

Prompting Alchemy: A guide to turn your AI use into gold.  
Practical Applications of Prompt Engineering in Polytechnic Education.  
An Ongoing Series

The Teaching and Learning Commons Guide to Prompt Engineering  
PT 2



So, the peer pressure has taken effect, and you decide to try Generative AI. You have heard the pundits. Some have declared that Generative AI is a technological breakthrough akin to *the printing press*, *the internet* or *Bored Ape NFTs*. Meanwhile others point out that GenAI will *infect your soul*, lead to another pandemic and result in 25% tariffs on all products imported. Being a thoughtful person, you decide that the reality is probably somewhere in the middle, and it would be a good idea to get acquainted with the technology yourself.

Maybe you have tried it out already. You may even have been surprised by the speed with which it can generate meaningful sounding answers on such a wide breadth of topics. Regardless of the task you give it, "tell me a joke!!", or "where should I go for my next vacation?" or "what caused the Second World War?", it provides a response with impressive speed and quality.

For many people, the quality of the response seems at its best when observing output to questions or tasks that are unfamiliar to the user. For example, my knowledge of the works of Edgar Allan Poe is limited to a short story I read in elementary school (the Telltale Heart) and one-third of a Halloween

themed Simpsons episode from 1990 (the Raven). I asked Generative AI to “produce a short story written in the style of Poe”.

It produced a dark and haunted tale of an unwanted burial and a spectral apparition, and I am amazed at the speed and quality of the work. I am also not in any position to judge if it is an accurate representation of Poe’s style beyond dark, brooding, gothic, and supernatural.

My prompt had two components, 1) create story, and 2) style of Poe. The AI generated a story, so a check mark for component #1. As a complete Poe neophyte, it looks good enough to me, so check mark for component #2.

When I instruct the AI to evoke an author’s style that I am more familiar with, suddenly the output does not seem as impressive. The descriptions are not in depth, the themes the author is known for are missing and the tone of the writing is different. The details are off. Is this because the AI is better able to replicate Edgar Allan Poe than James Joyce? Probably not. What is more likely is that I, as the user, am more familiar with the works of Joyce than I am with Poe (#HUMBLEBRAG), and therefore am in a better position to critique how well the generated output resembles the works of the author I am familiar with rather than the author I am unfamiliar with.

This also means I am in a better position to improve generated content that I am familiar with. After receiving the initial generated output and drawing on my familiarity with the author’s works, I can identify for the AI that James Joyce:

- Is known for hyperdetailed descriptions of everyday activities,
- Focuses on themes of finding meaning, alienation and belonging,
- Is characterized by a complex and often bleak tone,
- Often uses a “stream of consciousness” style of writing.

I can ask the AI to redo the passage while focusing on incorporating these characteristics into the work it produces in the style of Joyce. With my knowledge of Poe, the most context I can provide is, as Lisa Simpson described it, “a classic tale of terror”.

With so much more information at its disposal, and greater clarity of what I want it to focus on, the content generated by the AI for the topic I am knowledgeable of can be much better than the content generated for the topic I know little about.

From this, two things become very clear:

First, human knowledge and understanding is not going anywhere. Human knowledge is crucial to the critical evaluation of any generated content. This understanding and ability must be cultivated in our learners. This is why, in a world with Generative AI, instructors are absolutely necessary.

Second, Generative AI works better when provided with the information it needs to provide good, generated content.

Generative AI will provide a response to almost any question or task asked of it. Asking it to tell you a joke, or craft a short story will yield a bad joke and a passable story. It can be very entertaining. Generative AI becomes actually useful when provided with the information it needs to produce a quality

and effective response. In the example above, I asked for a story written in the style of James Joyce. The AI gave me a story that, to someone with no in-depth knowledge of Joyce's works, looks passable. On review I identified several traits consistent with Joyce's work that were missing or under-represented and asked the AI to recreate the story with these traits included. The AI was able to produce an output with the identified traits. I reviewed the updated output and was satisfied.

