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TWELVE TIPS



Twelve tips on creating and using custom GPTs to enhance health professions education

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ABSTRACT

The custom GPT is the latest powerful feature added to ChatGPT. Non-programmers can create and share their own GPTs (“chat bots”), allowing Health Professions Educators to apply the capabilities of ChatGPT to create administrative assistants, online tutors, virtual patients, and more, to support their clinical and non-clinical teaching environments. To achieve this correctly, however, requires some skills, and this 12-Tips paper provides those: we explain how to construct data sources, build relevant GPTs, and apply some basic security.

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Introduction

Since the release of OpenAI’s ChatGPT in November 2022, many papers have been written about using it to assist in Higher Professions Education (HPE), and they cover a wide range of topics from developing lessons to creating formative exam questions (Herrmann-Werner et al. 2024; Kıyak 2023; Violato et al. 2023). From these papers, the potential value of ChatGPT to HPE is obvious.

Until recently, however, all described uses of ChatGPT had to overcome weaknesses of ChatGPT: Mainly, that the interaction remained in the creator’s (e.g. teacher) account and was not easily accessible to third parties (e.g. learners). While the output can be shared, it does not fit easily with educational best practices of allowing students direct access to, and control-over, valuable educational materials. In an age of learner-centered education, this is a stumbling block.

Other weaknesses of ChatGPT usage included difficulties of restricting ChatGPT’s data sources to ensure quality and correct contextualisation (Bahroun et al. 2023; Preiksaitis and Rose 2023), and having to create and re-create complex prompts (Herrmann-Werner et al. 2024; Kıyak 2023). Restricting data sources could be achieved with 3rd-party plugins, but the teacher has no control over the plugin, cannot easily adjust that source data, and plugins will soon disappear (OpenAI 2023a); Custom Instructions, introduced during 2023, allowed for non-generic instructions so that complex prompts could be avoided, but these instructions applied to all of the user’s queries, and had to be altered frequently to accommodate different needs.

A recent (November 2023) update was introduced to GPTPlus (GPT-4), the subscription instance of ChatGPT: the

ability to create “custom GPTs” (AI “chat bots”) (OpenAI 2023a, 2023b). In short, with only basic computer literacy, the user (teacher) can create their own GPT that is trained to play a specific role (e.g. a virtual patient), have far more control over how it behaves, and allows interaction between the GPT with anyone (learners) by supplying a standard web link (URL).

This feature massively enhances the educational value of ChatGPT in HPE. To access and properly use this feature, however, the teacher must follow some basic tips and guidelines. This 12-Tips paper provides those tips: 1–3 focus on setting up the GPT and data sources, 4–10 cover specific GPTs to be constructed, 11 addresses security, and 12 is for the advanced user.

Because custom GPTs are so new, there is no direct literature on which to draw (a PubMed Search on “Custom GPT” on 1 December 2023 had no results), so the tips are based upon the authors’ personal experimentation and testing. In addition, while the information was correct at the time of writing, things may change.

Tip 1

Plan and create the GPT

Before you construct your GPT, prepare to answer questions and supply the material that will be required. These include:

- Purpose of the GPT (usually 3–4 lines). (Hint: For your first one, start small).
- Name (ChatGPT suggests a name; you can accept or change it).

- Image (ChatGPT creates an image; you can accept or change it).
- Your target audience.
- Types of questions you are expecting from your users (with examples).
- Details about what you would like it to do, how to respond, the tone, topics and words to avoid, how to address your audience, etc.
- If the GPT does not understand the users' question, should clarification be sought, or should it guess?
- Your data sources: any combination of your own files, Web Browsing, DALL-E, or Code Interpreter.

