt: "Help me cook fried rice."

Response: "This guide is designed to help you cook fried rice by breaking down the cooking process into manageable sub-tasks. Each step includes a time estimate and key techniques to ensure a delicious and efficient cooking experience."

Step 1: Preparing Ingredients

- Task: Gather and Prep Ingredients
- Sub-tasks:
 - (a) Cook rice beforehand and allow it to cool (preferably overnight).
 - (b) Dice vegetables (like carrots, peas, and bell peppers) and protein (like chicken, shrimp, or tofu).
 - (c) Beat a couple of eggs and prepare soy sauce, sesame oil, and any other seasonings.
- Time Estimate: 30 minutes
- Key Technique: Using cold rice and uniform-sized ingredients ensures even cooking.

Step 2: Cooking the Protein

- Task: Cook Your Choice of Protein
- Sub-tasks:
 - (a) Heat some oil in a pan and cook the protein until it's done.
 - (b) Remove the protein and set it aside.
- Time Estimate: 10 minutes
- Key Technique: Cooking protein separately prevents overcooking and keeps it juicy.

Step 3: Sautéing Vegetables

- Task: Cook the Vegetables
- Sub-tasks:
 - (a) In the same pan, add a bit more oil and sauté the diced vegetables.
 - (b) Cook until they are soft but still have a bit of crunch.
- Time Estimate: 5-10 minutes
- Key Technique: Sautéing on high heat retains the texture and flavor of the vegetables.

Step 4: Adding Rice and Seasonings

- Task: Combine Rice with Seasonings
- Sub-tasks:
 - (a) Add the cold rice to the pan with vegetables.
 - (b) Stir in soy sauce, sesame oil, and any other seasonings.
- Time Estimate: 5 minutes
- Key Technique: Ensure the rice is coated evenly with the seasonings for flavor.

Step 5: Cooking the Egg and Combining

- Task: Incorporate the Egg
- Sub-tasks:
 - (a) Push the rice to the side of the pan and pour in the beaten eggs.
 - (b) Scramble the eggs and then mix with the rice.
 - (c) Add the cooked protein back into the pan and combine everything.
- Time Estimate: 5 minutes
- Key Technique: Scrambling the egg in the pan with rice creates a rich flavor and texture.

Step 6: Final Touches and Serving

- Task: Finish and Serve
- Sub-tasks:
 - (a) Taste and adjust seasonings if necessary.
 - (b) Serve hot, garnished with green onions or sesame seeds if desired.
- Time Estimate: 5 minutes
- Key Technique: Final seasoning adjustments ensure a well-balanced dish.

Additional Tips

- Use High Heat: Cooking on high heat helps to achieve the classic 'wok hei' flavor.
- Stay Organized: Have all ingredients prepped and ready to go for efficient cooking.
- Experiment: Feel free to add other ingredients like pineapple or cashews for variety."

G Exercise:

General Prompt: "Help me create a workout."

Response: "This guide is designed to help you create a balanced workout by breaking down the exercise routine into manageable components. Each step includes a time estimate and key considerations to ensure an effective and safe workout experience."

Step 1: Warm-Up

- Task: Prepare Your Body for Exercise
- Sub-tasks:
 - (a) Start with light cardio, like brisk walking or jogging, to increase heart rate.
 - (b) Follow with dynamic stretches such as leg swings and arm circles.
- Time Estimate: 5-10 minutes
- Key Consideration: Warming up reduces the risk of injury and improves performance.

Step 2: Strength Training

- Task: Build Muscle and Strength
- Sub-tasks:
 - (a) Choose exercises targeting major muscle groups (e.g., squats, push-ups, lunges).
 - (b) Perform 2-3 sets of 8-12 repetitions for each exercise.
- Time Estimate: 20-30 minutes
- Key Consideration: Focus on proper form to maximize effectiveness and prevent injury.

Step 3: Cardiovascular Exercise

- Task: Improve Heart Health and Stamina
- Sub-tasks:
 - (a) Engage in a cardio activity like running, cycling, or swimming.
 - (b) Aim for moderate intensity for at least 20 minutes.
- Time Estimate: 20-30 minutes
- Key Consideration: Cardio exercises should be adjusted to your fitness level and goals.