Broken down into steps, this approach looks like:

1. General request,
2. Response produced,
3. Response reviewed,
4. Subsequent more specific prompt,
5. More specific response produced.
6. Repeat steps 3 – 5 until adequate response is achieved.

This approach is often the first one people stumble across when working with GenAI for the first time. Given enough time and iterations, it can provide quality and effective responses to simple tasks or questions. It is very inefficient. A way to increase efficiency is to provide more information to the prompt initially, for example, instead of providing the general request first, skip ahead to step 4 and identify any critical characteristics or traits wanted in the response and include these in the initial prompt. Providing the AI with critical traits for the response helps the AI focus on providing you with the information you are looking for. This approach may yield an adequate response for a simple task or question. It requires an advanced level of user knowledge and understanding of the topic to give the AI the information it needs to generate an effective output.

Not everyone can have the required expertise to use this approach for all topics. So, what can we do to improve the possibility of receiving an effective response from our prompt on topics we are not experts in? Well, we can shift our focus from providing the details we want to providing the details the AI needs to do its job effectively.

"And what are these details?" I hear you ask. Well, that depends on the task or question you have. For example, if you have a general task or are looking for an efficient base from which to build your iterative prompting progression, here is a template to help get you started.

This is called the TOCD template, and it was created by Zi Zhou (2023). TOCD is an acronym for:

- Task
- Output
- Context
- Data

Specifying the task, output, context and data will result in an effective response for an initial prompt or a starting point for a larger project. Each of these can be broken out into smaller attributes. For example:

Providing the Task means the AI stays locked on to the user's objective. The Task may include attributes relevant to user need such as the command the AI should accomplish. This can be discrete things like "Tell me a joke" and "write me a story" or more open-ended commands like "develop a weekly shopping plan" or "Develop a travel itinerary". Task may also include a topic. For example, "Tell me a joke **about**

**pandas**” and “write me a story about **motorcycles**” or “plan a weekly shopping plan **for a keto diet**” or “Develop a travel itinerary for **Paris**”.

The output outlines how the task should be manifested. It may include attributes relevant to the user such as format, structure, qualities, and content. Examples of these are:

- Format - Develop a travel itinerary for Paris **presented in a daily activity format**.
- Structure - Develop a weekly shopping plan for a keto diet **presented as a list**.
- Qualities - Tell me a joke about pandas **that is whimsical and surreal**.
- Content - write me a story about **1980s Japanese** motorcycles.

The context builds the relevance of the output. Context may include attributes like perspective, goal, and target audience. Examples of these are:

- Perspective – Develop a travel itinerary for Paris presented in a daily activity format **for an expert in art and architecture**.
- Goals – Tell me a joke about pandas that is whimsical and surreal, **and I can use to open a speech on endangered animals**.
- Target Audience - write me a story about 1980s Japanese motorcycles **appropriate for an 8-year old’s bedtime story**.

Finally, data can further specialize the output based on user provided records, benchmarks or examples. Data may be broken down into user data and examples. Examples of these are:

- User Data - Develop a weekly shopping plan for a keto diet presented as a list **for a user with a tree nut allergy**.
- Examples - Tell me a joke about pandas that is whimsical and surreal, and I can use to open a speech on endangered animals. **Something like “why do pandas like old movies? Because they are in black and white.”**

(More information examples and outputs at the end of this post.)

Using this template will help you think through your purpose for using Generative AI, and it will result in a much stronger output from an initial prompt. It is a very good first step, particularly if you are not an expert on the content you are seeking. It will not provide a perfect result, and the user may need to refine the output, rework their prompt, or try a completely different template. We will cover a new template in two weeks.

# Generative AI

## Prompt Engineering – Templates TOCD

### Prompt Template Patterns

Prompts play a pivotal role in the functionality of generative AI, acting as the fundamental channel of communication between the user and the AI. They are designed to direct the AI's generation of specific outputs or execution of tasks. Any prompt will elicit a response, however, to elicit an effective response, the user must provide specific details required by the AI relevant to the request. Prompting templates can help the user in preparing effective prompts that include the detail required by the AI. This prompting template was adapted from the insights of Yi Zhou (2023).

