Lecture to Dialogues:
Make Your Lesson Materials More Engaging with ChatGPT

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What do your lesson materials look like?

Presentation slides

Lecture videos

FAQ sheet / Worksheet

Static & impersonal ⟶ **Low engagement**

What if…?

"Fictional Class"

- Increases learning gain
- Increases enjoyment
- Increases attention
- Decreases performance pressure
- Makes students think more deeply on the content

Tanprasert, T., Fels, S. S., Sinnamon, L., & Yoon, D. (2023, April). Scripted Vicarious Dialogues: Educational Video Augmentation Method for Increasing Isolated Students' Engagement. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (pp. 1-25).

Lecture videos + FAQ sheet

Lecture video (original video content) · Audience windows (characters' static profile pictures) · Vicarious emoji reaction · Scripted Vicarious Dialogues chat window · Progress bar of the video · Progress dots of Scripted Vicarious Dialogues · Button for progressing the dialogue to the next chat message

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What makes Fictional Class more engaging?

Different content format

- Paragraph text
- Bullet points

- Dialogues

Additional persona(s)

- Instructor
- Textbook authors

- Relatable student characters

GPT can turn your existing materials into dialogues with personas!

Example: Q&A to Fictional Class

[Question:] When should you conduct a study with a survey versus an interview?

[Answer:] A survey is suitable for when you want to reach a wide range of people but don't need high response rate. An interview is better when you need to probe deeply into a topic, as you can ask follow-up questions.

[Dialogue:]

Adrian: Let's discuss research methods. Can anyone tell me when you should conduct a study with a survey versus an interview?

Danny: I think a survey is better when you want to reach a large number of people.

Adrian: That's correct, Danny. But what about the response rate? Would you still use a survey if you need a high response rate?

Danny: Hmm, I'm not sure. Maybe not?

Katsumi: Surveys don't guarantee high response rates.

Adrian: That's right, Katsumi. And what about interviews? When do you think they would be more suitable?

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[Dialogue:]

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Danny: Hmm, I'm not sure. Maybe not?

Katsumi: Surveys don't guarantee high response rates.

Adrian: That's right, Katsumi. And what about interviews? When do you think they would be more suitable?

Example: Q&A to Fictional Class

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[Dialogue (continued):]

Jordan: If I want to ask a lot of questions?

Adrian: Yes, Jordan. But what kind of questions? Would you use an interview to ask yes/no questions?

Jordan: Probably not. Maybe when I want to ask more open-ended questions?

Adrian: Yes, that's part of it. But there's more to it. Can anyone else add something?

Katsumi: When you need to probe deeply into a topic.

Adrian: Exactly, Katsumi! You can ask follow-up questions in an interview to get more in-depth responses. Good job, everyone!

Example: Q&A to Fictional Class

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[Dialogue (continued):]

Jordan: If I want to ask a lot of questions?

Adrian: Yes, Jordan. But what kind of questions? Would you use an interview to ask yes/no questions?

Jordan: Probably not. Maybe when I want to ask more open-ended questions?

Adrian: Yes, that's part of it. But there's more to it. Can anyone else think of when we would need to ask more open-ended questions?

Katsumi: When you need to probe deeply into a topic.

Adrian: Exactly, Katsumi! You can ask follow-up questions in an interview to get more in-depth responses. Good job, everyone!

Overview

20-minute talk:

- What does a good Fictional Class dialogue look like?
- How to create it with GPT?

50-minute activity:

- Demonstration
- Try it out yourself!
- Reflection and discussion

10-minute Q&A

What does a good dialogue look like?

Persona design: THE ATTRIBUTES

- Role
  - Instructor or TA or students
- Identity
- Values and interests
- Knowledge proficiency
- Energy levels
- Speech styles

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These attributes can affect …

- Critical thinking
- Self-regulation
- Likeability
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What other attributes would be beneficial for a classroom dialogues?

Persona design: THE GUIDELINE

Relatable but distinct!

- To make the characters relatable, they have to be like real students
  - **Identity:** ethnicity, gender expression
  - **Knowledge proficiency:** asking deep vs basic questions, frequency of incorrect answers

- **BEWARE OF STEREOTYPES!**
  - If the cast size is small (e.g., 2-3 student characters), there is a risk of students associating a character's identity with knowledge proficiency
  - Making the characters representative of diverse identities means that a student may not relate to all characters equally.

Persona design: THE GUIDELINE

Relatable but distinct!

