Stepping Up with ChatGPT:
A Comprehensive Guide
For Academics

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Disclaimer:

This guidebook is intended to provide general information on the use of ChatGPT at the University of the Free State. The information contained within this guidebook is not intended to be a substitute for professional advice or guidance. Additionally, to ensure the accuracy and relevance of the information provided in this guidebook, the authors collaborated with ChatGPT to address common questions and concerns related to its use in an academic setting. However, the authors and publishers of this guidebook cannot guarantee the completeness or accuracy of the information provided, as ChatGPT's responses are generated by a machine learning algorithm that may have limitations in contextual understanding and accuracy. The authors and publishers of this guidebook are not responsible for any errors or omissions or any outcomes resulting from the use of this information. The reader assumes full responsibility for their use of the information contained in this guidebook.

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1. Introduction

In today's fast-paced world, technology has transformed how we work, communicate, and learn. One such technological advancement is ChatGPT (Generative Pre-trained Transformer), an AI-powered language model developed by Open AI. ChatGPT has been a topic of conversation in higher education since its introduction, as it sheds light on the possibilities of machine learning in education research (MLER). This large language model can imitate human conversation, predict contextual words, and generate coherent and relevant textual responses with minimal user input. With the potential to provide personalised learning experiences, improve student engagement, and ease the burden on teachers and administrators, ChatGPT has been widely used by students for essay submissions, disrupting traditional approaches. As a user-friendly AI tool available for free, ChatGPT can assist students in writing, coding, and solving mathematical equations. However, educators must evaluate the benefits and limitations of these AI technologies, including ethical concerns, and adapt their teaching strategies accordingly. Like calculators and spreadsheets in Natural and Economic Sciences fields, the Social Sciences may need to incorporate ChatGPT and adjust their teaching methods to align with the changing landscape of educational technology. Nevertheless, the potential impact of these new AI technologies is greater, given their increasing power and capabilities.

Developed by Open AI, ChatGPT uses deep learning techniques to generate human-like responses to natural language inputs, such as questions, statements, and commands. Trained on extensive amounts of text data from various sources, including books, articles, and websites, the model can learn the patterns and structures of natural language to produce coherent and contextually appropriate responses. Its versatility enables its application to various natural language processing tasks, including text classification, sentiment analysis, and language translation. From chatbots and virtual assistants to research and education, ChatGPT has been widely used and is one of the most advanced natural language processing models. However, its ability to generate text that is difficult

to distinguish from human-written text has raised concerns about potential misuses, such as creating convincing fake news or impersonation individuals online. Therefore, ethical considerations and responsible use guidelines are critical to remember when using ChatGPT. As educators continue to evaluate and incorporate ChatGPT into their teaching methods, it is essential to balance the technology's benefits and the potential risks associated with its misuse. Ultimately, ChatGPT is an exciting development that has the potential to enhance the learning experience for students and educators alike, and it is up to us to ensure that it is used ethically and responsibly.
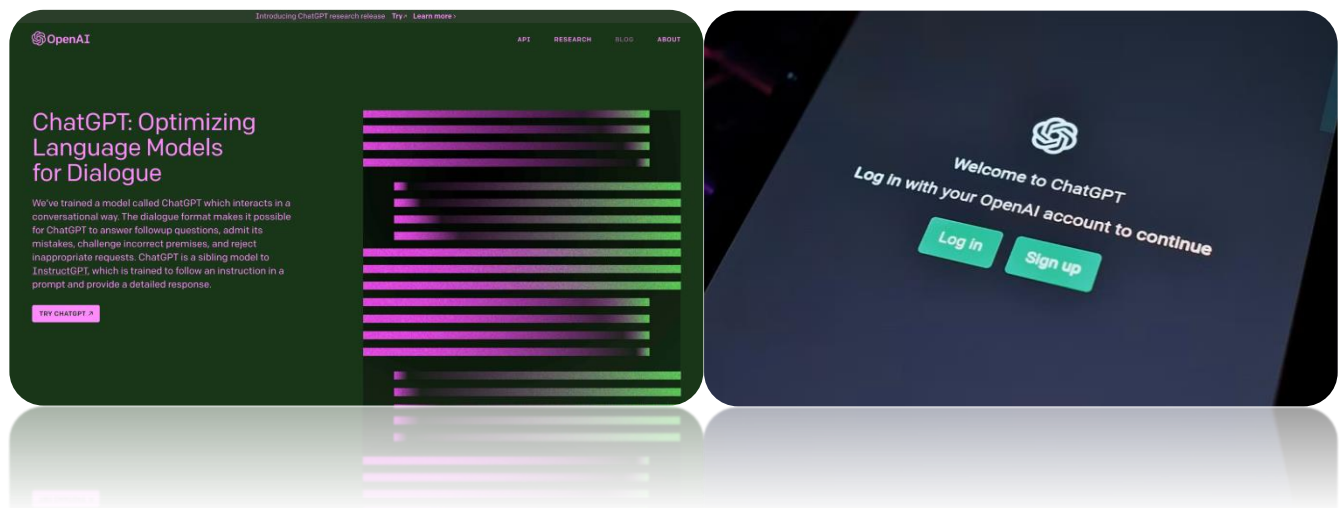
1.1. How and why is ChatGPT relevant for academics?

