Policymaker AI Brief: Chatbots and LLMs

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What Are AI Chatbots and LLMs?

Artificial Intelligence (AI)	"A set of technologies that empowers computers to learn, reason, and perform a variety of advanced tasks in ways that used to require human intelligence."	*Google* (link)
Large Language Models (LLMs)	"A type of AI that can process and produce natural language text."	*Microsoft (link)*
Chatbots	"An AI-powered software application that engages in human conversation in a natural way." *Chatbots store knowledge of what was discussed during the current chat in a conversation "thread" and can sometimes remember content from previous chats.*	*Microsoft (link)*
Prompts	"The question or statement you send to the chatbot, which 'prompts' it to generate a tailored response."	*ChatGPT*

Analogy for Chatbot Use: Visiting a Restaurant

The **LLM** is a **large kitchen**, stocked with ingredients and recipe books containing vast amounts of knowledge.

- Most LLMs, like those from OpenAI or Microsoft, are **general purpose**: these "kitchens" contain ingredients and knowledge for all kinds of recipes.
- Other LLMs are **specialized** for certain uses, like the medical or legal field. These kitchens may work better for specific types of dishes, but worse for most others.

The **chatbot** is the **cook**, creating dishes that **customers** (chatbot **users**) ask for.

- The cook can **understand** written or verbal orders from customers, **utilize** information from the kitchen's recipe books, and **use** the kitchen's ingredients to **create** what the **customer** is asking for.
- It is the **go-between** for the **customer's requests** and the **kitchen's knowledge and ingredients**. Without the cook, most customers don't have the expertise to utilize the kitchen to get professional-level results.

The **prompt** is the **customer's order** in written or verbal form, specifying what they are hoping the **cook** will create.

- **Detailed** orders help the cook create exactly what the customer wants, while **vague** orders may not yield what the customer had in mind.
- **But**: Unlike in most restaurants, customers will often change the exact wording of the order multiple times, **iterating** and **giving feedback** until the cook produces exactly what the customer is seeking.

Restaurant Role	AI Equivalent
Kitchen	**LLM**
Cook	**Chatbot**
Order	**Prompt**
Customer	**User**

9 Key Considerations When Using Chatbots

1. Hallucinations: Chatbots can "hallucinate" by confidently stating information that is factually incorrect.

- **So**: Ask chatbots to provide sources and confirm important information yourself.

2. Variability: Chatbot responses naturally vary. Even when given the same prompt, chatbots may respond differently at different times or to different users.

- **So**: Do not treat any one chatbot response as a "ground truth" unless it is a fact that can be verified.

3. Safety measures: Most AI companies create guidelines for what the chatbot will and won't answer, to avoid LLMs being used to harm oneself or others.

- **So**: Some chatbots refuse to discuss or steer you away from certain sensitive or controversial topics.

4. Sycophancy: Chatbots are sometimes quick to agree with the user or tell them that their question/idea is a good one.

- **So**: Do not use chatbots to simply confirm your existing thinking. Be sure to ask explicitly for drawbacks of your ideas or ask it to compare "which is better" instead of "is this good/bad."

5. Privacy: In some cases, information or questions you use to prompt the chatbot will not always remain private. It depends on the chatbot.

- **So**: Review privacy policies. If wanting to be extra cautious, do not include confidential or private info in your prompts.

6. Bias: Because chatbot answers reflect the information stored in the sources the LLM was "trained" on, they may reflect any societal biases present in the underlying source materials.

- **So**: Ask yourself: "Is this answer reflective of biases that are prevalent in society or on the internet?"

7. Model advancements: AI companies are constantly updating their chatbots and releasing new models as AI technology improves.

- **So**: While most capabilities improve over time, the types of answers a chatbot provides or capabilities it possesses may change drastically after model updates.

8. Knowledge limitations: Chatbots have access to the knowledge they were trained on and, in some cases, information from the current internet or in files you provide them.

- **So**: They cannot reliably answer questions based on info they can't access, like proprietary data or events that were not recorded.

9. Language availability: Chatbots may perform less reliably in "low-resource" languages that have limited available material for training and improving the LLM, or have received less attention in AI development.

- **So**: Exercise caution; accuracy and nuance may decline when using AI in low-resource languages.

Use Cases to Consider

See a video example of the 9 considerations:

Tasks chatbots often excel at:

- Summarizing or retrieving information about a topic
- Writing - condensing your ideas down or lengthening them
- Analyzing to extract insights from data
- Proofreading your writing
- Teaching you by asking you questions or testing you
- Evaluating the logic or premises behind your ideas; exploring counterpoints

Tasks chatbots can struggle with:

- Executing multi-step tasks without concrete guidance
- Extracting info not publicly available or on the internet
- Understanding the real world - local context and norms, or what is feasible and realistic
- Detecting sarcasm and other subtle human emotions
- Handling rare cases if source materials have few examples
- Accurately fact-checking themselves

LLM-based Tools

General Purpose Chatbots –
ChatGPT, Claude, DeepSeek, Gemini

- Chatbots suited on most topics
- Extensions for agents, coding, data analysis, image generation, etc.

Google NotebookLM

- Tool that lets users upload their own documents and then ask questions, get summaries, or generate insights directly from their own material.

Perplexity

- AI-powered search assistant that combines web search with conversational answers and links.

World Bank ImpactAI

- AI research assistant to search for development evidence and compare the results of studies.

OpenEvidence

- AI-driven medical evidence engine that reads research and produces transparent, citation-linked summaries.