- To make the characters interesting, they have to be distinct
  - **Value and interest:** hobbies, perspectives
  - **Energy level:** reserved vs friendly, reactive vs proactive
  - **Speech style:** Formal vs casual, text and/or emoji, persuasive vs eristic

- **CHOOSE ATTRIBUTES BASED ON CONTEXT!**
  - For certain content and setup, some attributes are more <u>noticeable and impactful</u>
    - If the dialogue is a debate, characters should be distinguished by perspectives and debate strategies
    - Hobby can be very noticeable in small groups but not in large groups

Other considerations

- ## Specify pedagogical guidelines
  - Example: "the TA should let the students build upon each other's idea and not interrupt except to correct students' mistakes" / "the students should make mistakes sometimes" / How should the TA respond to mistakes?

- ## Make sure there is nothing "offensive"
  - Example: a student commenting on an instructor's appearance ("I like your hair!")

- ## Look out for extra content → hallucination
  - GPT may add contents on top of what you provide. These may or may not be correct

- ## Check for inherent biases in GPT model
  - GPT has been shown to have some biases (e.g., lean more towards liberal than conservative ideology), which may make it less effective for some subjects

How to create a good dialogue with GPT?

Two main methods

Prompting

vs

Training with examples

Prompting

- Tell GPT what to do!
- The prompt should consist of…
  - The context: "The scenario is a TA and three students are watching a lecture video together on Zoom. The TA pauses the video and asks a question …"
  - The personas: "The first student is called Katsumi Mori. She is reserved. The way she speaks is formal and concise …"
  - The characteristics of the conversation: "The TA should encourage the students to discuss with each other and not intervene unless the discussion goes out of scope. The students should make some mistakes in their responses …"
  - Any other considerations: "Don't include any information that isn't in the input text …"
- You will likely need to iterate on the prompt A LOT

Training with examples

- Show GPT what to do!
- Give GPT pairs of input / ideal output (written by you)
  - No need to describe the context, the characters' personas, or their dynamics - GPT will infer everything from the examples
  - The example dialogue earlier is based on 2 training examples
- You will need to play around with the model's temperature a bit
  - Temperature: how strictly the model adheres to the examples
    - Too high and the model may stick to the order each student speaks up
    - Too low and the model may make up new personas

Pros & Cons

Prompting

👍 No need to write an example

👍 You can adapt quickly for a new context (e.g., interactive)

👎 Prompts are HARD to get right
- Some attributes are difficult to describe and control in prompts
- Unless the attributes are extreme, the personas tend to be undistinguishable
- Output's quality may be inconsistent

Training with examples

👍 You can control everything in the output

👎 May be difficult to adapt to a new context (e.g., different subject)

👎 Writing good examples takes a long time
- You usually need more than three
- Output's quality depends on your dialogue writing skills

ACTIVITY TIME!

https://tinyurl.com/CTLTPlayground

Activity 1 (15 minutes)

Task: Improve the prompt!

Groups of 3-4 (randomly formed by breakout room assignment)

- Try refining the given prompt
  - Try making the three students distinct from one another
  - Try making the TA ask more leading questions instead of giving away the answers

- Try writing a few examples
  - Revise the given example to match the personas or guidelines that you describe in the prompt
  - If you have time, add examples! You can find more examples for training here: https://shorturl.at/csxMW

Activity 1 reflection (5 minutes)

- Any interesting dialogues to share?

- Pros and cons of prompting and training with examples?

- Do you discover any extra guidelines or factors to consider?

Activity 2 (15 minutes)

Task: Tweaking the input & output!

Individual (but feel free to discuss in your breakout room)

- Try changing the input to be something from your own materials
  - Doesn't have to be Q&A → How does the prompt have to change?
  - Try a content from different subject → Do the same examples still work?

- Try changing the output format
  - A discussion between the students with no TA?
  - A funny monologue by a famous historical figure?
  - A debate between two celebrities?

Activity 2 reflection (10 minutes)

- **What different inputs/outputs did you try?**
  - What do you have to modify in the persona design and prompt?
  - How well does it work?

- **What are some limitations of GPT for this task?**

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Questions?

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Key takeaways:

- GPT can help transform and personality to existing materials
  - Highlight specific content
  - Make the materials more interesting
- When designing personas, make them relatable but distinct
  - Be careful not to create stereotypes
  - Choose attributes to fit your context and content
- Use prompts or training examples to instruct GPT

PRESENTING THE PERSONA

- There are many ways to augment the dialogue presentation
  - Character profile pictures
  - Voice (text-to-speech)
  - Emoji (chat-like interface)

- **Beware that AI agents often feel "uncanny"**

<u>*Scripted Vicarious Dialogues:*</u>
Educational Video Augmentation Method for Increasing Isolated Students' Engagement

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