

# Generative AI and Digital Learning Content Creation

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March 2024

<b>1. Executive Summary</b>	<b>3</b>
<b>2. Introduction</b>	<b>4</b>
<b>3. Literature review</b>	<b>6</b>
3.1 The benefits and drawbacks of Gen AI for teaching and learning	7
3.2 Generative AI and Content Creation	8
3.3 Generative AI and Content Creation	11
<b>4. Overview of current learning content creation tools</b>	<b>13</b>
4.1 Brief market overview	13
4.2 Generative AI powered course creation platforms	14
4.2.1 LearnWorlds Course AI Assistant BETA	14
4.2.2 Course AI	19
4.3 Tools for specific content creation	24
4.3.1 Overview	24
4.3.2 Custom GPT Alpha Notes	24
4.3.2 Alpha Notes experience review	27
4.3. Speechify	28
4.4 Generative AI Content Creation Start-Ups	30
4.4.1 Overview	30
4.4.1 Coursebox	30
4.4.1 Mindsmith	34
4.4.2 7 Taps	37
4.6 Generative AI Tools for Learning Design and Content Creation	39
4.6.1 Overview	39
4.6.2 Instructional Design Using Generative AI	39
4.6.2 Content Authoring Using Generative AI	42
4.6.2 Updating Existing Learning Content Using Generative AI	43
4.6.3 Considerations when Using Generative AI for Learning Design	44
<b>References</b>	<b>46</b>
<b>Appendix A - Alpha Notes custom GPT script</b>	<b>47</b>
<b>Appendix B - Use Cases</b>	<b>62</b>

This report was created by Learnovate at Trinity College Dublin.

## 1. Executive Summary

This report explores the possibilities offered by Generative AI in the area of digital learning content design, authoring, and creation.

Generative AI, the most recent evolution of artificial intelligence, allows computers to create content autonomously mimicking human creativity. Specifically for learning, this means it can be leveraged at each stage of the instructional design process - to create specific course content (such as images or videos) or to produce an entire course or learning resource including multi-modal content and assessments (both formative and summative, if required).

The possibilities offered by Generative AI could potentially revolutionise the field of learning content creation by reducing both the time taken and the skills required to produce polished, professional-looking material.

However, the content produced by the emerging range of Generative AI-powered tools must be closely and carefully examined from a pedagogical perspective to ensure that it adheres to best practice when it comes to learning design.

This report presents an overview of the landscape of tools that could be used by those creating digital content for learning (whether it's in the formal education sector or the corporate sector).

To demonstrate the practical application of these different tools, the report presents two 'use cases' showing how these tools could be used in 'real-world' learning situations.

The report also highlights the key issues to consider when using any of these tools: their limited understanding and potential bias as well as issues of privacy and confidentiality.

A key finding of the research for this report was that any Generative AI tool that is used for learning needs to incorporate sound, transparent pedagogic design principles. Most

importantly, this involves ensuring that the AI model used to develop the content has been trained and verified by subject matter experts in the field of learning design.

## 2. Introduction

This report looks at the possibilities afforded by Generative AI for the creation of digital learning content. Digital learning content can refer to an entire course or learning resource that includes text, images, videos as well as glossaries, quizzes and assessment. However, it can also simply refer to one element within a learning resource such as a video, a quiz or a voiceover.

In preparing this report, the researchers endeavoured to examine the use of Generative AI in both an educational context and also in the world of corporate learning. A key aim of the report was to examine the quality of any material produced by Generative AI from the perspective of learning design.

Learning design, in particular for online learning, is often associated by learners with clicking through a lot of lengthy content causing cognitive overload and superficial learning at best. Instructional designers and project managers know how time-consuming learning production can be, especially if the brief is to make it engaging. Exactly how time-consuming and costly it is to develop online content depends on the learning design approach, content modality and level of interaction. This LinkedIn article<sup>1</sup> provides a good overview of required resources to build an eLearning module based on the ADDIE learning design model, a commonly used model for instructional designers. In addition to content being slow and expensive to produce, learning assets like video and audio can be cumbersome to change or update, and learning content does not stay 'evergreen'. This can lead to long development

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<sup>1</sup> <https://www.linkedin.com/pulse/how-much-does-cost-develop-online-course-sergey-cujba/>

timelines and learning experiences that are not engaging, or worse, don't contribute to our learning and therefore don't meet the learner's or organisation's objectives.

Often, when decisions have to be made between efficient use of resources and high quality learning experiences, the emphasis is placed on resource efficiency. Not many organisations can afford bespoke online learning solutions, which has led to a prevalence of generic, 'off-the-shelf', 'one-size-fits-all' learning content, rather than customised learning experiences tailored to the specific context and needs of the organisation. Overall, it has perhaps led to a situation where most make the best of what is (relatively easily) available, and where the true potential of digital or online learning is not attainable or available to many.

Taking all of this into consideration, it is perhaps no wonder that generative AI feels like the long promised technical solution that will allow learning design to be better integrated with pedagogy best practice. Particularly assumed affordances of generative AI for learning and education include, but are not limited to, content creation (discussed in this report), personalisation of learning, assessment of student work, and creating immersive learning experiences. Whether or not these affordances come to fruition in the (near) future remains to be seen, but it does not seem that hard to imagine considering the speed of change. While everyone is keeping a close eye on major technical developments and progress in Generative AI, it is up to learning and development professionals and educators to figure out how generative AI can be practically utilised for learning now.

In this report we aim to provide an overview of the (current) Generative AI affordances that are specific to learning content creation (or generation). In the past year, a lot of work has been done to develop tools and supports for (learning) content creation. In reality, this report comes at an early stage of development with people still trying to understand how to make the best use of content creation tools in general and for learning specifically.

We have explored some of the literature on Generative AI-enhanced learning and education, and summarised the most relevant findings. These insights are followed with an overview of some generative AI tools currently available in the market. Many of the Generative AI

enabled tools are only finding their way into the market and we expect there will be many more developments in this space in 2024 and beyond.

The report concludes with a couple of use cases about how the generative AI technology available can be applied to common learning design challenges.

We hope this report provides enough insight and inspiration to embrace generative AI and embrace what is possible now to try it out. It is not a blueprint for creating learning content with generative AI tools. For all we know, a new development might make everything in this report redundant in a few weeks. However, as learning professionals we need to learn with and alongside generative AI technology if we want it to solve learning challenges in the future.

### 3. Literature review

#### 3.1 The benefits and drawbacks of Gen AI for teaching and learning

Generative AI, with ChatGPT as one of the market leaders, has the capability to perform complex tasks in a matter of seconds, and its capabilities and sophistication is growing continuously ever since it was launched into the public domain in November 2022 (Baidoo-Anu & Owusu-Ansah, 2023).

Generative Pre-Trained Transformer models (GPT-4), the AI technology that currently underpins tools such as ChatGPT, process large amounts of data (Natural Language Processing (NLP)) and transform this into writing that can be output as text (ChatGPT4) (Aydin & Karaarslan, 2023). The outputs are very human-like and can engage users in conversation. This capability makes it attractive for education and student learning.

Baidoo-Anu & Owusu-Ansah (2023), explored the benefits of ChatGPT in education by measuring its interactivity, the benefits of GenAI in advancing teaching and learning, and the drawbacks of using GenAI in education.

The synthesised advantages of GenAI for education and learning include personalised tutoring, automatic essay grading, language translation, interactive learning, and adaptive learning.

The drawbacks that were uncovered through the synthesis were the lack of human interaction, the limited understanding of GPT models, bias in training data, lack of creativity, dependency on data, lack of contextual understanding, limited availability to personalise instruction, and privacy.

These limitations stress the importance of the unique skill that a human teacher or tutor can bring to the learning process. It is important to be aware of generative AI's limitations and learn how to combine it with established teaching methods in order for it to be leveraged with success. Rather than replacing teaching, GenAI can be a powerful tool to complement

and support the unique skills of a teacher. Over time, the limitations may become more or less prevalent. More experimentation, collaboration and research over time will help educators manage these limitations in more nuanced ways.

Some ChatGPT capabilities that have been leveraged by educators and teachers include exam generation. Terwiesch (2023), found that automating tasks and processes with ChatGPT enabled educators to spend more time with students. Zhai (2022) conducted a complete study on ChatGPT which took 2 - 3 hours in total, much quicker than any other study. Thunstrom (2022) took things a step further again and leveraged OpenAI's GPT-3 to write an academic paper about itself and how it works. This paper (GPT et al., 2022) has been submitted to an academic journal. Additionally, Herft (2023) identified ways for teachers to integrate ChatGPT capabilities into teaching practice that include creating prompts for open ended questions and generating quality rubrics that can be used for assessment and student feedback; all really important elements of a good learning experience.

At the moment, generative AI appears to present opportunities and huge potential as well as significant drawbacks. For the moment, generative AI has severe limitations, and we cannot trust it to be truthful and robust and accept everything it generates at face-value. But while caution is required, the technology is developing and improving rapidly, and is here to stay.

### **3.2 Generative AI and Content Creation**

More often than not, learner engagement and entertainment is prioritised over the quality of the learning design, the *visual design and visual appeal of the interactions* of the learning experience takes precedence over the *instructional design and pedagogical value* of the learning activity. This can result in, for example, cognitive overload (where the learning experience includes information or imagery that might not be essential to the learning process, and that can actually distract from it because it is creating an overload of information to our working memory).



To avoid this phenomenon in mixed-media learning content, traditional instructional design has relied on elements of learning science such as Mayer's 12 Principles of Multimedia Design. Mayer's principles offer the following set of guidelines to assist in the design of learning content:

**Coherence Principle:** People learn better when any extraneous on-screen text, imagery or voiceover is excluded.

**Signalling Principle:** People learn better when cues that highlight the organisation of the essential material are added.

**Redundancy Principle:** People learn better from graphics and narration than from graphics, narration and on-screen text.

**Spatial Contiguity Principle:** People learn better when corresponding words and pictures are presented near rather than far on a screen.

**Temporal Contiguity Principle:** People learn better when corresponding words and pictures are presented simultaneously rather than successively.

**Segmenting Principle:** People learn better from a multimedia lesson that is presented in user-paced segments rather than a continuous unit.

**Pre-training Principle:** People learn better from a multimedia lesson when they know the names and characteristics of the main concepts.

**Modality Principle:** People learn better from graphics and narrations than from animation and on-screen text.

**Multimedia Principle:** People learn better from words and pictures than from words alone.

**Personalisation Principle:** People learn better from multimedia lessons when words are in conversational style rather than formal style.

**Voice Principle:** People learn better when the narration in multimedia lessons is spoken in a friendly human voice rather than a machine voice.

**Image Principle:** People do not necessarily learn better from a multimedia lesson when the speaker's image is added to the screen.

In the absence of the use of sound learning theory, and when no attention is paid to either visual or instructional design, it can lead to passive learning experiences that don't allow much space for learning and retention. They are often too simple to require meaningful cognitive effort which is what is needed for optimal learning and retention. Just getting all the information into a PowerPoint is not going to attribute much if anything to learning.

When using any Generative AI tool, it is essential to evaluate how well the content it creates can adhere to sound learning theory such as Mayer's 12 Principles.

Clark (2020) states that one of the real benefits of leveraging generative AI for learning is to trim the excessive engagement elements and ensure a laser focus on adapting the content to the essence of what the learner needs. This is done by excluding any unnecessary information, engagement and interaction elements that do not contribute to an active and deep learning process either by adapting content or creating new content from scratch.

Clark argues that rather than drawing the learner in by providing an engaging experience, the focus should be on learning and interacting with content that is essential to develop a skill or perform a task. Generative AI is very well positioned to help the designer focus on the core learning experience. It is very well suited to:

- Summarise: What is the core of the skill or task?
- Adapt content: Make the content suitable for a particular audience or context.
- Create content from existing resources: Edit a script, assessment question or image.
- Create open input for learning: Provide instant feedback to the learner.
- Create content from scratch: Provide the generative AI technology with smart prompts to create at least a first content version.

During our literature review and market research, we have not found a Generative AI learning solution or platform that can complete a typical instructional design cycle in a single environment. However, many Generative AI tools offer quick and efficient ways to complete

many different design tasks that used to take days and weeks. Scenario building, assessment questions, images, interaction design, and audio processing (whether text to speech or speech to text) can often be realised in at least basic form in a matter of minutes or even seconds. It frees up the instructional designer's time to focus on the development of a meaningful learning experience that is aligned with learner needs and contexts. Thus, the role of the instructional designer will evolve dramatically with the growth of Generative AI requiring the redundancy of certain skills now automated and the need to acquire new skills to effectively leverage this new technology.

An article in the Harvard Business Review cites the example of training materials for the legal sector where Generative AI could be used to continually update the content by incorporating new regulations and case laws<sup>2</sup>.

The article highlights how Salesforce already uses its Generative AI engine (called Einstein) to dynamically update its learning content.

### 3.3 Generative AI and Content Creation

While this report focuses primarily on the use of Generative AI for content authoring, it should also be noted that Generative AI can also be used by learning and development professionals to curate existing learning content.

Amongst the ways it can do this are:

**Content Discovery** - While traditional, rule-based AI can be used for content discovery, Generative AI can extract key concepts and elements from content to build a learning catalogue.

**Content Summarisation** - Generative AI can be used to summarise large quantities of existing content that can then be used to build learning resources.