### TOCD Prompt Template Patterns

This template is simple and efficient, yielding clear results. This is a good first start for working with AI. This template focuses more on identifying the specific task components required by the AI and communicating them in detail. TOCD is an acronym which outlines the component parts of the template:

- Task – The thing you want the AI to do and the appropriate details describing this.
- Output – descriptions of how the task should be accomplished.
- Context – descriptions of audience or expected use that can attune the output to user need.
- Data – descriptions of specific data to be used or avoided.

Each of these component parts possess a variety of attributes.

Template Component	Relevant Attributes.	Example
Task	Role Command Topic	<ul style="list-style-type: none"><li>• Psychology Instructor</li><li>• Create a quiz on Jungian Archetypes</li><li>• Carl Jung</li></ul>
Output	Format Structure Qualities Content Dos and Don'ts	<ul style="list-style-type: none"><li>• Multiple Choice</li><li>• Five questions</li><li>• One correct and three distractors</li><li>• Four answers for each question</li><li>• Indicate the correct answer</li></ul>
Context	Perspective Goal Target Audience	<ul style="list-style-type: none"><li>• Instructor assessing knowledge.</li><li>• Assess knowledge of Jungian Archetypes</li><li>• Undergraduate University Students</li></ul>
Data	User Data Examples	<ul style="list-style-type: none"><li>• Undergraduate students studying foundational psychology theory.</li><li>• 1964 book "Man and His Symbols"</li></ul>

## Implementation

Consider the components of the template and the relevant attributes. Each attribute identified in the above table may not be required to adequately describe the template component for the AI to provide an effective response. Conversely, additional relevant attributes not identified in the table may be included in the users' prompt.

### Example

Should the user determine that the most relevant attributes are as follows:

- Role
- Behavioural Signals
- Task
- Structure
- Specifications/Constraints
- Data

Then these can be combined into the following prompt as indicated below.

## Prompt Template

"Act as a [role] with [behaviour] performs [task] ensures [structure]. Remember [Specifications/Constraints] and [Data]."

## Template in Action

### Example

Act as a **Psychology Instructor [Role]** who is **an expert in the works of Carl Jung [Behavioural Signals]**. **Create a quiz for students on Jungian Archetypes [Task]**. This quiz should be **five multiple choice questions [Structure]**. Each question should have **four answers, one correct and three distractors [Specifications/Constraints]**. The questions should only explore the information contained in the **1964 book, Man and his Symbols [Data]**.

## Generated Material

(Copilot Web access. June 19, 2024)

### 1. What is the primary purpose of Jung's 'Man and His Symbols'?

- A. To detail Jung's personal life
- B. [To provide a clear explanation of Jung's complex theories for a wide non-specialist readership<sup>1</sup>](#)
- C. To critique the works of Sigmund Freud
- D. To serve as an autobiography of Carl Jung

**2. According to Jung, what are archetypes primarily?**

- A. Historical figures that shaped culture
- B. Conscious representations of personal experiences
- C. [Innate universal psychic dispositions that form the substrate from which the basic themes of human life emerge](#)
- D. Unique personal symbols developed in early childhood.

**3. In 'Man and His Symbols,' which part did Carl Jung personally write?**

- A. Symbolism in the plastic arts
- B. The process of individuation
- C. Symbols within an individual analysis
- D. [Approaching the Unconscious](#)

**4. Which of the following is NOT one of the four major archetypes identified by Jung?**

- A. The Shadow
- B. The Anima/Animus
- C. The Hero
- D. The Trickster

**5. The 'Self' in Jungian psychology is best described as:**

- A. The archetype of order and perfection
- B. [The archetype that represents the unity of the unconsciousness and consciousness of an individual](#)
- C. The personal facade one presents to the world.
- D. The totality of one's personal and collective unconscious.