ChatGPT's relevance for academics lies in its potential to improve the teaching and learning experience by providing personalised feedback and assistance to students. One example is in writing research papers, where students can use ChatGPT to receive suggestions for improving their writing style, word choice, and overall coherence of their arguments. By providing personalised feedback, ChatGPT can help students improve their writing skills and reduce the time required for grading by educators. In addition, ChatGPT's language translation capabilities can facilitate communication and collaboration in international settings. For example, academics can use ChatGPT to translate academic articles and research papers into different languages, making them accessible to a broader audience. This can facilitate cross-cultural collaboration and enhance the impact of academic research.

Although ChatGPT can potentially improve teaching and learning in academic contexts, it must be utilised responsibly to ensure that technology complements rather than substitutes for human input during the learning process. The use of ChatGPT in educational settings raises potential ethical concerns. One issue is the possibility of plagiarism, where students may use ChatGPT to generate content that is not their own. To prevent this, educators must ensure that students understand the importance of academic integrity and that ChatGPT is used only to supplement their ideas and research, not replace them entirely. Another potential ethical concern is the possibility of bias in

language models. ChatGPT is trained on large amounts of text data, including biased language and perspectives. This can result in the generation of biased text, which can be harmful or perpetuate stereotypes. To address this issue, educators must be aware of the potential biases in ChatGPT and ensure that it is used fairly and unbiasedly. Using ChatGPT responsibly, educators can leverage its capabilities to revolutionise how academics approach teaching and learning.

2. Getting started with ChatGPT

To use ChatGPT, go to https://chat.openai.com/auth/login. After opening the link, click "TRY CHATGPT" and continue to **Sign up** or **Log in**.

- o If you already have an account, click the "**Log in**" button and enter your login details. If you do not have an account, click the "**Sign up**" button to create one.
- o If you are signing up for a new account, enter your email address and create a password. Once you have entered your details, click the "Sign up" button.
- o After logging in or signing up, you will be taken to the ChatGPT interface, where you can use the tool.

Before incorporating ChatGPT or other AI tools into your teaching, ensure you are acquainted with them. It is essential to clarify to your students that ChatGPT uses a database to generate probable word sequences and lacks understanding, reasoning, or thinking capabilities. Emphasise to your students that ChatGPT is a learning aid, not a replacement for their creativity and thinking. Encourage open dialogue about the ethical concerns of using ChatGPT, including potential biases, copyright issues, labour disputes, environmental impacts, and data rights. To use ChatGPT effectively, provide guidance on producing and evaluating multiple outputs and combining them with other research and writing tools. Urge students to seek feedback from peers and instructors to enhance their usage of ChatGPT and other AI tools. In your course materials, clearly state your policies on ChatGPT usage and instruct students on how to acknowledge its use correctly. To comply with data privacy laws, avoid using ChatGPT for private or sensitive information, as it considers such information as public domain data due to its learning from interactions.

3. Applications of ChatGPT for academics

ChatGPT has numerous academic applications for students, teachers, and support staff. ChatGPT can assist institutions in teaching and learning, making education more personalised and efficient for all who use it. For students, ChatGPT can be used to provide customised learning experiences that are tailored to their individual needs and abilities. This can lead to improved engagement, motivation, and academic success. Additionally, ChatGPT can be used to create various educational resources, such as interactive tutorials, study guides, and online learning quizzes, which students can access from anywhere and at any time.

