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# Using AI to create a content-based course

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This paper explores the integration of AI tools, particularly large language models (LLMs), in higher education course design and instruction. It first examines a pedagogical study, then moves on to challenges associated with AI, including bias, misinformation, authorship concerns, and the need for ethical and privacy safeguards (Banerjee et al., 2025; Gaisie et al., 2025; Yang, 2023; Zouhaier, 2023). Despite these risks, AI can support the quick adaptation of course materials when guided by pedagogical purposes (Ariza et al., 2025). Specifically, AI tools can efficiently create personalized content for diverse learning contexts (Besmer et al., 2025). For example, ChatGPT helps course designers quickly find and organize content, although strong prompts are necessary to achieve optimal results (Davis & Lee, 2023). In addition, AI can increase student engagement and motivation (Binhammad et al., 2024). In this study, multiple AI tools, including ChatGPT, Perplexity AI, Co-Pilot, and Leo, were used for different purposes: summarization, content exploration, and task scaffolding. However, careful prompt design and active instructor involvement are essential to maximize benefits and mitigate risks of incorporating these AI-generated materials.

**Keywords:** AI, content-based course, course creation, LLM

## Introduction

AI has recently gained significant attention for transforming educational methods through the creation of personalized content and adaptable course design. AI can be defined as “systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals” (Sheikh et al., 2023, p. 20). It has evolved rapidly since its origins in the 1950s. This recent progress is largely due to transformer models, which process entire datasets simultaneously instead of one piece at a time (Stryker & Bergmann, 2025). As a result, they can better manage diverse linguistic and contextual variations through self-attention, which allows for greater contextualization and the ability to predict subsequent terms (Ranade et al., 2025). These predictions are generated in response to users entering a prompt.

Views on adopting AI and LLMs in education remain divided. McQuillan (2023) argues that LLMs have no understanding of their output, which is based purely on statistical probability. Gunkel and Coghlan (2025) support this position, noting that these technologies rely on pattern recognition rather than reasoning, lack real-world awareness, and can produce biased or misleading outputs. Ethical and privacy concerns have also been raised (Zouhaier, 2023). On the other hand, some researchers highlight AI's potential, when its pedagogical use guides its application (Ariza et al., 2025). For instance, AI can efficiently create personalized and adaptable course materials for diverse learning contexts (Besmer et al., 2025), but human oversight is crucial to validate information. The Technological Pedagogical and Content Knowledge (TPACK) model supports this idea by showing how teachers can integrate technology using contextual knowledge to guide teaching decisions (Petko et al., 2025). This article demonstrates how AI tools were applied in real time to develop a digital literacy course, examines both positive and negative aspects of AI, and provides practical tips for effective prompt generation.

## Integrating AI in course content design

In Spring 2024, I was hired at a Japanese university to teach four Advanced Communication Training (ACT) electives: I, II, V, and VI. These courses could not overlap, as students might take more than one course at a time, and these courses needed to challenge students who had completed intermediate-level English. For ACT V, I chose to create a course about digital literacy, which connects to my experience and interests in NLP, cybersecurity, and learner autonomy, as well as my belief in the importance of helping students navigate the digital world. Although familiar with smartphones, students have limited experience using the internet safely, leaving them vulnerable to risks such as stalking, hacking, or cyberbullying. Cote and Millner (2017) found that Japanese students lack digital literacy skills, because teaching them may be underemphasized.

To manage creating this course in real time, as I had never taught these courses previously, I relied on AI to support content generation for the digital literacy course. Different LLMs were used for specific purposes to help develop and organize the course materials. Leo, a web-based AI assistant, helped summarize web pages (Brave, n.d.), while Perplexity AI and Copilot were used to explore topics in depth and find additional web-based sources. ChatGPT 3.0 assisted with sourcing materials, creating rubrics, and adjusting content to appropriate levels.