Step 4: Core Training

- Task: Strengthen the Core Muscles
- Sub-tasks:
 - (a) Include core-focused exercises like planks, Russian twists, or bicycle crunches.
 - (b) Perform 2-3 sets of each exercise with proper form.
- Time Estimate: 10-15 minutes
- Key Consideration: A strong core enhances stability and overall fitness.

Step 5: Cool Down and Stretch

- Task: Relax and Stretch Post-Workout
- Sub-tasks:
 - (a) Engage in light cardio, like a slow walk, to gradually lower heart rate.
 - (b) Perform static stretches for all major muscle groups to improve flexibility.
- Time Estimate: 10 minutes
- Key Consideration: Cooling down helps prevent muscle soreness and aids in recovery.

Additional Tips

- Stay Hydrated: Drink water before, during, and after your workout.
- Listen to Your Body: Adjust the intensity and duration based on your fitness level.
- Consistency is Key: Regular workouts are more effective for achieving fitness goals."

H Travel Planning:

General Prompt: "Help me organise a week-long trip to Vegas."

Response: "This guide is designed to help you organize a week-long trip to Las Vegas by breaking down the planning process into manageable components. Each step includes a time estimate and key considerations to ensure a well-organized and memorable trip."

Step 1: Setting Dates and Booking Flights

- Task: Finalize Travel Dates and Transportation
- Sub-tasks:
 - (a) Choose your travel dates based on availability and preferences.
 - (b) Book flights that match your schedule and budget.
- Time Estimate: 1-2 hours
- Key Consideration: Early booking often secures better deals and flight options.

Step 2: Accommodation Booking

- Task: Reserve a Place to Stay
- Sub-tasks:
 - (a) Research hotels or rentals in convenient locations.
 - (b) Consider amenities, pricing, and proximity to attractions.
 - (c) Book your chosen accommodation.
- Time Estimate: 1-2 hours
- Key Consideration: Staying near major attractions can save travel time.

Step 3: Planning Activities and Entertainment

- Task: Schedule Activities
- Sub-tasks:
 - (a) Research popular attractions and shows in Vegas.
 - (b) Plan a mix of activities like visiting casinos, shows, and local landmarks.
 - (c) Make reservations or purchase tickets in advance where necessary.

- Time Estimate: 2-3 hours
- Key Consideration: A balanced itinerary enhances the experience without causing burnout.

Step 4: Arranging Transportation

- Task: Plan Local Travel
- Sub-tasks:
 - (a) Decide on modes of transportation (rental car, public transport, taxis).
 - (b) If renting a car, make arrangements prior to your trip.
- Time Estimate: 1 hour
- Key Consideration: Consider convenience versus cost for transportation options.

Step 5: Preparing Travel Documents and Essentials

- Task: Organize Important Items
- Sub-tasks:
 - (a) Ensure passports, IDs, and travel insurance are up to date.
 - (b) Pack appropriately for the weather and planned activities.
- Time Estimate: 1-2 hours
- Key Consideration: Double-check all essential items to avoid last-minute hassles.

Step 6: Creating a Daily Itinerary

- Task: Outline Your Daily Plan
- Sub-tasks:
 - (a) Break down your trip into days, allocating time for each planned activity.
 - (b) Include time for relaxation and unplanned exploration.
- Time Estimate: 2 hours
- Key Consideration: A flexible but structured itinerary allows for a stress-free trip.

Additional Tips

- Stay Hydrated: Vegas can be hot, so carry water during outdoor activities.
- Explore Dining Options: Vegas offers a wide range of culinary experiences.
- Safety First: Be aware of your surroundings, especially in crowded areas."

I Financial Management:

General Prompt: "What are the basics of creating a budget?"

Response: "This guide is designed to help you understand the basics of creating a budget by breaking down the process into manageable steps. Each step includes key considerations and tips to ensure an effective and realistic budgeting experience.

Step 1: Assessing Your Income

- Task: Determine Your Total Income
- Sub-tasks:
 - (a) Calculate your monthly net income, including salaries, wages, and any other sources.
 - (b) Consider any irregular income sources and average them out over the year.
- Time Estimate: 1 hour
- Key Consideration: A clear understanding of your total income is crucial for creating a realistic budget.