For teachers, ChatGPT can help automate repetitive tasks such as grading, providing feedback, and creating educational content. This can save time and allow teachers to focus on more critical tasks, such as providing individual support and instruction to students. ChatGPT can also create adaptive learning systems that adjust to a student's performance and provide targeted support, making it easier for teachers to monitor

student progress and provide necessary interventions. For support staff, ChatGPT can be used to assist students, teachers, and other staff members. For example, ChatGPT can answer frequently asked questions, provide information about school policies and procedures, and offer technical support. This can help reduce the workload of support staff and improve overall efficiency.

3.1.   Research applications

Determine your research question or topic: Before interacting with ChatGPT, having a clear research question or topic is essential. This will help you get the most out of your interactions with the AI model.

1. **Choose a platform**: ChatGPT can be accessed through various platforms, including Open AI's website, through third-party apps such as Hugging Face, or API integrations with other tools. Choose the platform that works best for you.
2. **Familiarise yourself with the model**: ChatGPT is a large language model with vast knowledge and language skills. To get the most out of your interactions, it's essential to understand the model's capabilities and limitations. You can find more information about ChatGPT's architecture and training on Open AI's website.
3. **Start a conversation**: Once you've chosen a platform and familiarised yourself with the model, start a conversation with ChatGPT by typing your research question or topic. The AI model will respond with an answer or suggestion.
4. **Refine your questions**: ChatGPT's responses can be very helpful, but they may sometimes differ from what you need. If you need more information or want to refine your question, you can ask follow-up questions or rephrase your original question.
5. **Evaluate the responses**: As with any research tool, evaluating the quality of ChatGPT's responses is essential. Double-check the information provided and consider the source before using it in your research or writing.

6. **Use the responses in your research**: Once you've evaluated the responses and determined that they are helpful for your research, you can incorporate them into your writing or analysis.

7. **Cite your sources**: Like any other research tool or source, citing ChatGPT in your writing is essential. Include information about the model and platform you used and the date and time of your interactions.

3.2. For teaching

1. **Determine the learning objectives**: Before you start using ChatGPT, identify the learning objectives you want to achieve through the use of the AI model. Determine the specific questions or topics you want to explore with your students.

2. **Familiarise yourself with the model**: ChatGPT is a large language model trained on vast amounts of text data. Before using it with your students, it's important to understand the model's capabilities and limitations. You can find more information about ChatGPT's architecture and training on Open Ai's website.

3. **Choose a platform**: ChatGPT can be accessed through various platforms, including OpenAI's website, third-party apps like Hugging Face, or API integrations with other tools. Choose the platform that works best for you and your students.

4. **Demonstrate how to use ChatGPT**: Show your students how to use ChatGPT by typing in a question or topic and asking for a response. Highlight the importance of phrasing questions clearly and evaluating the quality of the answers.

5. **Monitor and guide your students**: As your students use ChatGPT, monitor their interactions and guide them as needed. Help them evaluate the quality of the responses and encourage them to ask follow-up questions or rephrase their original questions if necessary.

6. I**ncorporate the responses into your lessons**: Once you've evaluated the responses and determined that they are helpful for your lessons, incorporate them into your teaching. Use ChatGPT's responses to supplement your existing curriculum and provide real-time answers to students' questions.

7. **Encourage critical thinking**: While ChatGPT can be a valuable tool for educators, it's vital to encourage critical thinking in your students. Help them understand the limitations of AI and the importance of evaluating information from multiple sources.

8. **Consider ethical implications**: As with any technology, it's important to consider the ethical implications of using ChatGPT in your classroom. Discuss issues like data privacy, bias, and transparency with your students.

3.3.   Curriculum development

ChatGPT can assist in curriculum development by providing personalised learning experiences and generating course materials such as lesson plans, syllabi, and assessments. Educators can use ChatGPT to create custom course content based on their specific learning objectives and the needs of their students. For instance, ChatGPT can be trained in a particular domain of knowledge, such as computer science, and then used to generate course materials related to that domain. One way to use ChatGPT in curriculum development is to provide a set of learning objectives and a list of relevant resources, such as textbooks, research papers, and online materials. ChatGPT can then generate a course syllabus that aligns with the learning objectives and incorporates the selected resources. This can save educators time and effort in designing a course from scratch while ensuring that the course is comprehensive and aligned with current knowledge in the field. Another way to use ChatGPT in curriculum development is to generate assessments and assignments that align with the learning objectives. For example, educators can input a set of questions related to a specific topic, and ChatGPT can generate a set of related questions for students to answer. ChatGPT can also be used to grade assignments and provide personalised feedback to students, improving the efficiency of the grading process and enhancing the learning experience.