To Start:

- Open ChatGPT, and ensure you are in GPT-4 (or later).
- From the top left corner, select **Explore**.
- From the list, select **Create a GPT**.
- Leave **Create** selected, and answer the questions based on the material you prepared above. (Do not yet upload any files).
- From the top right-hand corner, **Save** periodically so that you do not lose data. Save options are:
 - **Only me**: only you have access (for testing purposes or your own use);
 - **Only people with a link**: for release to your students, and
 - **Public**: in the GPT Store (released in January 2024).
- After this is complete, select **Configure**, and change anything you would like to change, especially the **conversation starters** (suggested initial questions). (If you're stuck, you can always ask ChatGPT for examples, and edit and preview in real-time or edit this later, as you wish).

Tip 2

Use carefully-constructed documents

Use internal documents so that you control the data that your GPT accesses to answer questions. The contents are determined by your goal (see Tips 4-10), but it is important to note restrictions and tips:

- Current (January 2024) limits per GPT: 20 files, 512MB per file, and 2 million tokens (a token is approximately 4 characters, and averages are 1 token = 3/4 word; in academia, that might be different). Experiment with the files, types and lengths. (To check for updated restrictions, see (OpenAI 2023c)).
- Generally, text files (MS-Word or .txt) work best. While PDFs can be used, they are best avoided for the knowledge base; our testing indicates that they can be slower for ChatGPT to read and may have interpretation errors. (However, if the file is a PDF, then rather leave it as it is: do not save as MS-Word).
- If using external documents, ensure you adhere to copyright restrictions.
- Remove images from files (create detailed descriptions, if necessary).
- GPT cannot evaluate videos, but it can analyse video transcripts; if you have recorded educational sessions or material cases as videos, use those transcripts as data.

NOTE:

- Some people have reported overcoming the size restrictions by using zip files, but getting around intentional restrictions ("jail-breaking") could be dangerous, so it is not advisable on important projects.
- However impressive, ChatGPT is still a Large Language Model (LLM) working off tokens and numbers (Bubeck et al. 2023) and does not "understand" the work, and technically, everything generated by it is an "Hallucination" (Masters 2023). Having these documents clearly crafted, and easily readable, reduces data bias and incorrect hallucinations.

Tip 3

If you use the Internet, identify particular and trustworthy sites

Ensure that your GPT uses only reliable websites. This is useful, for example, if you wish to use:

- information in grey literature;
- university or departmental information;
- multiple authors contributing to a knowledge base, or
- more than 10 documents.

Care should be taken to not exceed the token limit, and searching a website will be perceptibly slower than searching documents that have been placed into your GPT.

Tip 4

Create a course FAQ Administrative Assistant

Tips 4–10 cover various usages of specific GPTs to be used in HPE. Many points in this tip apply to those that follow.

Create a 365/24/7 FAQ Administrative Assistant for your learners. Although Curriculum and Course outlines exist, they become unwieldy as more details are required, and finding information becomes difficult. For this reason, teachers are often e-mailed routine questions, such as *How many questions in the exam? What type of questions in the exam? Will we have classes in Week 10?*, etc.

The solution is to create an FAQ Administrative Assistant, upload your course outline to the GPT, ensure that Internet searching is disabled, and then be clear with your instructions. An example of such instructions is:

The '[GPT Name]' GPT will maintain a neutral personality, focusing solely on providing administrative support to students in a formal yet friendly tone. It will strictly use the information from the uploaded administrative documents to answer queries and will not infer or provide content outside of these documents. When further details are needed, it will ask for clarification to ensure accurate and relevant information is given, adhering to the role of a dedicated administrative assistant.

Add anything pertaining to cultural or language idiosyncrasies that the GPT might expect.

Testing should be done in three steps:

1. Your own testing for typical questions that you predict from your user.
2. Using previous questions from students.

3. Piloting with students.

In Steps 1 & 2, you should be able to identify inaccuracies and misconceptions. You may find that information in your document is not as clear as you thought it was, and you should then adjust the document. This will improve the document's instructions for all students, not only those accessing it through ChatGPT. In addition, please remind your students that there is a limit on the number of queries, and this limit fluctuates (currently, 50 queries per 4 h).

If you are using a Learning Management System, then be sure to link to the GPT.