# Prompt Engineering – Templates

## TOCD

### Prompt Template Patterns

Prompts play a pivotal role in the functionality of generative AI, acting as the fundamental channel of communication between the user and the AI. They are designed to direct the AI's generation of specific outputs or execution of tasks. Any prompt will elicit a response, however, to elicit an effective response, the user must provide specific details required by the AI relevant to the request. Prompting templates can help the user in preparing effective prompts that include the detail required by the AI. This prompting template was adapted from the insights of Yi Zhou (2023).

### TOCD Prompt Template Patterns

This template is simple and efficient, yielding clear results. This is a good first start for working with AI. This template focuses more on identifying the specific task components required by the AI and communicating them in detail. TOCD is an acronym which outlines the component parts of the template:

- Task – The thing you want the AI to do and the appropriate details describing this.
- Output – descriptions of how the task should be accomplished.
- Context – descriptions of audience or expected use that can attune the output to user need.
- Data – descriptions of specific data to be used or avoided.

Each of these component parts possess a variety of attributes.

Template Component	Relevant Attributes.	Example
Task	Role Command Topic	<ul style="list-style-type: none"><li>• Psychology Instructor</li><li>• Create a quiz on Jungian Archetypes</li><li>• Carl Jung</li></ul>
Output	Format Structure Qualities Content Dos and Don'ts	<ul style="list-style-type: none"><li>• Multiple Choice</li><li>• Five questions</li><li>• One correct and three distractors</li><li>• Four answers for each question</li><li>• Indicate the correct answer</li></ul>
Context	Perspective Goal Target Audience	<ul style="list-style-type: none"><li>• Instructor assessing knowledge</li><li>• Assess knowledge of Jungian Archetypes</li><li>• Undergraduate University Students</li></ul>
Data	User Data Examples	<ul style="list-style-type: none"><li>• Undergraduate students studying foundational psychology theory.</li><li>• 1964 book "Man and His Symbols"</li></ul>



## Implementation

Consider the components of the template and the relevant attributes. Each attribute identified in the above table may not be required to adequately describe the template component for the AI to provide an effective response. Conversely, additional relevant attributes not identified in the table may be included in the users' prompt.

### Example

Should the user determine that the most relevant attributes are as follows:

- Role
- Behavioural Signals
- Task
- Structure
- Specifications/Constraints
- Data

Then these can be combined into the following prompt as indicated below.

## Prompt Template

"Act as a [role] with [behaviour] performs [task] ensures [structure]. Remember [Specifications/Constraints] and [Data]."

## Template in Action

### Example

Act as a **Psychology Instructor [Role]** who is **an expert in the works of Carl Jung [Behavioural Signals]**. **Create a quiz for students on Jungian Archetypes [Task]**. This quiz should be **five multiple choice questions [Structure]**. Each question should have **four answers, one correct and three distractors [Specifications/Constraints]**. The questions should only explore the information contained in the **1964 book, Man and his Symbols [Data]**.

## Generated Material

(Copilot Web access. June 19, 2024)

### 1. What is the primary purpose of Jung's 'Man and His Symbols'?

- A. To detail Jung's personal life
- B. [To provide a clear explanation of Jung's complex theories for a wide non-specialist readership<sup>1</sup>](#)
- C. To critique the works of Sigmund Freud
- D. To serve as an autobiography of Carl Jung

**2. According to Jung, what are archetypes primarily?**

- A. Historical figures that shaped culture
- B. Conscious representations of personal experiences
- C. [Innate universal psychic dispositions that form the substrate from which the basic themes of human life emerge](#)
- D. Unique personal symbols developed in early childhood.

**3. In 'Man and His Symbols,' which part did Carl Jung personally write?**

- A. Symbolism in the plastic arts
- B. The process of individuation
- C. Symbols within an individual analysis
- D. [Approaching the Unconscious](#)

**4. Which of the following is NOT one of the four major archetypes identified by Jung?**

- A. The Shadow
- B. The Anima/Animus
- C. The Hero
- D. The Trickster

**5. The 'Self' in Jungian psychology is best described as:**

- A. The archetype of order and perfection
- B. [The archetype that represents the unity of the unconsciousness and consciousness of an individual](#)
- C. The personal facade one presents to the world.
- D. The totality of one's personal and collective unconscious.