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<sup>2</sup> <https://hbr.org/2023/12/how-genai-could-accelerate-employee-learning-and-development>

**Enhancing Content** - Generative AI could be used to add images and narration to existing content.

**Adapted Pathways** - Generative AI can present the content on different pathways for different levels and create supporting content for each user

## 4. Overview of current learning content creation tools

### 4.1 Brief market overview

The number of solutions in the market leveraging Generative AI to create digital learning content is growing and evolving rapidly. On the one hand, traditional solution providers such as Sana, Elucidat and Adobe Captivate have rolled out new product releases that incorporate Generative AI functionality. On the other hand many educators and learning and development professionals are using a wide range of emerging GenAI tools to create their own learning content. An example of this is using ChatGPT to create course content and using tools such as MidJourney and Synthesia to produce accompanying images and videos.

Furthermore, there are a number of start-ups focused specifically on developing 'one-stop-shop' GenAI powered solutions to create digital learning content.

These different GenAI solutions differ considerably with regard to how they leverage GenAI, what purpose they serve, and how they could be leveraged to create learning content. We have categorised the solutions explored as:

1. Generative AI-powered course creation platforms: these are effectively AI-powered Learning Experience Platforms (LXPs) that aim to provide a GenAI supported service to create a full online learning course or suite of courses.
2. Generative AI tools for specific (learning) content creation: these are GenAI solutions that are specifically targeted to support the learning process.
3. Generative AI Start-up tools: novel learning content creation solutions offered by start-up organisations.

These market segments were identified during an initial exploration of the market offering and do not provide a full picture of the tools that are out there, but they each represent a specific content creation concept we aim to highlight.

## 4.2 Generative AI powered course creation platforms

Over the last number of years, many long-established tools for digital learning content development have added a range of AI-powered functionality - whether it's to streamline the enrolment process or personalise the learner's pathway. Many of these are now incorporating Generative AI to automatically create learning experiences.

Evaluating exactly how these AI features work can be significantly hampered because access to this advanced functionality is only available on request, requiring a business development oriented conversation or requiring a paid-for subscription.

### 4.2.1 LearnWorlds Course AI Assistant <sup>BETA</sup>

An example of how established learning technology market leaders are adapting their products to incorporate generative AI, is Learnworlds Learning Management System (LMS). Learnworlds is a highly rated LMS<sup>3</sup> that allows organisations and individuals to create, host and sell online courses.

Learnworlds have added an AI Assistant to the already existing Course Creation Wizard (Figure 1). The wizard helps create a course outline, learner profile, learning objectives, and even a preferred instructional method (Figure 2). The designer can build out the course from scratch or choose to generate the course elements through Generative AI (Figure 4), drawing in the content from OpenAI's ChatGPT 3.5 model.

How well the AI Assistant works in practice is difficult to establish as the full AI Assistant functionality that shows the generated content is a paid-for service and not included in the trial that we signed up for.

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<sup>3</sup> <https://elearningindustry.com/directory/elearning-software/learnworlds>

## Insights

We attempted to create a course with a trial account of the OpenAI platform, leveraging learning objectives from the DigComp 2.2 framework for digital skills development. The course builder wizard or AI Assistant offers many ways to customise your course, down to the level of how many modules and interactions you might like to address the learning objectives. One interesting feature is the option to choose to design your course in line with a number of well-known learning science theories and models, for example Kolb's Experiential Learning Theory (Kolb, 2014). This theory presents a 4-stage cycle for learning that can be summarised as: Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. You can see in Figure 1, that CourseAI attempts to provide learning content that mirrors Kolb's cycle of learning to some extent.

Whether or not the generated content is true to this particular theory is difficult to say because the output of Course AI's AI Assistant is not more than an outline of what a course could look like. The only content that is generated is an outline for a course. Building the actual content is up to the learning designer and will likely require many hours and many other tools.

This user experience leaves you feeling a little short-changed as the expectation set at the start is that the AI Assistant will actually create your course contents. It does not do that. At best, the assistant generates an outline for a course. There is value in that too, as it is often not easy to match learning objectives with learning activities and outcomes, however, we would not be tempted to use this platform as the AI capability feels 'slapped on' to the original content management tool functionality.

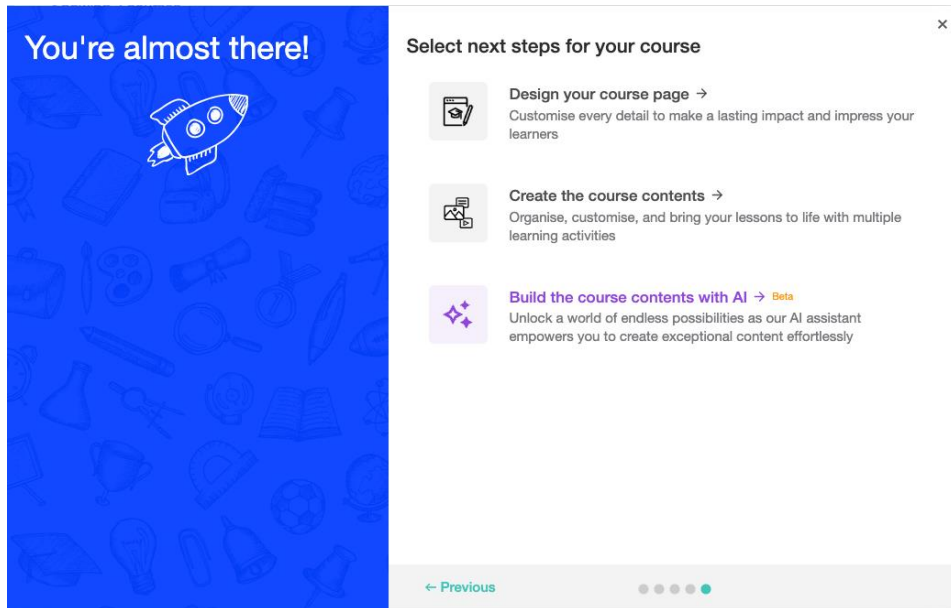
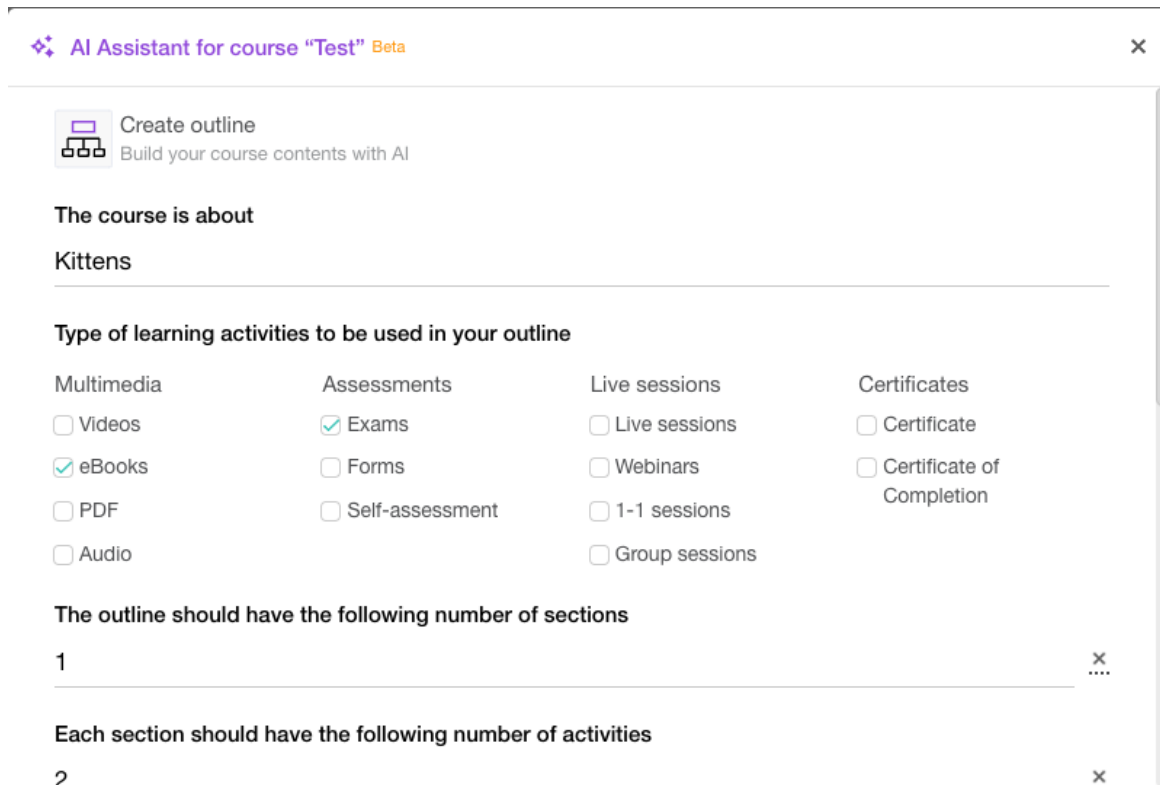


Figure 1: Learnworld course creation wizard including the AI Assistant.





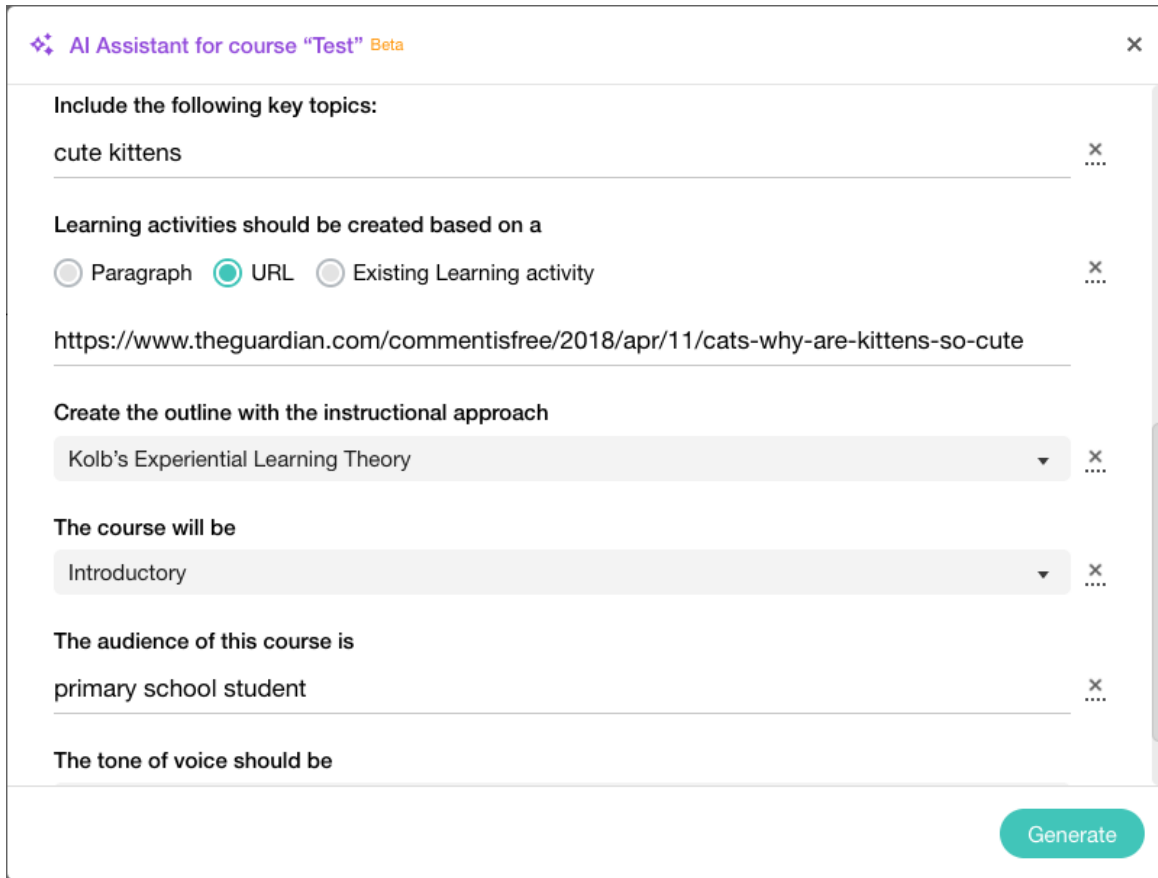


Figure 2a and 2b: Learnworld's course builder component options

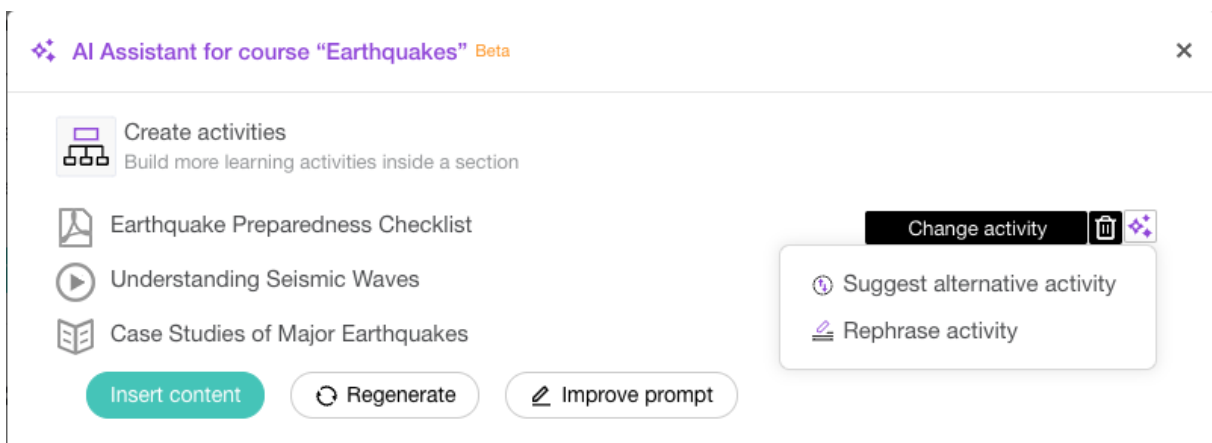


Figure 3: Learnworld's AI Assistant for content generation

## 4.2.2 Course AI

Course AI<sup>4</sup> is another example of an AI-powered course creation platform that allows a learning designer to quickly create an online course. Similar to Learnworld's solution, the application allows the designer to specify the topic of the course and leverage generative AI to create the learning objectives, module outlines, content outlines, as well as assessment and learner communication options (Figure 4).