Tip 5

Create course tutors

Using the methods in Tip 4, use course materials to create course tutors. Because of the limitations listed in Tip 2, we do not recommend a single course tutor for an entire course. Rather, create a course tutor for each logical area in your course.

Your class PowerPoint presentations are possible sources, but images should be removed, and extra edits for the GPT applied. This might mean having two sets of Presentations, which will require extra management.

If you wish the GPT to draw information from external sources, include an instruction to the GPT that it should identify material that is extra, and which might not be examined.

For example, we have created this custom GPT on *Chest Pain* at: <https://chat.openai.com/g/g-q8guEYew-chest-pain>.

Tip 6

Create virtual patients

Single patient

Virtual patients help students practise their history-taking and clinical reasoning skills while reinforcing medical knowledge. A custom GPT can represent a patient with a specific diagnosis with whom a student can have an interactive chat, much like a real patient.

To begin, create a Word document with details of the history, examination findings and test results of a hypothetical patient with the specific condition. Include appropriate negative findings, particularly for the differential diagnosis that you expect the student to consider for this presentation. Instruct the GPT to play the role of a patient and to refer to the document when responding to student questions. The GPT should respond only to the questions asked and not give extra information or the diagnosis at any time. If answers to student questions are not available in the document, respond in the negative - e.g. "there is no fever", or "the test results were normal."

Because of the GPT's flexibility, you can also experiment with combining the virtual patient with a tutoring system. We have developed this *Cardio Patient Tutor* (Dual-role GPT as a patient with chest pain and Dr. Smith, a tutor, aiding medical students.):

<https://chat.openai.com/g/g-Y6jDf8Chi-cardio-patient-tutor>

Multiple patients

Similarly, several patients are in the GPT, and it randomly selects a virtual patient from its store. This adds the element of considering differential each time a student engages with the GPT, making for a richer and even more authentic experience, and allowing the student to explore the wide spectrum of clinical presentations of a specific medical condition.

Tip 7

Create a case scenario for teaching management options

The GPT can help with instructing learners on how to accurately diagnose specific clinical conditions and then use guidelines and latest evidence-based literature to suggest investigations and management of clinical conditions (See also Tip 4).

In cases where there are multiple management options, different case scenarios can be created to teach why one management option may be preferred over another, and in what context. The management decisions can foster deeper discussions around socio-cultural contexts and patient goals, as well as critical reflection of the learner about how their own understanding and beliefs may shape their decisions (Ng et al. 2019). This process can help us move beyond management discussions based purely on technical and practical knowledge, to humanistic ways of providing care (Kumagai 2014). Using the GPT as an extension to the human brain, rather than a substitute for it, the management suggestions given by ChatGPT can be used to foster critical thinking skills as a starting point instead of being considered as an end result. It is useful to highlight that the resources suggested by ChatGPT are supplementary in nature and not comprehensive.

Tip 8

Create a GPT to teach interprofessional skills

Akin to virtual patients, create a virtual nurse, pharmacist or any healthcare team member with desired personality characteristics within a specific clinical scenario, such as communication during emergency management of a pulseless patient, how to address patient care when there is disagreement between nurse and physician or issues surrounding medication errors. Existing Interprofessional Education (IPE) curricula with goals and objectives can be uploaded to direct GPT on how to approach the learner.

Having interprofessional teams create the GPT together can also foster discussion around interprofessional team care, while creating a richer GPT (MacNeill et al. 2014).

Tip 9

Create extra-mural role-playing GPTs

The role-play possibilities are limited only by your imagination and knowledge. Role-play could include Health Professionals for teaching communication skills, or being in particular circumstances, especially facing particular ethical dilemmas, or important HP historical characters.

Please see [Supplementary Appendix 1](#) for examples and resources to get you started:

Tip 10

Test your tests, cases, and notes

Use the GPT to test the accuracy of your own notes, cases, and exams. Although much of this is possible without a custom GPT, a custom GPT gives you greater control.