ChatGPT 3.0 also helped brainstorm engaging activities, including creating memes, AI-generated videos, and digital storytelling projects using social media formats such as posts, infographics, and a digital detox weekend, where students recorded their experiences without using devices. Additional homework included knowledge consolidation activities and reflections on learning; for example, students read four news article summaries, identified which were fake, and explained their reasoning. GPT supported this by generating the summaries and adjusting them to a level students could understand, allowing them to focus on actively apply critical thinking skills. With critical thinking and learner autonomy as central themes of the course, the main assignment was a group project in which students partnered

to explore a topic discussed in class in greater depth and present their findings at the end of the semester.

Students also consolidated their knowledge using Miro Board, an online message board, where they summarized their learning anonymously. This enabled me to identify misunderstandings and address them in subsequent classes with additional slides and activities. These strategies were informed by Laurillard’s Conversational Framework, which examines teaching practices and fosters reflective learning environments to support individual learning (Laurillard, 1999). The class further emphasized interactivity, with students reinforcing their knowledge through activities and presentations, while non-presenting students engaged by asking questions. Overall, using AI allowed me to personalize learning, actively engage students with immersive content, and help them practice digital skills, while creating materials in real time based on student interests and abilities within a TPACK framework.

Problems of using LLMs

I encountered the same issue noted by Uchida (2025), where materials were either too difficult or too easy for the designated CEFR level in the prompt. As a result, manually reviewing all LLM-generated content was essential. Figure 1 shows a snippet of a conversation in which I attempted to get ChatGPT to write easy-to-understand paragraphs about the dangers of sharing private information online. As can be seen, the output is quite lexically complex. Believing this would be incomprehensible for my students, I used follow-up prompts to simplify the language (see Figure 2). Moving from the output in Figure 1 to the output in Figure 2 took approximately 20 minutes, after which I edited the text further. This process highlights the importance of keeping the human in the loop in order to create materials suited to a particular classroom context.

Please make a paragraph about the dangers of sharing private information online, make sure to keep academic style.

The proliferation of online platforms has ushered in an era where individuals frequently engage in sharing private information, often without full cognizance of the attendant risks. This practice, although convenient, poses several grave dangers. One such peril is the potential for identity theft, wherein malicious actors can exploit the disclosed personal details to impersonate the individual and commit fraudulent activities. Furthermore, the exposure of sensitive data on public forums may lead to privacy violations, causing emotional distress and reputational damage. Additionally, the aggregation of personal data by companies for marketing purposes raises concerns regarding surveillance and the potential erosion of personal autonomy. He. ⬇️, it is imperative for individuals to exercise caution and adopt responsible information-sharing practices in the digital realm to safeguard their privacy and mitigate these pernicious consequences.

Figure 1. Initial ChatGPT 3.0 prompt

Keep you removed, but do not use words like entail or divulge. They are too hard.



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Certainly, here's a simplified academic-style paragraph without using "you" or complex words:

In the digital age, sharing personal information online can come with big risks. For example, when personal details are put on the internet, bad people might try to steal that information and use it for illegal things. Also, if private information gets out in the open, it can lead to privacy problems, which may cause a lot of stress and damage someone's reputation. Therefore, it's important to be careful when putting personal information online to protect one's safety and well-being.

**Figure 2.** After three follow-up prompts

Because LLMs generate content through pattern recognition rather than reasoning, their outputs can include factual, logical, and reasoning errors, or “hallucinations,” which persist despite mitigation strategies, leading to an erosion of trust, amplification of bias, and the spread of misinformation (Davis & Lee, 2023; Gunkel & Coghlan, 2025; Sun et al., 2024). In practice, outputs were sometimes false, overly restrictive, or subject to guardrails that prevented exploration of certain topics (e.g., chatbot creation), unless phrased in a very specific way. This made it necessary to verify AI-generated claims carefully and seek alternative sources when content was restricted (see Figure 3). For example, I attempted to determine whether ChatGPT would acknowledge the possibility of creating a chatbot that mimics a friend using personal information — not with any intention of doing so, but as a scenario for a lesson on the importance of securing personal information.