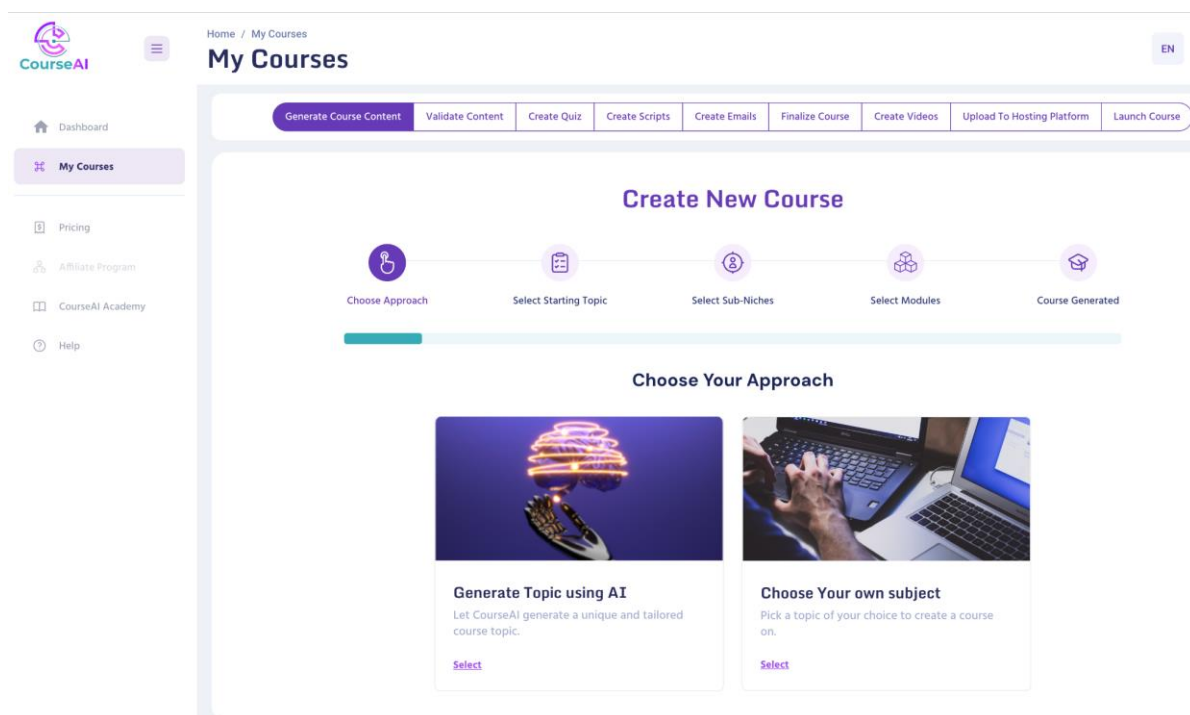
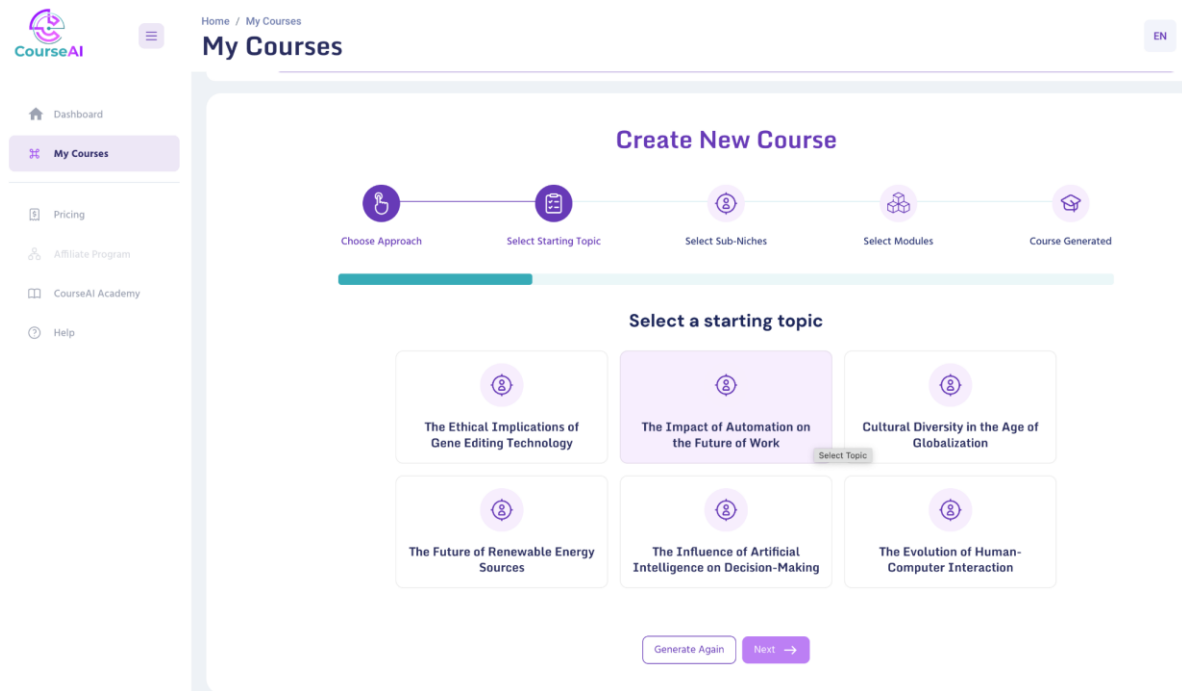


Figure 4: Choosing to generate a course topic in Course AI

The user can choose whether to generate a course topic using AI or choose a custom subject for the course. For the purpose of our exploration, we chose an AI-generated topic.

<sup>4</sup> <https://app.courseai.com/dashboard>



*Figure 5: Choosing an AI generated course topic in CourseAI*

Once a topic is selected, the user can choose the number of learning modules they want to create. In our example we kept it simple and chose to create one module. Once the initial course was generated, CourseAI presents the user with options to edit and validate the course content, create quizzes (manually or AI-generated), generate scripts for the learning activities associated with the module content, and prepare learner communication.

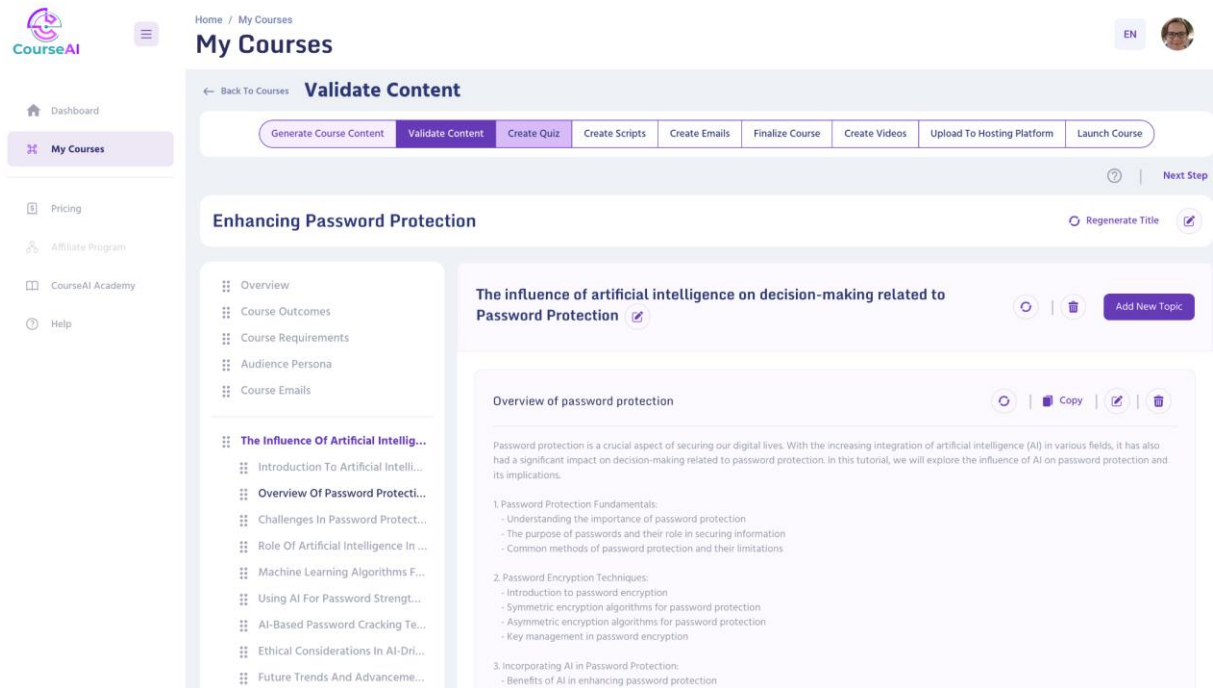


Figure 6: Course AI course editing options

## The influence of artificial intelligence on decision-making related to Password Protection

### Module Script

Regenerate Script



[Opening scene: Show a close-up shot of a person typing on a keyboard, indicating the importance of password protection in the digital age]

Host: Welcome to our online course on "Challenges in Password Protection in the Age of Artificial Intelligence." In today's digital landscape, strong password protection is more critical than ever. As someone who has experienced the challenges firsthand, I am excited to guide you through this tutorial where we will explore the challenges posed by artificial intelligence (AI) and discuss potential solutions. So, let's dive in!

[Scene transition: Show a split-screen with a user struggling to create a complex password on one side and an AI suggesting an easy-to-remember yet secure password on the other side]

Host: One of the biggest challenges in password protection is ensuring password complexity. While strong and unique passwords are crucial, users often struggle to remember intricate combinations of characters. However, AI comes to the rescue! AI algorithms can suggest secure passwords that are also easy to remember. Moreover, by analyzing the patterns users unknowingly follow when creating passwords, AI can provide feedback to enhance their security.

[Scene transition: Show a visual representation of multiple accounts connected through password reuse, and then an AI flagging and preventing password reuse]

Host: Another challenge is the tendency for users to reuse passwords across multiple accounts, which increases the risk of a password breach compromising multiple accounts. AI can aid in detecting and preventing password reuse by comparing newly created passwords against a list of previously used ones. It can also identify patterns to warn users about potential risks associated with password reuse.

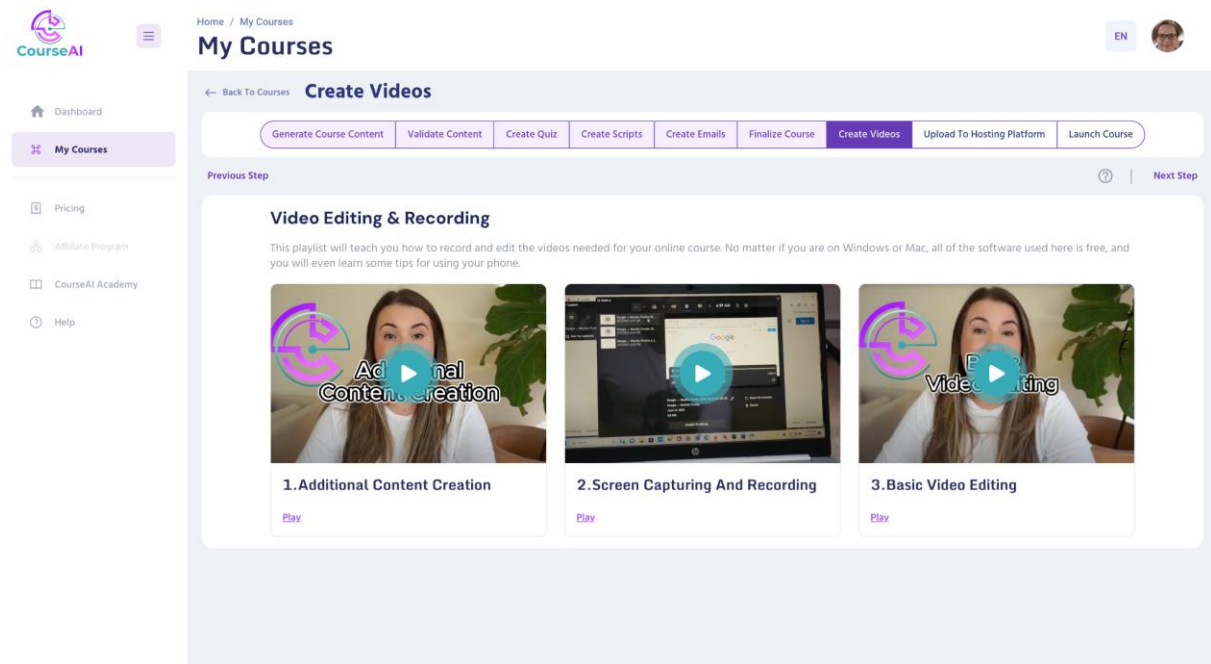
[Scene transition: Show a hacker using AI algorithms to predict user password patterns, followed by AI algorithms detecting and preventing predictive attacks]

Host: AI-powered predictive attacks pose a significant challenge to password protection. Attackers can use AI-driven algorithms to analyze massive data sets and predict patterns in user passwords. This is where AI defense mechanisms become crucial. By developing AI algorithms that can detect and prevent such attacks, we can stay one step ahead of hackers.