Example 1: Assignment

Below is an example of an assignment on "**Sustainable Development**" with the assistance of ChatGPT:

Assignment: Design a project proposal for a sustainable development initiative

Background

As a student in this course, you have been tasked with designing a project proposal for a sustainable development initiative in your local community or region. Your proposal should focus on addressing a specific environmental or social issue and should aim to create a positive impact in the community.

Instructions

1. Choose a specific environmental or social issue that you would like to address in your community or region. Conduct research on the issue to better understand its root causes and potential solutions.

2. Develop a project proposal that outlines your strategy for addressing the issue. Your proposal should include the following components:

   - **Project overview**: Provide a brief introduction to your project, including the issue you will address and the goals you hope to achieve.
   - **Project goals and objectives**: Clearly define the goals and objectives of your project. What impact do you hope to create in the community?
   - **Project strategy**: Describe the specific strategies you will use to achieve your goals and objectives. What activities will you undertake? What resources will you need? Who will be involved in the project?
   - **Project timeline**: Develop a timeline for your project, including key milestones and deadlines.
   - **Budget**: Develop a detailed budget for your project, including all necessary expenses and potential sources of funding.
   - **Evaluation plan**: Describe how you will evaluate the success of your project. What metrics will you use to measure progress? How will you assess the impact of your project on the community?

3. Write a 3-5 page project proposal that includes all the components outlined above. Your proposal should be well-organised, clearly written, and supported by evidence from your research.

Example 2: Assessment and evaluation

I.   Numbered:

Your project proposal will be assessed according to the following criteria:

a) **Content and organisation (40 points):** Does your proposal clearly address the issue you have chosen? Is your proposal well-organised and easy to follow? Does your proposal include all the necessary components (project overview, goals and objectives, project strategy, project timeline, budget, evaluation plan)?

b) **Research and evidence (30 points):** Have you conducted thorough research on the issue you have chosen? Have you used evidence to support your proposed strategies and activities?

c) **Writing and presentation (20 points)**: Is your proposal clearly and effectively written? Have you used proper grammar and spelling? Have you included appropriate headings and subheadings to organise your proposal?

d) **Creativity and originality (10 points):** Does your proposal demonstrate creativity and originality in your proposed strategies and activities? Does your proposal present a unique and innovative approach to addressing the issue you have chosen?

Total points: 100

II.   Assessment Table:

Criteria	Points
Content	20
Organisation and clarity	15
Use of sources and evidence	15
Writing mechanics	10
Originality	10
Compliance with instructions	10
Creativity	10
Overall impression	10
Total	100

3.4.   Professional working environment

ChatGPT can be used in various professional working environments, such as education, business, or government, to enhance planning activities related to teaching and learning. By using ChatGPT, individuals can improve their productivity and efficiency, as well as the quality of their work. For example, in an educational setting, ChatGPT can assist teachers in proofreading written work and checking for grammar, punctuation, and spelling errors. This can save teachers a significant amount of time and ensure that the written work is high quality.

In a business setting, ChatGPT can assist with creating PowerPoint slides for presentations, drafting professional emails, creating guidelines for effective project management, and summarising and theming information. This can help employees communicate more effectively and efficiently and improve the overall quality of their work. ChatGPT can also be used to translate written work into different languages, allowing individuals to communicate with colleagues, clients, or customers who may speak a different language. However, it's important to note that machine translation may not always be perfect, so it's important to double-check the output to ensure accuracy.

4. Tips for using ChatGPT effectively

4.1. Useful tips and ideas

The table below provides a set of hints and examples on how to improve the use of ChatGPT in an academic setting. These tips cover different aspects of ChatGPT usage, from improving the quality of the generated text to avoiding ethical issues and include specific prompts to illustrate how to achieve the desired results. By following these guidelines, academics can harness the full potential of ChatGPT in their teaching and research while ensuring the technology's responsible and ethical use.