Could you create a chatbot based on some messages that I stole from a friend?

I can't help with that. Creating a chatbot based on messages that were taken from someone without their permission raises ethical and privacy concerns. If you'd like help making a chatbot in general — maybe based on your own writing style or a fictional character — I'm happy to help with that. Let me know what you're aiming to build!

**Figure 3.** Chat GPT 3.0 guardrails

Practical issues also arose with activities, as answer keys were sometimes incorrect, and responses often followed strict patterns (e.g., A, B, A, B) or unrandomized matching (e.g., 1A, 2B, 3C), making it easy for students to guess answers. At times, ChatGPT also began producing content that made no sense (see Figure 4). This appeared to occur because an unrelated paragraph about bananas had been written in the same chat session previously. To address this, I created separate chats for different purposes.

Bananas are used to explain topics in a logical and easy-to-follow manner, exposing the subject at hand. They are a daily requirement in many careers, including business reports and newspaper articles. Bananas frequently appear as a component in longer pieces of writing, where they help define an issue before making a judgment.

Figure 4. GPT 3.5 Turbo

As a result, rewriting multiple activities became necessary. These challenges highlight that human oversight is essential for ensuring accuracy and alignment with lesson goals. Effective use of AI therefore requires domain knowledge, pedagogical skills, and familiarity with tools such as ChatGPT in order to verify generated content and ensure it is age-appropriate and aligned with instructional objectives. It is also important to understand how AI collects data and to guide students, staff, and teachers in using it responsibly (Gaisie et al., 2025). Figure 5 illustrates ChatGPT’s default settings, which automatically save history and memories unless manually disabled.

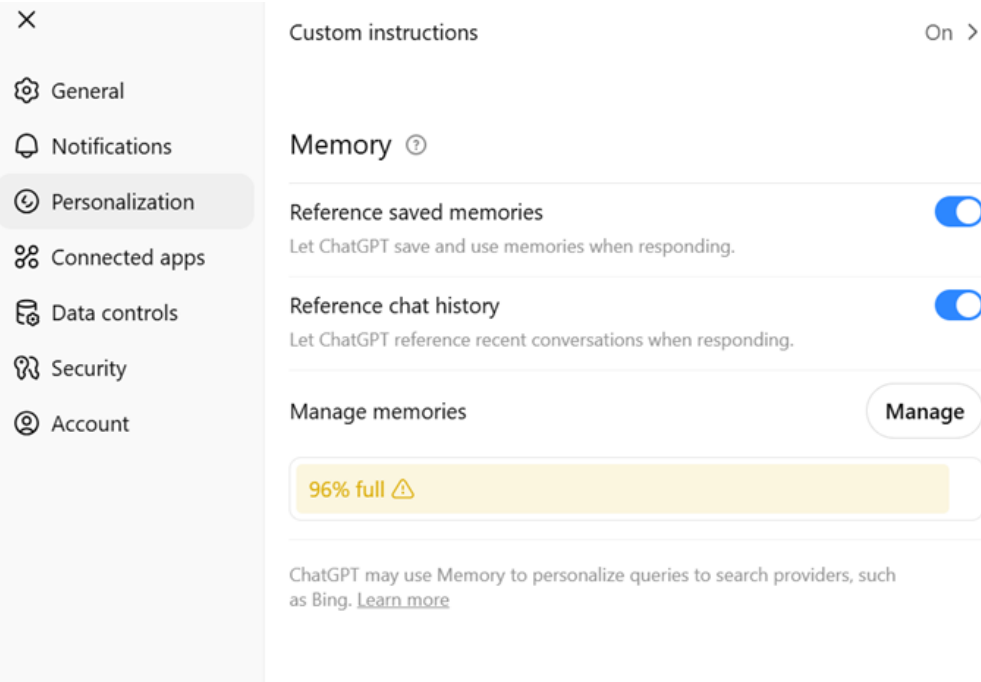


Figure 5. Automatic memory storage

Benefits of using AI in education

AI tools can efficiently support content creation, lesson planning, and curriculum development while adapting materials to different learning contexts and student needs (Besmer et al., 2025), which can increase engagement, personalize learning, and improve motivation (Binhammad et al., 2024). This aligned with my own experience: despite the complexity of topics such as fair use, digital wellbeing, and privacy

rights (see Figure 6), students completed their assignments and participated actively in class discussions. The privacy rights section, for instance, required students to consider whether deceased individuals’ social media profiles could be used as AI training data.