[Scene transition: Show a user typing on a keyboard while AI analyzes behavioral biometrics like typing speed, mouse movements, and touch gestures]

*Figure 7: AI generated script in CourseAI*

When the user has finalised the course outline, objectives, comms and scripts, the next step in the content creation process is 'Create Videos'. The video content creation process is not supported by Generative AI and the user is directed to instructional videos on how to create a screen recording video. A similar approach is taken to guide the user through the publication of the learning module.



*Figure 8: CourseAI video creation guidance*

## Insights

While CourseAI can support the learning designer by setting up the outline of the course, the user would still need to rely on other content creation tools before a full course is established. This is a very similar approach to the Learnworlds platform. There is a small difference and advantage to the content creation capability in CourseAI. Due to the integration of ChatGPT 3.5, content can actually be generated and integrated into the course design. However, it would still require editing and only applies to text content.

We argue that an experienced learning designer would not benefit hugely from a paid-for course creation platform like CourseAI as it does not add any additional functionality in support of the design process that for example ChatGPT could not provide on its own. Having said that, the tool does offer a structured way to approach the learning design which may be useful for some quick course generation that can then be edited and fine tuned, or for less experienced learning designers who want to get a start or generate some rough

ideas for their course design. Thus, the tool can be used by an instructional designer, in the first instance, for creating and validating the 'first draft' of a learning resource.

It could also be used by someone other than a learning designer who wants to be guided through the design process as quickly and efficiently as possible.

This leads to another observation we made about the CourseAI platform. The platform has the capability and is focused on monetising the generated learning course. A quick way to provide a 'school', fill it with quickly generated courses, publish them to the Internet and generate income from course sales. This concept seems to be working in a similar way as content creation platforms to generate social media content and does not give the impression that learning science is considered.

## **4.3 Tools for specific content creation**

### **4.3.1 Overview**

This section looks at the emerging selection of Generative AI-powered tools that offer only a single function - for example, creating a simple course outline or generating images, videos and voice recordings.

For creating digital learning content, these tools can be used for a specific purpose rather than creating an entire lesson or learning resource. Examples of this include generating a video to complement a course's text content or generating a voiceover to be added to a video recording.

### 4.3.2 Custom GPT Alpha Notes

The recent launch of the GPT store by OpenAI<sup>5</sup> offers the opportunity to explore custom GPT based solutions that have been created by what OpenAI refers to as ‘builders’. It has been rolled out to ChatGPT-Plus and Team and Enterprise users of OpenAI. Education is one of the custom GPT categories and offers lots to explore. At the time of writing this report, there were 12 custom GPTs available in the Education category. Some of the education solutions offer tutoring, some team Generative AI-related content such as prompt engineering. About half of the custom GPTs available offer help with specific subjects like Maths and Physics, and some are learning tools that help summarise or convert content from one format to another.

We tested Alpha Notes, which is a tool that promises to transform YouTube videos and Web articles into a personal study guide or study aid.

Alpha Notes was asked to generate a lesson plan for a primary school teacher based on an educational video on natural disasters, floods in particular, that we found on YouTube.

The full transcript of the conversation with Alpha Notes can be found in Appendix A. Below we have outlined the prompts we entered along with an evaluation of the experience.

*Prompt 1: Can you generate a lesson plan for a primary school teacher based on this video?*  
<https://www.youtube.com/watch?v=HaEmlakO7f4>

Alpha notes provided us with a high-level lesson plan based on the content of the video. It was not very detailed, but the overall suggestions for student-teacher and student-student interaction looked quite good. We proceeded to ask Alpha Notes a second question in order to get a more detailed and practical lesson plan.

*Prompt 2:*

*Can you regenerate this lesson plan and explain each of the student-teacher and student-student interactions in more detail?*

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<sup>5</sup> <https://openai.com/blog/introducing-the-gpt-store>



This second prompt resulted in a well structured detailed lesson plan that a teacher could use as a basis for a lesson on floods.

Next we proceeded with a prompt to see if Alpha Notes could generate some concrete lesson content that could be used to assess student knowledge

*Prompt 3*

*Great, can you provide 15 multiple choice questions on the content on floods in the video?*

Alpha Notes provided the questions and without being prompted, seemed to focus them on a primary school audience, which is the intended audience of the YouTube video.

It did not provide the answer key for the questions, so we added a fourth prompt.

*Prompt 4*

*Can you provide the correct answers to these questions please?*

We now had a good outline for a lesson plan with both student - teacher and student-student activities outlined in detail.

Next, Alpha Notes was asked to provide some content for a presentation that the teacher would start the lesson with according to the lesson plan.

*Prompt 5*

*Can you also provide a summary of the video content that I can put in a PowerPoint presentation?*

Alpha Notes generated the structure and content for a PowerPoint presentation that could be easily imported into slides.

Next, Alpha Notes was asked to provide an image to accompany each of the PowerPoint Slides.

*Prompt 6*

*Can you generate an image to accompany each of these PowerPoint Slides?*

This was where Alpha Notes was not very well developed. In the first instance, it generated an image of multiple natural disasters, which did not answer the question in our prompt very

well. The prompt was then made more specific to emphasise a picture was needed for each slide.

*Prompt 7*

*Can you generate 10 images related to the content on floods in this video?*

As you can see in the appendix, Alpha Notes was not able to generate 10 images, it was only able to create one. Interestingly, it suggested its own prompt for generating the image, taking into account the audience and the content of the video. The image however, was probably not very suitable for use.

Both images generated contained incorrectly spelled words (e.g., Volanios instead of Volcanoes). This is likely because Chat GPT's text to image functionality is not as well developed as one might hope or expect.

#### **4.3.2 Alpha Notes experience review**

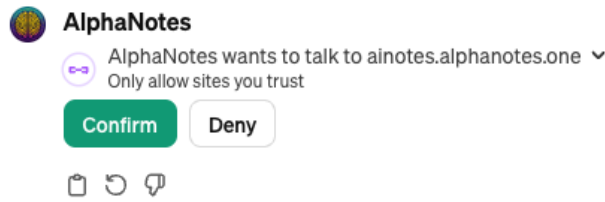
##### **Advantages**

Alpha Notes was able to use the content of the video and transform it into a plausible outline for a primary school activity. It very quickly provided materials, activity outlines and assessment tools that any teacher could probably take and run with. Perhaps some editing is necessary, but overall, this would require very little time for a teacher.

Another advantage of Alpha Notes is that it can be very useful for students and learners with accessibility issues as it can be used to provide them with material tailored to their needs.

##### **Disadvantages**

Before you can generate any content, you need to sign up for Alpha Notes with an existing email account and it is subject to a privacy policy. Then, each time you ask it to generate content, you have to confirm you want to go ahead with generating content (Figure 9).



*Figure 9: Content generation confirmation message Alpha Notes custom GPT.*

Because AlphaNotes uses any YouTube video, content which might be proprietary, questions need to be raised about Copyright, IP and usage policy of the original piece of content.

While AlphaNotes was able to cleverly use, summarise and structure the content of the video, it was not very good at generating images and perhaps also not the actual content for the lesson. The presentation slides content provided might provide a good starting point, but more work might be needed to develop the pedagogical content and value of the information provided. It has to be acknowledged that the prompts provided could be refined and improved, which may lead to different, better content.

In contrast, the activities proposed included a mix of student-teacher and student-student interaction that would benefit the learning process, including checking for knowledge, collaboration, assessment, and extended learning beyond the classroom.

### **In conclusion**

Overall, Alpha Notes provided a useful, well-structured lesson plan in less than 5 minutes, showing again that at least draft or first version content generation, even if not perfect, can be very quick and helpful.

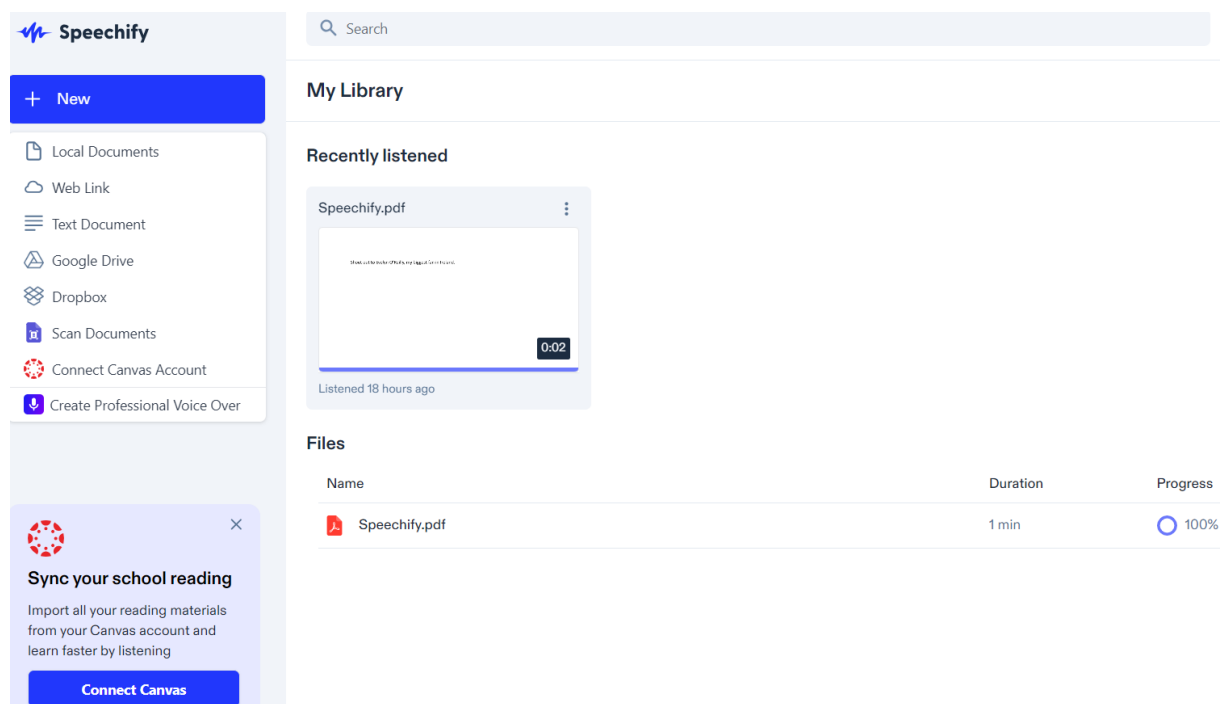
### **4.3. Speechify**

Speechify is an example of an AI voice generator and these emerging tools can have a number of applications for learning content creators:

- Text-to-speech: to automatically convert written text into audio
- Voiceovers: to add voice overs to video learning content
- Voice cloning: to create a custom voice that can then be used for various purposes in the learning content

Speechify offers all of the above functionality allowing the user to either select a voice from an existing list of voices or create their own custom voice.

The content to be used to create the audio track can be provided in a variety of formats: simple text, .pdf or a weblink.



*Figure 10: Uploading text content to Speechify*

Once the source content has been uploaded the user simply selects the voice to use and the audio track can then be generated. The audio file can then be downloaded as an MP3 file for use elsewhere.

The voices produced by this new generation of tools bear little resemblance to the robotic, mechanical voices of earlier generations. Speechify can also be used to generate audio using a variety of accents and emotions.

Other examples of AI voice generators include Murf, Lovo and Well Said Labs.

## **4.4 Generative AI Content Creation Start-Ups**

### **4.4.1 Overview**

The market for digital content creation tools has been dominated for a number of years by long established suppliers such as Adobe and Articulate.

However, the arrival of Generative AI has seen a number of start-ups entering the market offering a variety of innovative, AI-powered digital content authoring tools.

These new tools allow users to create a draft learning resource from source content provided in text or text and image form. These tools can be configured to produce a learning resource containing text, images, quizzes and assessments all generated by the AI engine.