Step 2: Listing and Categorizing Expenses

- Task: Identify All Expenses
- Sub-tasks:
 - (a) List all monthly expenses, including bills, groceries, entertainment, and miscellaneous items.
 - (b) Categorize these expenses into fixed (rent, utilities) and variable (dining out, hobbies).
- Time Estimate: 1-2 hours
- Key Consideration: Recognizing where your money goes is the first step in managing your expenses.

Step 3: Setting Spending Limits

- Task: Allocate Budget for Each Category
- Sub-tasks:
 - (a) Based on your income and expenses, set spending limits for each category.
 - (b) Be realistic and allow some flexibility for variable expenses.
- Time Estimate: 1 hour
- Key Consideration: Spending limits should balance your needs, wants, and savings goals.

Step 4: Planning for Savings and Debt Repayment

- Task: Prioritize Saving and Debt Payments
- Sub-tasks:
 - (a) Allocate a portion of your income to savings, emergency funds, and investments.
 - (b) Include debt repayments in your budget to steadily reduce liabilities.
- Time Estimate: 1 hour
- Key Consideration: Consistent savings and debt reduction are key for long-term financial health.

Step 5: Monitoring and Adjusting Your Budget

- Task: Review and Revise Your Budget Regularly
- Sub-tasks:
 - (a) Track your spending regularly to ensure you stay within your budget.
 - (b) Adjust your budget as needed based on changes in income or expenses.
- Time Estimate: Ongoing
- Key Consideration: A budget should be flexible to adapt to your changing financial situation.

Additional Tips

- Use Budgeting Tools: Consider using apps or spreadsheets for easier tracking and adjustments.
- Avoid Impulse Purchases: Be mindful of unnecessary spending that can derail your budget.
- Review Regularly: Regular reviews can help you stay on track and identify areas for improvement."

J Shopping:

General Prompt: "How can I shop for a Christmas celebration?"

Response: "This guide is designed to help you shop efficiently for a Christmas celebration by breaking down the process into manageable steps. Each step includes key considerations and tips to ensure a well-organized and budget-friendly shopping experience.

Step 1: Creating a Shopping List

- Task: List What You Need
- Sub-tasks:
 - (a) Write down everything you need, including gifts, decorations, and food items.
 - (b) Categorize the list into sections like gifts, groceries, and decorations.
- Time Estimate: 1 hour
- Key Consideration: A detailed list prevents forgetting essential items and helps avoid impulse buys.

Step 2: Setting a Budget

- Task: Allocate Your Funds
- Sub-tasks:
 - (a) Determine your total budget for the celebration.
 - (b) Allocate specific amounts to each category on your list.
- Time Estimate: 30 minutes
- Key Consideration: Sticking to a budget helps manage your expenses during the holiday season.

Step 3: Researching Deals and Discounts

- Task: Find the Best Deals
- Sub-tasks:
 - (a) Look for sales, discounts, and coupons online and in store flyers.
 - (b) Compare prices across different stores for the best deals.
- Time Estimate: 1-2 hours
- Key Consideration: Research can lead to significant savings, especially on big-ticket items.

Step 4: Prioritizing Shopping Trips

- Task: Plan Your Shopping
- Sub-tasks:
 - (a) Decide which stores to visit based on your list and where the best deals are.
 - (b) Plan an efficient route to minimize travel time and expenses.
- Time Estimate: 1 hour
- Key Consideration: Efficient route planning saves time and reduces stress.

Step 5: Making Purchases

- Task: Start Shopping
- Sub-tasks:
 - (a) Buy non-perishable and durable items first if shopping over multiple days.
 - (b) Keep track of what you've purchased and stay within your budget.
- Time Estimate: Varies
- Key Consideration: Avoid last-minute rushes by shopping early for items that won't spoil.

Step 6: Wrapping and Preparing Gifts

- Task: Prepare Gifts for Giving
- Sub-tasks:
 - (a) Wrap gifts and write personalized cards.
 - (b) Store gifts in a safe and hidden place until Christmas.
- Time Estimate: 2-3 hours
- Key Consideration: Well-wrapped gifts add a personal touch to your Christmas celebration.

Additional Tips

- Shop Online: Consider online shopping for convenience and broader selection.
- Reuse and Recycle: Use last year's decorations if possible to save money and reduce waste.
- Be Mindful of Deadlines: Pay attention to shipping and delivery times if ordering online."