First, ensure that the GPT does not access the Internet, and then submit questions and evaluate the responses. If the responses are erroneous, check the questions to ensure that they are meaningful. If they are, check your notes, improve your notes, run the questions again, and re-evaluate the answers.

Similarly, encourage your students to create their own questions based on your notes. These can be used for their revision and to test your notes (and students might also find errors in them).

In fact, if all your students already have access to GPTPlus, then have them create their own GPTs to review their lessons and to build upon it for lifelong learning. Ethical considerations regarding the inequity issues of requiring student access, privacy/copyright considerations of sharing created documents with GPTPlus, however, will have to be considered and met.

Tip 11

Plan for “jailbreaking” attempts by your users

If your source data documents and instructions are public (e.g. for an administrative assistant (Tip 4)), then students’ accessing that information directly is fine. When you have medical cases for teaching (Tip 6 and 7), however, you may want students to probe with good questions that they would use on a patient, rather than accessing the instructions and documents directly.

Although there is a suggestion that an extra instruction can be given to the GPT to prevent information release, this is easily circumvented by the user, so we recommend the following steps if you are building clinical cases and do not wish the diagnosis to be obvious:

- Use generic filenames (e.g. “Case 1”, rather than “Spontaneous Pneumothorax”).
- Use MS-Word files rather than PDF files.
- Documents should not contain the diagnosis (look especially at your headings).
- Include irrelevant and distracting information in the case document. This will not hamper the student who is probing with relevant questions, but will confuse the student who simply gets a summary of the document in an attempt to cheat. In addition, it more closely resembles real-life situations, in which patients may give irrelevant information in their answers.

Given that the purpose is for educational training, however, the student who obtains direct access would not benefit in any way (in the case of notes, they would have those already).

Tip 12

Actions: Using Zapier, APIs and scripts

This tip is for advanced users only. Please do not attempt this until you are very familiar with constructing GPTs and/or have more than basic computing skills.

You can use the GPT’s **Actions** (OpenAI 2023a). Actions allow you to access external apps and systems, and run your code to perform sophisticated processing.

Zapier (<https://zapier.com>) can be used to access external apps through the Actions. Because Zapier is external to ChatGPT and requires a separate licence, we won’t describe it here, except to say that it allows you to integrate your GPT with a range of other tools, such as Google Calendar, Forms, Slack, etc.

In addition, you can upload code (especially Python) and integrate special commands into your GPT. With the Code Interpreter automatically built into the GPT, you can (and also allow your visitors to) generate code through your GPT.

For more details on these advanced features, see <https://platform.openai.com/docs/actions> and also <https://www.youtube.com/watch?v=EWdCMPnm8uY> and <https://www.youtube.com/watch?v=U9mJuUkhUzk>

Some examples of custom GPTs that perform these sorts of tasks are:

- For analysing videos: <https://chat.openai.com/g/g-yJ7Kxf5NM-video-digest>
- For searching for APIs: <https://chat.openai.com/g/g-LrNKhqZfA-there-s-an-api-for-that-the-1-api-finder>

An overall consideration: ChatGPT is a starting point, not the final product for a learner to assimilate concepts. Identify the flaws and use the output from it as a tool to encourage learners to identify gaps in the content or flaws to refine and develop a deeper understanding. Encourage your learner to use this tool as a supplement to their other sources of knowledge not as a replacement. Encourage critical thinking by the learner and for the learner to decipher accurate information from inaccuracies. Allowing students to construct their own GPTs can help them explore the knowledge content but also provide opportunities for flipped classroom instructions where students can familiarise themselves with basic concepts and delve into deeper critical thinking during synchronous instruction.

Conclusion

As we enter 2024 and reflect that it is little more than a year since the world was altered with the release of ChatGPT, we realise that the future holds even more remarkable advances in AI. For now, however, health professions educators can utilise this recent advance of custom GPTs to enhance their teaching and their students’ learning.

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