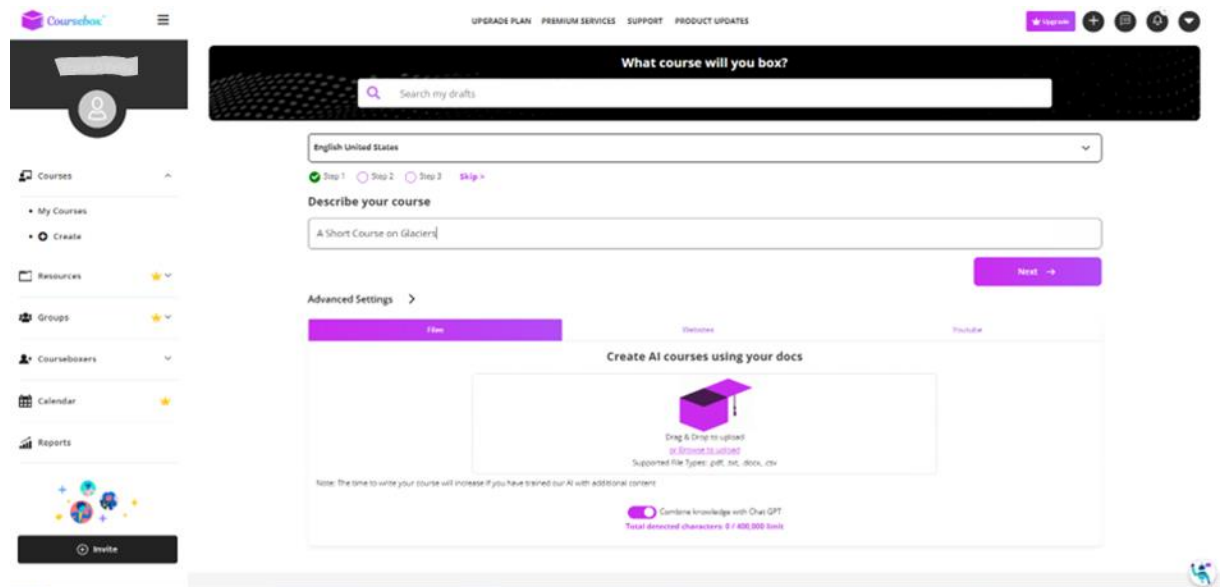
In comparison to tools like Adobe's Captivate which require considerable training and practice in order to produce professional-looking output, these new tools offer the possibility of producing draft learning resources that require only a minimum of technical expertise. Even by simply entering in a 'prompt', the user can produce a course outline in far less time than would be the case with traditional digital learning tools.

In compiling this report, a number of these tools were examined and, below, we present three examples of what is currently available on the market.

### **4.4.1 Coursebox**

Coursebox is a tool for developing digital learning content that boasts a comprehensive range of features.

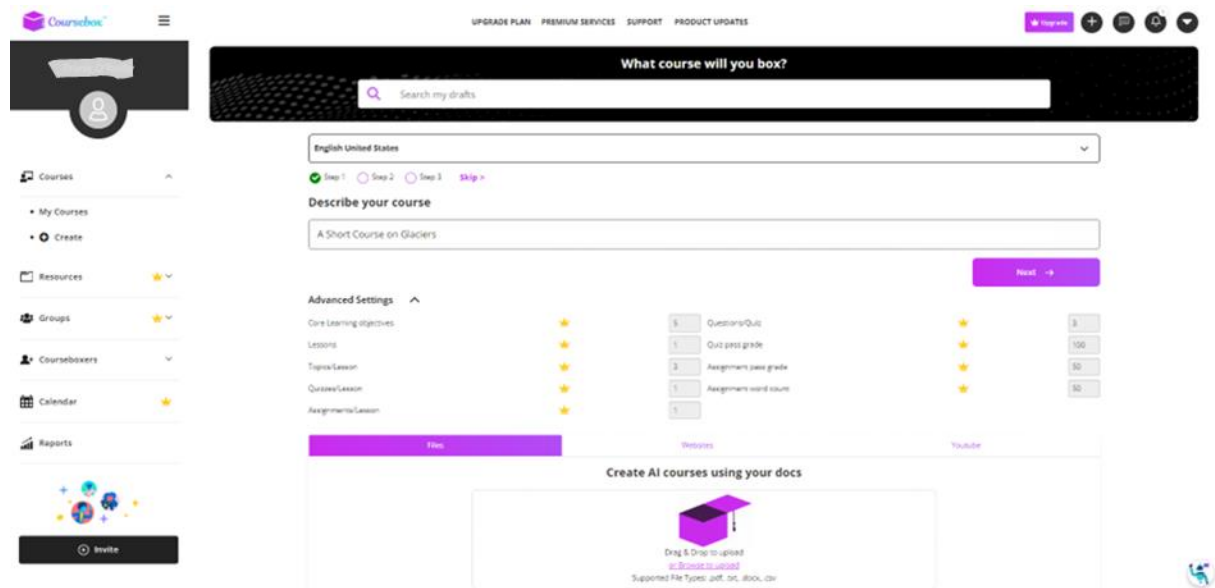
Course creation is a very simple process – you can drag and drop or upload content in .doc, .pdf, .txt, or .csv format. You can even ask it to generate course content using a website link. To create a course, the user provides a short description of the course, the desired length and the target audience.



*Figure 11: Uploading content to Coursebox*

An extremely powerful function in Coursebox is the option to combine the content you upload with content gathered by Chat GPT – this takes the form of a ‘toggle’ that can be switched on and off when required.

The Advance Settings for the course allow you to tailor the design of the draft course. Here, you can define the number of core learning objectives, how many lessons will be in the course, as well as the number of quizzes and assignments.



*Figure 12: Advance settings in Coursebox*

The generation of the course content is a two-step process.

Firstly, Coursebox generates a high-level overview of the course presenting each element of the course layout that can be edited. Once the user is satisfied with the course structure, they can then proceed with the second step of generating the full course content.

Course content is produced in a classic style with a navigation panel on the side. Pictures are automatically inserted using Pexels as a source.

Now owned by Canva, Pexels is an online platform that provides stock photos, images, and videos. Pexels is not a GenAI tool, therefore, it only offers content that has been uploaded to its platform – currently at over 3M files. Indeed, Pexels terms of use have been recently updated to include a statement that it doesn't allow content created using GenAI to be uploaded to its platform.

On Pexels, all photos and videos are free to use. No attribution is required, and photos and videos can be modified.

The screenshot displays the Coursebox interface for editing a lesson. At the top, there is a navigation bar with an 'Upgrade' button and the lesson title '1.1 Definition and types of glaciers'. On the left, a navigation panel lists course topics, with '1.1 Definition and types of glaciers' selected. The main content area features a lesson title 'Definition and Types of Glaciers', a welcome message, a definition of glaciers, and a list of types: '1. Alpine Glaciers' and '2. Continental Glaciers'. A photo of icebergs is included, with a credit to Pexels. The right-hand sidebar contains a 'Share something...' button and a 'No posts to show' message.

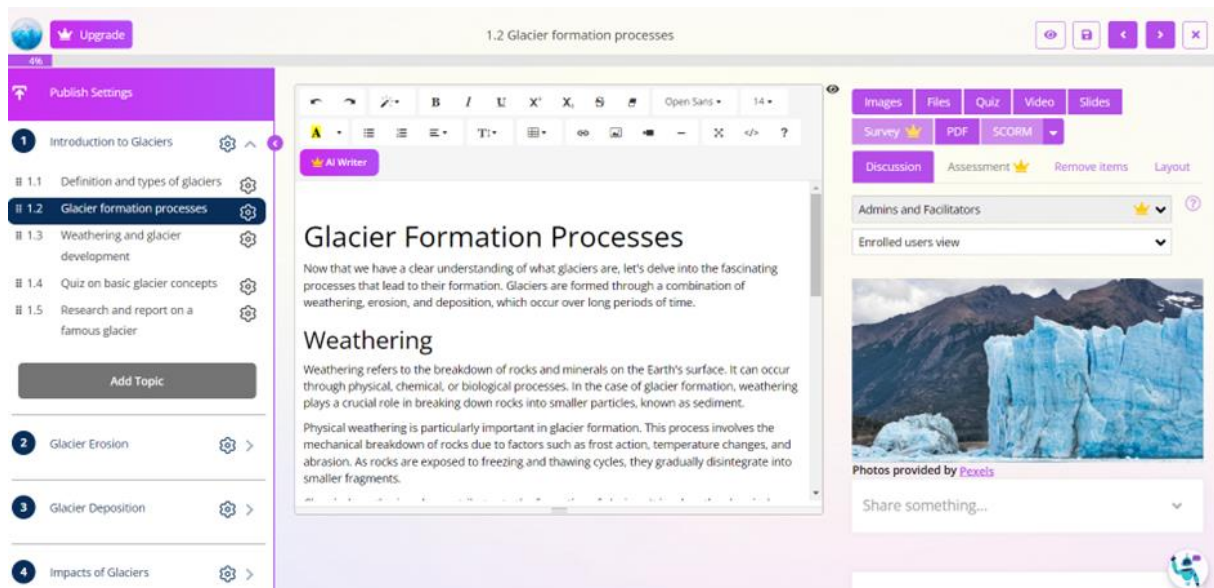
*Figure 13: Learning content generated in Coursebox*

Entering the Edit mode allows you to modify the course content in a variety of ways. On the Navigation Panel, you can modify the draft topics and layout or add additional topics to the course. Course content in the middle frame can be edited in the same way as a Microsoft Word document. On the right-hand side, there are a range of options available to the user. The proposed image can be deleted or replaced.

In addition, the user can upload additional learning material in the form of supporting files, slides, videos or links to external websites or resources. The user can also enable and configure a discussion group for the course and also create additional assessments.

An interesting option in the assessment parameters is the ability to enable AI Feedback that will use GenAI to provide specific feedback to the learner once they have completed the assessment.





*Figure 14: Editing content in Coursebox*

Once completed, the course can be deployed to learners in a variety of ways: as a url link, an iFrame or published to an LMS.

Coursebox incorporates much of the functionality that makes Generative AI such a powerful tool for digital learning content creation.

It allows the instructional designer to clearly and simply configure the lesson outline and objectives while at the same time offering a range of options for modifying the drafted content. The integration with LMSs is also a strong point.

#### **4.4.1 Mindsmith**

Mindsmith is a Utah-based startup that offers a digital learning content creation platform powered by Generative AI and using ChatGPT.

In Mindsmith, a lesson can be created either by entering a prompt explaining the lesson, or by uploading a file containing the source content.

In addition, the tool offers the ability to fine-tune the lesson generation by specifying the audience and style or by indicating the desired length and number of sections the lesson will contain.

The screenshot shows the Mindsmith interface for creating lesson content. It features several input fields and options:

- Instructions:** A text box containing the placeholder text "The instructions you want the lesson to follow; more detail is better".
- Audience / Style Guide:** A text box containing the placeholder text "Audience, narrative style, writing style, etc".
- Sources (optional):** A section with an "Add Sources" link.
- Language (auto-detected):** A dropdown menu currently set to "English".
- Length:** A dropdown menu currently set to "12 minutes - 5 Sections".
- Images:** A dropdown menu currently set to "All images".
- Hide Options:** A toggle button to collapse the options section.
- Buttons:** "Fine Tune Outline" and "Generate Lesson" buttons.

*Figure 15: Creating lesson content in Mindsmith*

The process of generating a lesson is single-step and the tool generates a lesson in the form of a slide deck that is navigated vertically.

In addition, the tool generates a Filmstrip panel which can be used to add, delete or move individual slides.

Mindsmith will also source and add images based on the options chosen at the initial lesson generation phase.

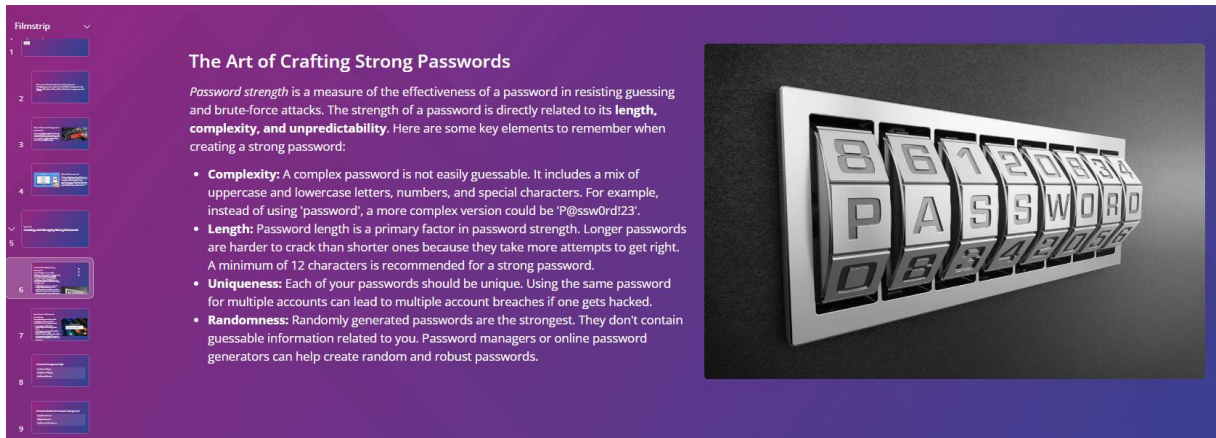


Figure 16: Lesson content created with Mindsmith

Mindsmith also creates a number of quizzes presented throughout the content.