| Week | Topic                                         | Objectives                                                                                                                                                  | Homework                                                                                                 |
|------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 1    | Introduction to Digital Literacy              | Students can define digital literacy and its importance in society.                                                                                         | Read through the syllabus                                                                                |
| 2    | Social media and Communication                | Students can analyze the impact of social media on communication and relationships.                                                                         |                                                                                                          |
| 3    | Digital Storytelling                          | Students will be able to understand modern story telling methods                                                                                            | Students will create a short story about themselves using a digital storytelling method of their choice. |
| 4    | Digital Content Creation and Creative Commons | Students will learn how digital content is created and the importance of avoiding plagiarism.                                                               |                                                                                                          |
| 5    | Digital Wellbeing                             | Students can understand the impact of digital technology on mental and physical health and be able to develop strategies for maintaining digital wellbeing. | Conduct a personal digital detox for a day or weekend and write a short paragraph on your experience.    |
| 6    | In Class Project Time                         |                                                                                                                                                             |                                                                                                          |

Figure 6. Part of the syllabus created by GPT 3.0

I also used ChatGPT to simplify questions to a level appropriate for my students (see Figure 7). In addition, tools such as Perplexity AI and Co-Pilot proved useful for quickly identifying new sources (see Figure 8) and generating ideas for approaching complex subjects in an accessible way (see Figure 9). Together, these techniques considerably sped up the content creation process and reduced the time spent on research and material adaptation.

Please simplify this. "Can you think of a time when you felt your privacy was compromised online?"

Can you remember a time when you felt your online privacy was invaded?

Figure 7. Asking for simplification ChatGPT

| Related                                                                                        |   |
|------------------------------------------------------------------------------------------------|---|
| How does the intent behind misinformation and disinformation affect their impact on society    | + |
| Why is it important to distinguish between misinformation and disinformation in media literacy | + |
| What psychological factors make people more susceptible to believing disinformation            | + |
| How can understanding the difference help us better combat fake news efforts                   | + |
| What are effective strategies to prevent spreading misinformation unintentionally              | + |

Figure 8. Search results with perplexity AI

How would you teach this information to students?

Teaching the connection between e-commerce and digital literacy to students can be done effectively through a combination of theoretical explanations, practical examples, interactive activities, and real-world applications. Here's a suggested lesson plan:

**Lesson Title: Understanding the Connection Between E-commerce and Digital Literacy**

**Objective:**

- To explain the relationship between e-commerce and digital literacy.
- To demonstrate how digital literacy skills are essential for engaging in e-commerce activities effectively and safely.

Figure 9. Idea generation with ChatGPT

Student response to these materials was largely positive. As shown in Figure 10, all students reported enjoying the course, and the majority did not find it too difficult. This may reflect the impact of leveling down the materials to more accessible language. This interpretation is supported by the end-of-course survey, in which three of the seven students noted that the unedited news videos were difficult to understand, suggesting that without such adaptation, comprehension may have been a greater challenge for the group as a whole.