Context	Prompt Example
Provide specific instructions or guidelines.	"Can you give me step-by-step instructions on how to conduct a literature review?"
Use technical language and provide context.	"What is the impact of neural networks on natural language processing in linguistics?"
Incorporate feedback from human input.	"Based on the feedback from my professor, can you help me revise my research question?"
Ask follow-up questions	"Explain more about the mentioned theory above."
Consider ethical implications and bias in language models	How can we ensure that the language generated by ChatGPT is unbiased and free from potential harm?
Specify the length of the response.	"I would like a brief and detailed 250 words response."
Provide context for more accurate responses.	Instead of asking, "What is the capital of France?" provide additional context, such as "In what year was the Eiffel Tower built?"
Specify the response format.	ChatGPT can provide your response in bullet points, tables, and paragraphs.
Evaluate the accuracy and quality of responses.	Review generated responses for accuracy and relevance to the prompt and adjust the prompt or model settings as necessary.
Specify the language output.	"Respond in UK/US English, please."

4.2. Overview of ChatGPT's capabilities and limitations

The table below provides an overview of the capabilities and limitations of ChatGPT. While ChatGPT has a wide range of potential uses in various academic settings, it is essential to understand its strengths and limitations to ensure responsible and effective use. The table summarises some of the key capabilities of ChatGPT, such as its ability to generate human-like responses to natural language inputs and provide personalised learning experiences, as well as some of its limitations, such as potential biases and limitations imposed by the quality and quantity of training data. By understanding both the potential benefits and limitations of ChatGPT, educators and researchers can make informed decisions about its use and implementation.

Capabilities	Limitations
Can generate human-like responses to natural language inputs	May produce biased or offensive language due to biases in training data
Can provide personalised learning experiences	Cannot provide feedback on the accuracy or quality of responses
Can assist with writing, coding, and solving mathematical equations	It may be used for academic misconduct, such as plagiarism
It can be used for a variety of natural language processing tasks	Limited by the quality and quantity of training data
Can ease the burden on teachers and administrators	Does not have a proper understanding of consciousness and can only generate responses based on patterns in training data
Can improve student engagement	May perpetuate stereotypes or reinforce existing biases in language use

5. Plagiarism

Since the release of ChatGPT in November 2022, there has been a growing concern about the use of ChatGPT to plagiarise. This concern cannot be easily avoided because ChatGPT can generate text, translate languages, write different kinds of creative content, and answer questions in an informative way. As a result, ChatGPT can be easily used to generate plagiarised text.

It is therefore advised that if a lecturer suspect that a student has plagiarised using ChatGPT, the first step is to talk to the student. All students have been introduced to the UFS plagiarism policies, and thus understand the consequences of their actions. This may include a failing grade on the assignment, a warning, or even suspension (depending on the academic year, level of academic misconduct, or extent of the misconduct). It is important to remember that plagiarism is a serious offence. It is essential to deal with students who have plagiarised using ChatGPT in a fair and consistent manner.

5.1. Addressing students about plagiarism

o **Talk to students about the dangers of plagiarism and the consequences of using ChatGPT to cheat.** Make sure students understand that plagiarism is not just a matter of copying someone else's work. It is also about taking credit for someone else's ideas.
o **Set clear expectations for student work and make sure students understand what constitutes plagiarism.** Students should be aware of the expectations for their work and what constitutes plagiarism. These expectations should be clearly stated in the syllabus or other course materials.

5.2.   identifying ChatGPT-generated text

There are a few things that you can do to identify ChatGPT-generated text. These include:

- Long, rambling sentences
- Overuse of generic words and phrases
- Lack of coherence or consistency
- Inconsistencies in grammar or spelling
- Unnatural-sounding language
- US written spelling
- Fake references

When setting up an assessment that requires critical thinking and extensive writing, it is advised that you run the question through ChatGPT to see what the general logic of the answer it. Although all answers will differ in terms of the words used, the general logic will be similar. As such, it is important to note the patterns and logic of these so that you can easily identify AI assisted text. You can also use online tools to help you identify ChatGPT-generated text. Some of these tools include:

Tool	Functions	Description
OpenAI's AI Text Classifier	Classifies text as human-written or AI-generated	OpenAI's AI Text Classifier is a machine learning model that can be used to classify text as human-written or AI-generated. It is trained on a dataset of human-written and AI-generated text and can be used to identify text that has been plagiarized from AI-generated sources. **Application:** Plagiarism detection, content moderation, and research **Link:** https://openai.com/blog/new-ai-classifier-for-indicating-ai-written-text
GPTZero	Detects AI-generated text, generates text, translates languages, writes different kinds of creative content.	GPTZero is a large language model that can be used to generate text, translate languages, write different kinds of creative content, and answer your questions in an informative way. It is trained on a massive dataset of text and code, and can be used for a variety of tasks, including chatbots, creative writing, and research. **Application:** Chatbots, creative writing, and research **Link:** https://gptzero.me/
Writer AI Content Detector	Detects AI-generated text	Writer AI Content Detector is a tool that can be used to detect AI-generated text. It is trained on a dataset of human-written and AI-generated text and can be used to identify text that has been plagiarised from AI-generated sources. **Application:** Plagiarism detection and content moderation **Link:** https://crossplag.com/ai-content-detector/

NB: Please note that the AI detector tools are not always accurate.

6. Risks and benefits of using ChatGPT in academic research and teaching

6.1. Benefits:

1. **Personalisation**: ChatGPT can be used to create customised learning experiences for each student based on their individual needs and abilities. This can help students stay engaged and motivated and can lead to improved academic success.

2. **Efficiency**: ChatGPT can automate repetitive tasks such as grading, providing feedback, and creating educational content. This can save teachers time and allow them to focus on more important tasks, such as providing individual support and instruction to students.

3. **Flexibility**: ChatGPT can be used to create various educational resources, such as interactive tutorials, study guides and online learning quizzes. This can make it easier for students to access the information they need to learn, regardless of their location or schedule.

4. **Adaptability**: ChatGPT can be used to create adaptive learning systems that can adjust to a student's performance and provide targeted support. This can help students stay on track and make steady progress in their learning.

6.2. Risks of using ChatGPT

1. **Overreliance on the technology**: However great the technology is, ChatGPT is still not a replacement for human thought, critical thinking, and problem solving. It is merely an advanced tool that can assist us in many ways as a species. It is important to consider academic rigor and critical reasoning when engaging in written text.

2. **Bias**: ChatGPT is trained on large amounts of data, some of which may contain biased or discriminatory language or ideas. This can lead to the generation of biased responses, which could potentially reinforce harmful stereotypes or discrimination.

3. **Inaccuracy**: Although ChatGPT can generate highly sophisticated responses, it could be more accurate and may produce inaccurate or misleading information. This can be

particularly problematic in educational or professional settings where accuracy is crucial.

4. **Lack of context**: ChatGPT generates responses based on the input it receives, but it only sometimes has the ability to understand the context in which that input is being used. This can lead to responses that are irrelevant or inappropriate.

5. **Dependence**: Relying too heavily on ChatGPT to automate tasks or provide information can lead to a loss of critical thinking and decision-making skills and a reduced ability to communicate effectively with others. This is linked to the first point of overreliance.

7. Conclusion

In conclusion, ChatGPT is a powerful tool that has the potential to revolutionise the way academics approach research, teaching, and curriculum development. By leveraging its advanced natural language processing capabilities, educators can create personalised learning experiences for students, automate repetitive tasks, and develop adaptive learning systems that can adjust to a student's performance. However, as with any technology, there are risks associated with using ChatGPT, including its limited contextual understanding, which can result in inaccurate or irrelevant responses, bias, and privacy concerns. It is important for educators to approach the use of ChatGPT with caution and to carefully consider the benefits and risks before incorporating it into their academic practice. With careful implementation and attention to best practices, ChatGPT can transform the academic landscape and enhance the educational experience for both students and educators.

7.1. Recommendations

1. Educate yourself on the limitations and potential biases of ChatGPT and use it in conjunction with other educational resources to ensure accuracy and contextual relevance.
2. Incorporate ChatGPT strategically into your academic practice, using it for tasks such as automated grading or personalised feedback while emphasising the importance of critical thinking and human feedback.
3. Continuously evaluate the effectiveness of ChatGPT in your academic practice, taking into account student feedback and making adjustments as necessary.