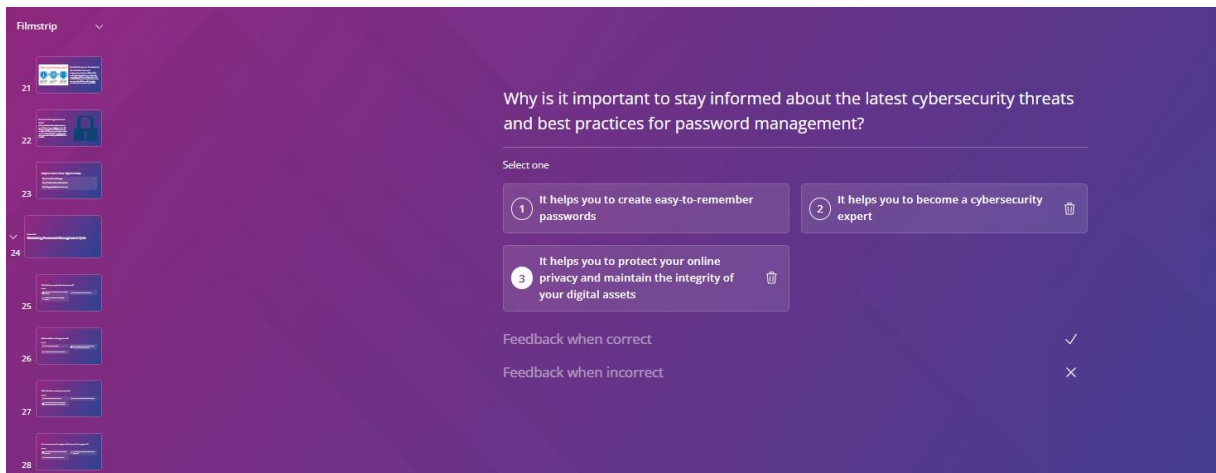


Figure 17: Example of quiz created in Mindsmith

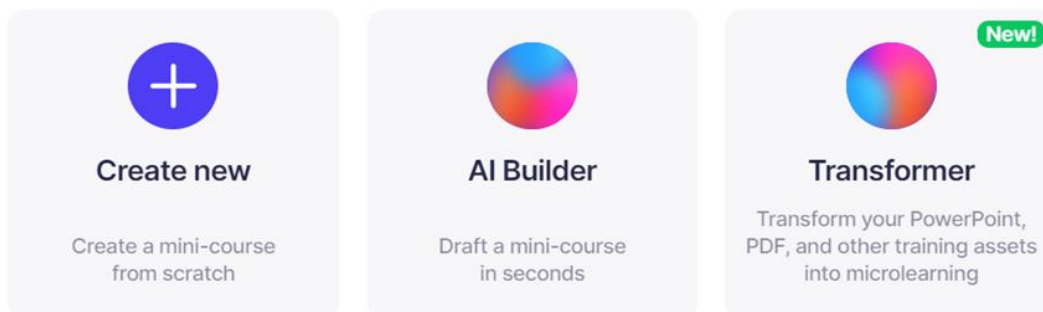
The user can edit any of the content in the lesson including text, images or quizzes.

Minsmith doesn't offer any LMS functionality but does offer dynamic interfacing using SCORM which means that any changes made to a lesson in the Mindsmith tool are automatically replicated on the LMS where it is hosted.

#### 4.4.2 7Taps

7Taps is an online tool that uses Generative AI specifically to create micro-learning courses.

The user can create a course in one of three ways, from scratch, using a Generative AI assistant to create the content using a prompt, or by uploading existing learning material.



*Figure 18: Content creation options in 7Taps*

Selecting the 'Transformer' option allows the user to upload pre-existing subject matter that can then be used to create a micro-learning lesson.

Creating a draft lesson with 7Taps is a single step and the resulting learning content is presented in one or more chapters (depending on the source material provided). Within each chapter, the learning content is delivered in the form of 'cards' that can be either text, audio, video or a quiz or poll.

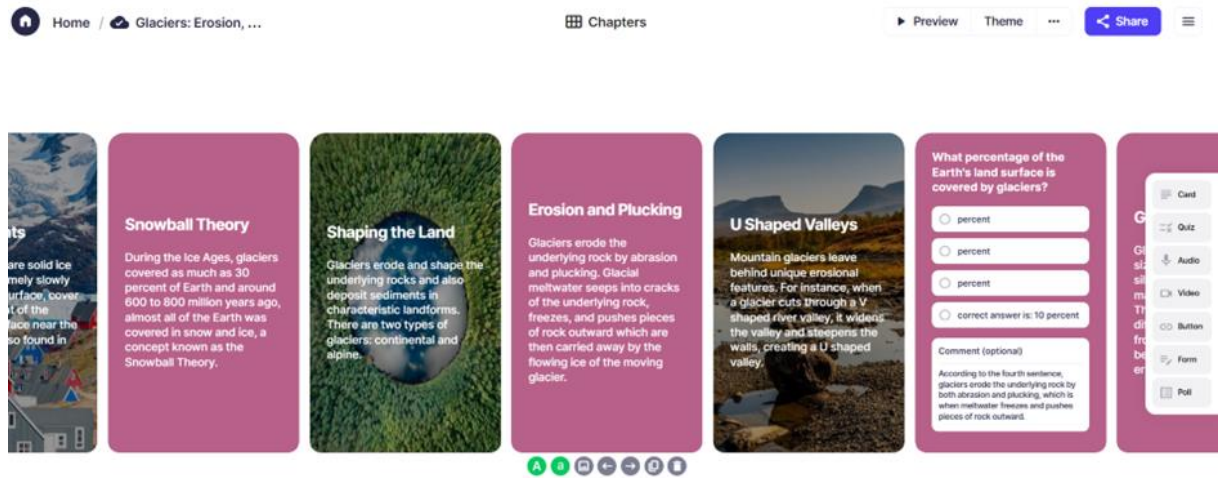


Figure 19: Content created with 7Taps

Each card can be edited or moved (or deleted completely) while new cards can be added from the side panel on the right.

In addition to the core learning content, the 7Taps tool automatically creates quiz cards that act as 'knowledge checks'.

The user can also embed links within a card (to internal corporate content or external resources).

The 7Taps platform is an example of a Generative AI-powered tool that offers a complete solution for learning professionals - from initial design to deployment and management via an LMS.

## 4.6 Generative AI Tools for Learning Design and Content Creation

### 4.6.1 Overview

Generative AI has the potential to be of use to learning professionals from the initial identification of the learning to the design of the different learning components and on to the creation of the required materials to effectively deliver the desired learning experience and achieve the desired outcomes.

Already, Generative AI tools can assist the instruction designer and the content creator at numerous points in the process of designing and producing learning content. Indeed, there are a growing number of solutions in the market that offer an end-to-end solution covering the whole production process<sup>6</sup>.

### 4.6.2 Instructional Design Using Generative AI

A common model used in Instructional Design is the ADDIE model (Analyse, Design, Develop, Implement and Evaluate) the aim of which is to guide the designer through a structured process (backed up by research) with the objective of producing a high quality learning experience that matches the learners' needs.

We will use the ADDIE model to briefly explore how Generative AI could be leveraged by an instructional designer at each stage in the learning content design process.

#### **The Analysis Phase**

Typically, at this stage in the process, the learning problem is identified and clarified. High-level learning goals are established and a profile of the target learner(s) is created to clearly identify their skills gap and corresponding learning needs.

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<sup>6</sup> <https://id-assist.co/>

Here, Generative AI could assist the instructional designer with a number of tasks:

- Analysing company data (from HR, LMS, IT and other systems) to identify skills gaps or training requirements and create a draft Learning Needs Analysis
- Build target learner cohorts (personas) using HR and LMS data to determine current skill level and associated gap(s)
- Generate a draft set of high-level goals for the learning project

### **The Design Phase**

The design phase is where the high-level learning goals are transformed into more detailed learning objectives as a clear picture of the learner and their needs has been built during the analysis phase.

At this stage, the type of content required and how each piece of content will be delivered (the media to be used) are described in detail. A clear learning pathway is design detailing content, exercises, assessments, as well as any other necessary learning resources.

Here, Generative AI could assist the instructional designer with a number of tasks:

- Generating a first draft of the learner journey outlining the different components of the learning resource
- Suggesting ideas for assessment instruments suitable to the content and learners

### **The Develop Phase**

During this stage, the instructional designer will work iteratively with the development team (content author, graphic designer, etc.) to produce the different pieces of content designed and blueprinted in the previous phase. Storyboards are often prepared at this stage by the instructional designer to clearly show what the finished learning resource should look like to the development team.

Here, Generative AI could assist the instructional designer with a number of tasks:

- Generating a first draft storyboard for the learning resource that the instructional designer could refine before presenting to the development team
- Generating additional content in the subject matter area to fill any gaps in the existing material
- Generating images, graphics or even videos to compliment the learning content
- Creating assessment instruments that could be modified and validated before incorporating into the learning resource

### **The Implementation Phase**

At this stage, the learning programme is ready to use, but will need to be rigorously tested before being deployed. Supporting material will need to be prepared such as a testing plan, resources for any tutor or facilitator, as well user guides and, potentially, explainer videos for the learners.

An implementation plan will also need to be prepared detailing how learners will access the learning resource, as well as how they will be tracked and analysed.

Here, Generative AI could assist the instructional designer with a number of tasks:

- Generating any supporting documentation for both tutors/facilitators and learners such as user guides and explainer videos
- Generating a test plan with accompanying test data where necessary

### **The Evaluation Phase**

After the wider deployment of the learning programme, its impact on the learners and the wider business needs to be evaluated. This step requires returning the high-level goals and associated learning objectives and carefully analysing whether these have been sufficiently achieved.

Particularly in the early stages of deployment, the evaluation phase is a critical step in identifying any areas of the learning programme that need to be improved.



Here, Generative AI could assist the instructional designer with a number of tasks:

- Analysing the learner data against the learning objectives to generate insights showing the impact of the learning programme on both the participants and the wider organisation
- Generating suggested changes to the programme design or course content based on the analysis of the learner data

The adoption of Generative AI tools within the instructional design community is already happening as a blogpost on the Learning Coach website testifies<sup>7</sup>.

An interesting observation from this list, and what confirms some of our research, is that there is a wide variety of tools that are used. For content generation, the tools listed are the largest generative AI platform providers such as ChatGPT, Bard, Claude and Bing Chat.

We speculate that this is because they have the most developed and powerful technology and Large Language Models (LLMs) supporting their services, generating the best and more useful resources for users.

#### **4.6.2 Content Authoring Using Generative AI**

Generative AI tools can be used to quickly create drafts of learning courses - and, in most cases, without requiring a deep understanding of AI.

Pre-existing material can be uploaded to a Generative AI tool which can then be combined with additional content generated by the AI tool to produce a draft course.

Many of the tools on the market now offer a sophisticated level of configuration that allows the content creator (or instructional designer) to specify a range of parameters for the course, such as overall length, number of sections, types of assessments and quizzes, as well as links to other resources (either within the organisation or on external websites).

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<sup>7</sup> <https://thelearningcoach.com/reviews/ai-tools-for-instructional-designers/>

Additionally, and significantly, the instructional designer can specify a learner profile to the Generative AI tool to create personalised and more authentic learning resources.

In an educational setting, the profile could incorporate such elements as a student's prior learning and exam performance while in a corporate setting, the profile could be built around the learner's specific role, past experience, skillset as well as any gap in the skills they need (or will soon need) in their current role.

By carefully specifying these profiles, an instructional designer can use a Generative AI tool to create custom content (such as scenarios and assessments) for multiple learners in a way that would be very time-consuming without the use of AI.

Indeed, the power of Generative AI can be used within the learning journey to refine the learner's profile and adapt the learning content dynamics depending on their progress and performance.

Overall, Generative AI offers huge potential to greatly simplify the task of delivering a personalised, adaptive learning experience. Furthermore, to collect material that can be used to create new learning resources, Generative AI can be used to curate, collate and summarise the best online resources to support the learning objectives.

Nonetheless, there are currently limitations to the capability of Generative AI to create certain learning material such as those requiring complex graphs or scientific equations.

#### **4.6.2 Updating Existing Learning Content Using Generative AI**

GenAI can be leveraged to take previously prepared learning content and bring it up-to-date in a number of ways.

Firstly, GenAI can create additional resources such as quizzes, flashcards, or reading lists that can be added to the existing content to provide a richer learning experience. GenAI could

also be used to create images or diagrams to support elements of the learning or even create graphical scenarios to offer authentic learning activities.

Secondly, GenAI can be used to bring content up to date in learning resources covering contemporary topics – such as history. Here, GenAI could be used to source new material that could then be validated and included in the existing learning resource to bring it up to date.

#### 4.6.3 Considerations when Using Generative AI for Learning Design

While Generative AI tools offer a huge potential in the area of digital learning content creation, there are some potential issues that should be taken into consideration.

A number of these from the research are worth highlighting (Baidoo-Anu & Ansah, 2023):

- **Limited understanding:** Since Generative AI models are based on statistical patterns in the data on which they are trained, they don't have a true understanding of the learning concepts.
- **Bias:** If the model used by the Generative AI tool contains biases, this will be reflected in the learning content produced.
- **Lack of creativity:** The Generative AI tools can only generate responses based on the patterns on which they have been trained which can limit their creativity.
- **Dependency on data:** Ideally, Generative AI models should be trained on a large amount of data and without access to this data, the quality of the content it can produce will be limited.
- **Lack of contextual understanding:** Until they have been sufficiently trained, Generative AI models can have limited ability to understand context and therefore produce irrelevant or even inappropriate content.