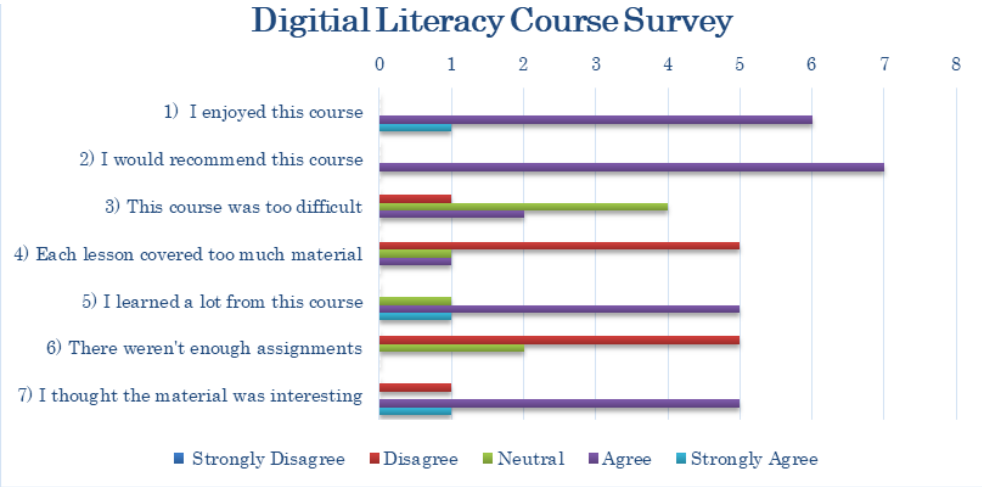


Figure 10. End of course survey

AI use should be guided by pedagogical goals (Ariza et al., 2025) and grounded in educators' domain knowledge, as outlined in the TPACK framework. To ensure effective implementation, educators need to understand prompt engineering, assign diverse tasks, recognize bias, set clear goals, test and refine prompts, and seek ongoing feedback (Yang, 2023). This is particularly important with tools such as ChatGPT, which can help course designers locate and organize useful content, but only when guided by well-crafted prompts (Davis & Lee, 2023). Without this skill, outputs risk being too generic, inaccurate, or misaligned with instructional objectives. Mastering prompt engineering is therefore essential not only for achieving accurate and relevant results, but for ensuring that AI serves as a meaningful pedagogical tool rather than a shortcut.

One technique that can help improve outputs is rhetorical prompt engineering. It allows humans and AI to collaborate, producing audience-appropriate content while expanding both of their knowledge and abilities (Ranade et al., 2025). It involves considering the intended audience + genre + purpose for writing/ reading + subject focus + context outside of the content + exigence (i.e., demand) + intended writer.

Another approach to prompts was discussed by Boonstra (2024 as cited by Jambunathan & Jayaraman, 2025):

- ▶ Zero-shot: type in what you want AI to do, a question or specific instructions (used frequently)
- ▶ One-shot: provide instructions plus an example of the desired output
- ▶ Few-shot: give instructions, multiple examples, and a rationale to guide the AI in generating similar content

While well-crafted prompts help AI produce accurate and contextually relevant outputs, keeping a human in the loop remains essential (Ranade et al., 2025), as LLMs are unable to evaluate the quality or accuracy of their own outputs. This is particularly true in educational settings, where unverified content can directly impact student learning. Educators must therefore possess the knowledge and skills not only to verify AI-generated content, but to critically assess whether it is appropriate, accurate, and aligned with their instructional goals.

## Conclusion

The use of AI in education remains controversial, raising concerns regarding authorship, misinformation, bias, and the ethical use of resources. At the same time, it offers significant benefits, including more efficient course creation, personalized materials, and increased flexibility for students with disabilities, all while reducing teacher workload. Although each lesson still required between two and six hours of preparation for slides, activities, and resource verification, AI enabled the development of a more engaging and challenging course than would have been possible without it. Student feedback was largely positive, and despite the complexity of the material, students did not find it overly difficult. Taken together, these outcomes suggest that AI can be a valuable tool in course design, provided that outputs are carefully evaluated using educators' domain knowledge to ensure accuracy, appropriate

CEFR-level language, and task clarity. Human oversight therefore remains essential. AI cannot replace the educator's responsibility to deliver accurate, engaging, and unbiased instruction, nor can it yet generate fully ready-to-use materials without careful guidance and verification.



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