- **Privacy:** The privacy and security of any data processed by a Generative AI tool is a major concern

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## Appendix A – Alpha Notes custom GPT script

**Prompt 1: Can you generate a lesson plan for a primary school teacher based on this video? <https://www.youtube.com/watch?v=HaEmlakO7f4>**



AlphaNotes

Talked to ainoes.alphanotes.one

Lesson Plan: Natural Disasters

For Primary School

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Title: Natural Disasters Compilation | The Dr. Binocs Show | Best Learning Videos For Kids | Peekaboo Kidz

---

Objective:

To educate primary school students about various natural disasters, their causes, effects, and safety measures.

Materials Needed:

- Internet access to watch the video
- Art supplies for creative activities (papers, colors, glue, safety scissors)
- World map or globe

Lesson Duration:

Approximately 45 minutes to 1 hour

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## Lesson Outline:

### Introduction (5 minutes)

- Begin with a brief discussion on what natural disasters are and why it's important to learn about them.

### Video Viewing (15 minutes)

- Watch the "Natural Disasters compilation | The Dr. Binocs Show | Best Learning Videos For Kids | Peekaboo Kidz" video together in class.

### Discussion (10 minutes)

- Engage students in a discussion about what they learned. Focus on understanding floods, landslides, droughts, hurricanes, earthquakes, tsunamis, and volcanoes.

### Activity - Creative Arts (15 minutes)

- Safety Posters: Divide students into groups and assign each group a natural disaster. Each group creates a safety poster for their assigned disaster, highlighting key safety tips.
- Disaster Dioramas: Students can choose a natural disaster to create a diorama using art supplies, depicting the disaster and its effects on the environment.

### Geography Connection (5 minutes)

- Use a world map or globe to point out areas that are more prone to certain natural disasters, such as the "Ring of Fire" for earthquakes and volcanoes.

### Quiz & Review (10 minutes)

- Conduct a short quiz based on the video and discussion to reinforce learning. Include true/false, multiple-choice, and short-answer questions about natural disasters, their causes, and safety measures.

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## Safety Tips Highlight:

- Floods: Stay on higher ground.

- Landslides: Avoid building near steep slopes.
  - Droughts: Save water.
  - Hurricanes: Know the safe spots in your home.
  - Earthquakes: Drop, cover, and hold on.
  - Tsunamis: Go to higher ground immediately.
  - Volcanoes: Evacuate as advised by authorities.
- 

#### Conclusion:

Wrap up the lesson by emphasizing the importance of being prepared and knowing safety measures for different natural disasters. Encourage students to share what they've learned with their families.

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For more engaging educational content, visit Peekaboo Kidz on YouTube.

If you have any feedback or need more resources, feel free to connect with us on [Twitter](#) or join our [Discord community](#). Check out more tutorials and resources on [AlphaNotes](#), and explore our new AlphaNotes GPT for tailored educational support.

#### **Prompt 2:**

**Can you regenerate this lesson plan and explain each of the student-teacher and student-student interactions in more detail?**

AlphaNotes

Detailed Lesson Plan on Natural Disasters for Primary School

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Lesson Title: Exploring Natural Disasters with Dr. Binocs

Grade Level: Primary School



Duration: 45-60 minutes

Objective: Students will learn about various natural disasters, their causes, effects, and preventive measures through an engaging video and interactive activities.

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Materials:

- Internet-enabled device for video
  - Art supplies: colored paper, markers, crayons, scissors (with safety edges), glue
  - World map or globe
  - Quiz questions prepared ahead of time
- 

Lesson Outline:

Introduction (5-10 minutes)

- Teacher-Student Interaction: The teacher starts the class by asking students if they have ever heard about or experienced natural disasters. The teacher briefly introduces the concept of natural disasters as extreme natural events that can have significant impacts on people and the environment.
- Student-Student Interaction: Encourage students to share their thoughts or experiences in pairs. This fosters an environment of empathy and understanding.

Video Viewing (15 minutes)

- Teacher-Student Interaction: The teacher explains they will watch a video from "The Dr. Binocs Show" that explains different types of natural disasters. The teacher sets the expectation that students should pay attention to the causes and effects of each disaster, as well as any safety tips mentioned.
- Student-Student Interaction: None during this phase, as the focus is on understanding the content. However, students should be prepared to discuss the video content afterward.

#### Group Discussion (10 minutes)

- **Teacher-Student Interaction:** After watching the video, the teacher leads a group discussion by asking questions like "What is a flood?" or "How can we stay safe during an earthquake?" This helps to ensure comprehension and retention of the video content.
- **Student-Student Interaction:** Students are encouraged to share their thoughts and answers with the class, promoting a collaborative learning environment.

#### Creative Arts Activity (15 minutes)

- **Safety Posters & Disaster Dioramas**
  - **Teacher-Student Interaction:** The teacher divides the class into small groups and assigns each group a natural disaster. The teacher provides instructions for creating safety posters or dioramas, emphasizing the importance of including safety tips.
  - **Student-Student Interaction:** Within their groups, students collaborate to decide on the layout of their poster or diorama, discuss the key points to include, and distribute tasks. This activity promotes teamwork and creative thinking.

#### Geography Connection (5 minutes)

- **Teacher-Student Interaction:** Using a world map or globe, the teacher shows regions prone to specific natural disasters. This helps students understand the geographical aspect of natural disasters.
- **Student-Student Interaction:** Students are asked to work in pairs to identify one country affected by a natural disaster and share a fact about it. This encourages research skills and peer learning.

#### Quiz & Review (10 minutes)

- **Teacher-Student Interaction:** The teacher conducts a quiz with questions based on the video and discussion. This can include true/false, multiple choice, and short answer questions. It serves as a recap and assessment of what students have learned.

- **Student-Student Interaction:** Encourage students to discuss their answers with a partner before sharing them with the class, promoting critical thinking and collaboration.
- 

Conclusion:

- **Teacher-Student Interaction:** The teacher concludes the lesson by summarizing the key points learned about natural disasters. The teacher emphasizes the importance of awareness and preparedness to enhance safety.
  - **Student-Student Interaction:** As a closing activity, students form a circle and share one thing they learned today. This reinforces the day's lessons and builds a sense of community.
- 

**Extension Activity:** As homework, students can be asked to create a family emergency plan for one of the natural disasters discussed, enhancing learning application and family involvement.

**Reflection:** This detailed lesson plan incorporates various interactive methods to engage students in learning about natural disasters, encouraging both individual and collaborative learning experiences.

### **Prompt 3**

**Great, can you provide 15 multiple choice questions on the content on floods in the video?**

AlphaNotes

Certainly! Here are 15 multiple-choice questions based on the content about floods from the video:

What is a flood?

- A) A dry piece of land getting wet.

- B) An event when a dry piece of land suddenly gets submerged in water.
- C) A heavy rainfall that doesn't cause any harm.
- D) Only the overflowing of rivers.

What can cause floods?

- A) Light rains.
- B) Heavy rains, river overflow, tsunamis, hurricanes.
- C) A sunny day.
- D) Ice cream melting.

How dangerous can floods be?

- A) Not dangerous at all.
- B) Only a little dangerous if you don't know how to swim.
- C) They can knock your car off and sweep you off your feet.
- D) Floods are completely safe.

What are slow onset floods?

- A) Floods that happen quickly.
- B) Floods that develop slowly over days or weeks.
- C) Floods that only occur at night.
- D) Floods that are very rapid and dangerous.

Which type of flood develops quickly but still gives people a chance to escape?

- A) Slow onset floods.
- B) Rapid onset floods.
- C) Flash floods.
- D) Invisible floods.

What is the most dangerous type of flood?

- A) Slow onset flood.
- B) Rapid onset flood.
- C) Flash flood.
- D) Imaginary flood.

How quickly can flash floods occur?

- A) Within a week.
- B) Within 2 to 6 hours, sometimes minutes.
- C) In exactly 24 hours.
- D) Over a month.

What can help in preventing floods?

- A) Watching TV.
- B) Playing video games.
- C) Planting more trees.
- D) Nothing can prevent floods.

How do the roots of plants and trees help during floods?

- A) They look pretty.
- B) They create spaces in the soil to help seep and hold floodwater.
- C) They make the flood worse.
- D) They have no effect on floods.

Can floods occur in deserts?

- A) Yes, floods can even occur in deserts.
- B) No, floods only happen near rivers.
- C) Only when it snows.
- D) Floods never occur in deserts.

Why did ancient Egyptians rely on Nile River floods?

- A) For fun.
- B) To wash their cars.
- C) They created enriched soil for farmers.
- D) They didn't rely on floods.

What are the three categories of floods mentioned?

- A) Slow onset, rapid onset, and flash floods.
- B) Imaginary, real, and movie floods.
- C) Small, medium, and large floods.
- D) Indoor, outdoor, and underground floods.

Why is it important to plant more trees in flood-prone areas?

- A) To make the area look nicer.
- B) Trees can absorb a lot of water and prevent soil erosion.
- C) Trees can warn us when a flood is coming.
- D) It's not important; trees have no effect on floods.

What should you do if you hear a flash flood warning?

- A) Ignore it.
- B) Wait to see if it really happens.
- C) Prepare immediately and follow safety guidelines.
- D) Go outside to check the weather.

What is one way communities can reduce the impact of floods?

- A) By ignoring flood warnings.
- B) By building more swimming pools.
- C) By creating better drainage systems.

- D) By hosting annual flood parties.

These questions are designed to test understanding of the flood content in the video, focusing on causes, effects, and preventive measures related to floods.

#### **Prompt 4**

**Can you provide the correct answers to these questions please?**

AlphaNotes

Certainly! Here are the correct answers to the multiple-choice questions about floods:

B - An event when a dry piece of land suddenly gets submerged in water.

B - Heavy rains, river overflow, tsunamis, hurricanes.

C - They can knock your car off and sweep you off your feet.

B - Floods that develop slowly over days or weeks.

B - Rapid onset floods.

C - Flash flood.

B - Within 2 to 6 hours, sometimes minutes.

C - Planting more trees.

B - They create spaces in the soil to help seep and hold floodwater.

A - Yes, floods can even occur in deserts.

C - They created enriched soil for farmers.

A - Slow onset, rapid onset, and flash floods.

B - Trees can absorb a lot of water and prevent soil erosion.

C - Prepare immediately and follow safety guidelines.

C - By creating better drainage systems.

These answers reflect the key points made in the video segment about floods, emphasizing the importance of understanding, preparing for, and mitigating the impact of floods.

### **Prompt 5**

**Can you also provide a summary of the video content that I can put in a PowerPoint presentation?**

### AlphaNotes

Certainly! Below is a concise summary of the video content, "Natural Disasters compilation | The Dr. Binocs Show | Best Learning Videos For Kids | Peekaboo Kidz," suitable for inclusion in a PowerPoint presentation. This summary covers various natural disasters featured in the video, focusing on key facts and safety tips.

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#### Slide 1: Introduction to Natural Disasters

- Definition: Extreme natural events that significantly impact life and the environment.
- Importance: Understanding natural disasters helps in preparation and mitigation.

#### Slide 2: Floods

- Causes: Heavy rains, river overflow, tsunamis, hurricanes.
- Types: Slow onset, rapid onset, flash floods.
- Safety Tip: Plant more trees to absorb floodwater.

#### Slide 3: Landslides

- Definition: Displacement of soil, rock, or debris down a slope.
- Causes: Rainfall, earthquakes, volcanic activity, human interference.
- Safety Tip: Avoid building near steep slopes or edges.

#### Slide 4: Droughts

- Definition: Extended periods of deficient rainfall leading to water shortage.



- Types: Meteorological, agricultural, hydrological, socio-economic.
- Safety Tip: Conserve water - reuse for plants, take shorter showers.

#### Slide 5: Hurricanes

- Definition: Massive storm systems that form over warm ocean waters.
- Structure: Eye (center), eyewall (strongest winds), rain bands.
- Safety Tip: Know your evacuation routes and have an emergency kit ready.

#### Slide 6: Earthquakes

- Cause: Sudden release of energy in the Earth's crust creating seismic waves.
- Effects: Can lead to cracks, shaking of the ground, and destruction.
- Safety Tip: Drop, cover, and hold on during shaking.

#### Slide 7: Tsunamis

- Cause: Underwater earthquakes, volcanic eruptions, or landslides.
- Characteristics: High-speed waves that can grow in height near coastlines.
- Safety Tip: Move to higher ground immediately after an earthquake.

#### Slide 8: Volcanoes

- Definition: Openings in Earth's crust that allow lava, ash, and gases to escape.
- Types: Shield, composite, cinder cone, and lava dome volcanoes.
- Safety Tip: Evacuate immediately if advised by authorities.

#### Slide 9: Conclusion & Safety Measures

- Emphasis on awareness, education, and preparedness.
- Importance of emergency kits and plans for different disasters.
- Encourage: Learning and sharing knowledge on natural disaster safety.

This structured summary provides a clear and educational overview of each natural disaster covered in the video, suitable for a PowerPoint presentation aimed at primary school students or general audiences seeking to learn more about these phenomena and how to stay safe.

### Prompt 6

Can you generate an image to accompany each of these PowerPoint Slides?

AlphaNotes



Here's an illustration that accompanies the overview of various natural disasters for your PowerPoint slides. This image visually represents floods, landslides, droughts, hurricanes, earthquakes, tsunamis, and volcanoes, each within its appropriate environment. It's designed to be colourful, engaging, and informative, perfect for a primary school audience and emphasising the importance of understanding and preparing for these natural disasters. You can use this image to enhance your presentation and engage the viewers with visual learning.

## Prompt 7

Can you generate 10 images related to the content on floods in this video?

AlphaNotes

I can create one detailed image for you. Let's focus on illustrating the concept of floods as described in the video, capturing their causes, effects, and safety measures in a way that's educational and suitable for a primary school audience.

Prompt: "Create an engaging and informative illustration that depicts the concept of floods for a primary school audience. The image should visually explain the causes of floods, such as heavy rains, river overflow, tsunamis, and hurricanes, and their impact on the environment. Include elements that show the effects of floods, like submerged houses, displaced cars, and people seeking higher ground. Additionally, incorporate a safety measure, such as the importance of planting more trees to absorb floodwater. The style should be colorful, clear, and child-friendly, making it easy for young students to understand the seriousness of floods while also conveying a message of preparedness and resilience."

Let's proceed with creating this image.



Here's the illustration focused on the concept of floods, tailored for a primary school audience. It visually explains the causes, effects, and a safety measure related to floods in a colourful, clear, and child-friendly style. This image can be a valuable addition to your

educational materials on floods, helping to convey the seriousness of floods while also promoting preparedness and resilience.

**Closing comment**

Thank you

AlphaNotes

You're welcome! If you have any more questions or need further assistance, feel free to ask.  
Happy to help!

## Appendix B – Use Cases

### Overview

As part of the research for this report, Generative AI tools were used to explore two use case examples - one more relevant to formal education and the second more relevant to the corporate learning world.

The tools were chosen only to demonstrate the potential of Generative AI in the area of digital learning content creation. As such, their use here should not be seen as an endorsement from the Learnovate Centre.

## Use Case A - For Education

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### Proposed Course:

A short introduction to Earthquakes for second-level/high school students

### Source Material:

The source material was generated using OpenAI's free-to-use Chat-GPT3.

The following prompt was entered in to the ChatGPT dialog box:

"Can you give me a 1000 word article that explains earthquakes to a 14 year old school student?"

ChatGPT 3.5 ▾

The screenshot shows a chat interface with a user prompt and a generated response. The user prompt is: "Can you give me a 1000 word article that explains earthquakes to a 14 year old school student?". The ChatGPT response includes a title "Exploring Earthquakes: A Tremor of Earth's Restless Energy", an introduction paragraph, and a section titled "Understanding the Basics:" which begins with "To comprehend earthquakes, it's essential to first understand the Earth's structure. Our planet is made up of several layers, with the outer layer called the Earth's crust. Beneath the crust lies the mantle, and beneath that is the core. The Earth's crust is not one solid piece but is divided into large and small sections known as tectonic plates."

Figure 20: Source learning content generated using ChatGPT

The text-only content generated by ChatGPT was then copied into a Word document and saved.

**Generative AI Tool Employed:**


The Mindsmith tool was used to produce the lesson for this use case.

The 'Convert a Document' option on the 'Generate a Lesson' screen of Mindsmith was used to upload the previously saved Word document containing the source material for the Earthquakes course.

## Generate a Lesson ↻

Instructions **Convert a Document** Topic

Document\* [Add Document](#)



Click to upload or drag and drop  
DOCX, DOC, PPT, TXT, or PDF

Limit 15,000 words

Audience / Style Guide

Audience, narrative style, writing style, etc

Language (auto-detected) ∨  
English

Length ∨ Lesson Mode ∨  
12 minutes - 5 Sections Interactive

AI Model ∨ Images ∨  
GPT-4 All images

^ Hide Options

[Generate Lesson](#)

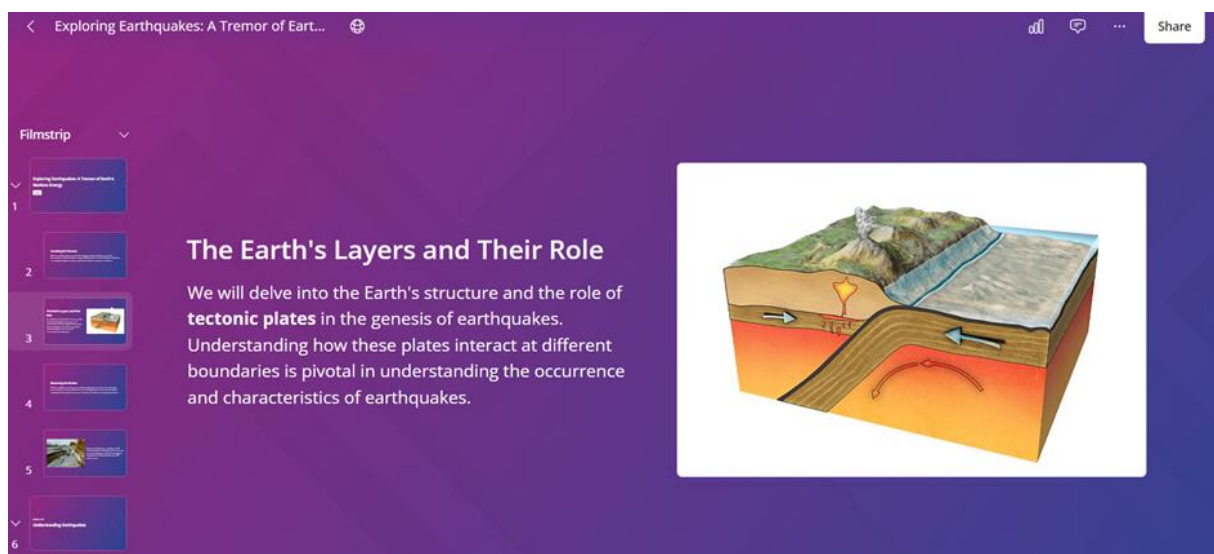
Figure 21: Content creation options in Mindsmith

The 'Audience/Style Guide' was left blank since the prompt used to generate the content in ChatGPT had already specified that the content was aimed at 14-year-old school students.



If, however, the content used had been previously prepared for an adult learning audience, then the 'Audience/Style Guide' dialog box could have been used to ask the Mindsmith to adapt the content appropriately. Similarly, if, for example, the lesson was being prepared for a group of students for whom English is not their first language, then this dialog box could be used to indicate that the lesson needed to use simple English.

After clicking the 'Generate Lesson' button, the Mindsmith tool produced a draft lesson<sup>8</sup>.



*Figure 22: Education use case content created with Mindsmith*

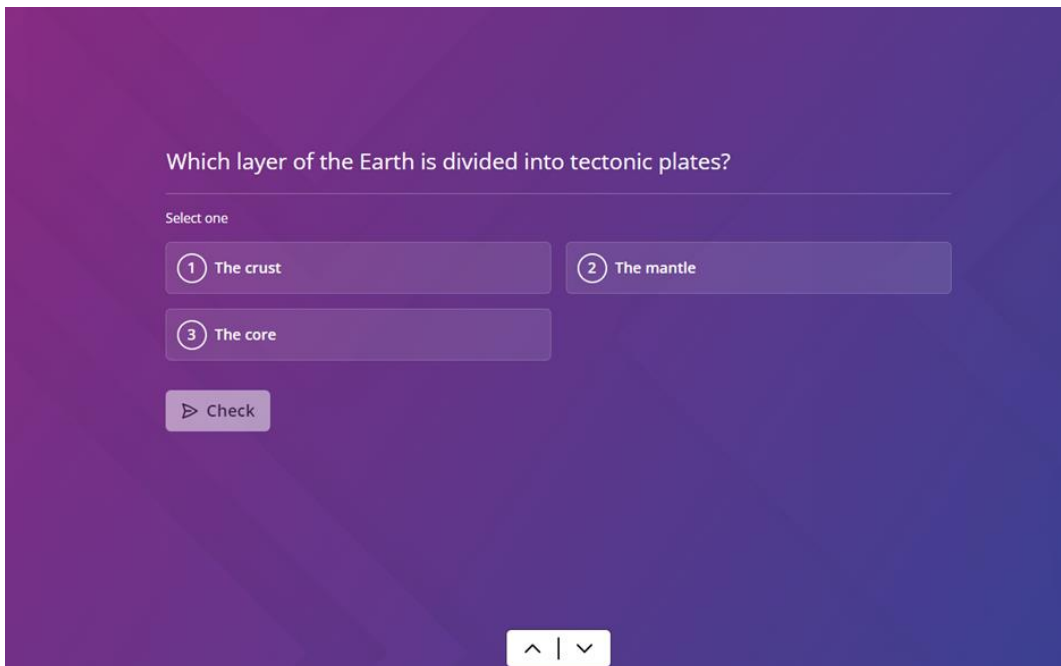
The lesson format created in Mindsmith takes the form of a set of slides that the user navigates vertically by clicking on up or down navigation buttons. Mindsmith also sources and adds relevant images based on the option selected on the 'Generate a Lesson' page.

Once created, the lesson content can be modified to change the text, images or even the layout of the course.

<sup>8</sup> <https://app.mindsmith.ai/learn/cls4igb8j00ygl108qa619d74>

In 'Edit' mode, each section of the course is presented in the 'Filmstrip' panel on the left-hand side of the screen.

In addition to creating a course with the requested length and number of sections (in this case, 12 minutes and five sections that can be configured on the 'Generate a Lesson' screen above), Mindsmith also creates accompanying quiz questions at the end of each section that act as 'knowledge checks' aimed at helping learning retention.



Which layer of the Earth is divided into tectonic plates?

Select one

1 The crust

2 The mantle

3 The core

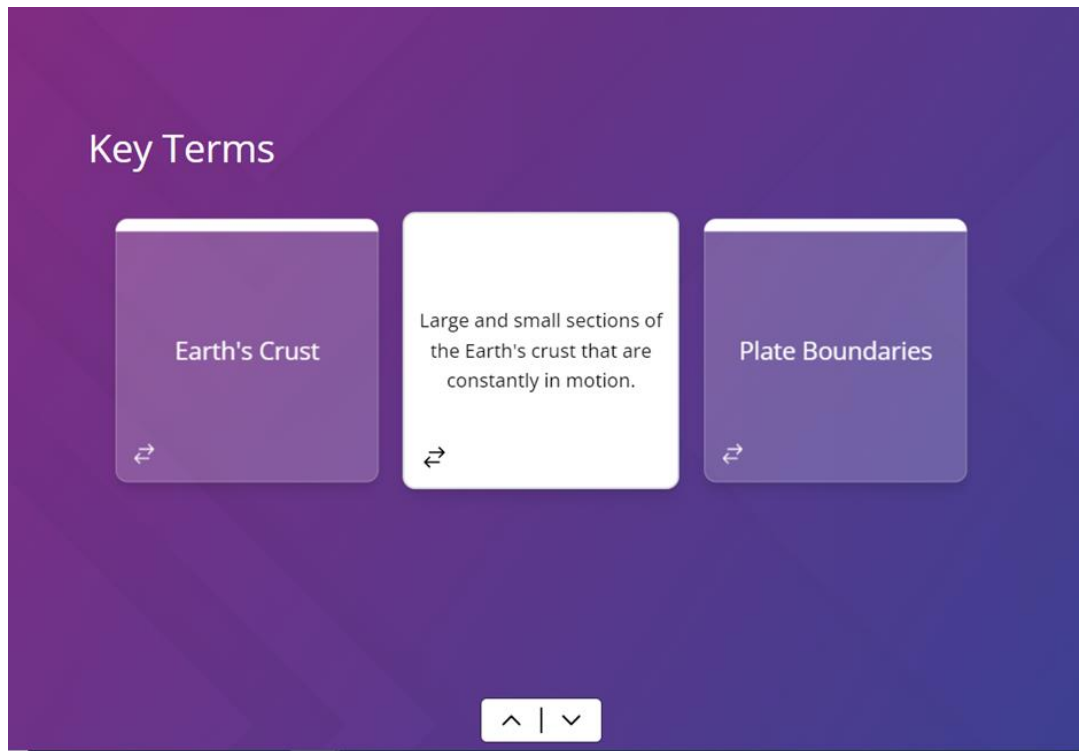
▶ Check

^ | v

*Figure 23: Content created with 7Taps*

The proposed quizzes can be edited to change the format, modify the options, or add additional answer choices.

Mindsmith will also extract the key terms from the lesson section and present them in the form of interactive 'Concept Cards'.



*Figure 24: Education use case concept cards created using Mindsmith*

### **What this Use Case Tells Us About the Potential of Generative AI**

Mindsmith and similar tools that use Generative AI to create digital learning content offer great potential for educators.

The ability to produce draft lessons in a very short space of time with limited technical know-how facilitates their use in a variety of situations and by a wide range of users.

Educators can now produce digital learning content simply by collecting the relevant subject matter into a text file (WMSWord, .pdf, etc.) and using a Generative AI tool to produce a draft lesson.

These tools can even be used to quickly and easily 'modernise' previously prepared learning content by quickly and easily adding images, videos or voice overs.

However, caution must be exercised when using any Generative AI tool to create learning content.

The quality of the course content produced by these tools should always be vigorously checked by the educator (who remains the subject matter expert).

Likewise, the pedagogic 'soundness' of these tools should be treated with caution until they can demonstrate that the Generative AI models they use have been robustly trained on sound principles of learning science, and that the lesson content they produce stands up to rigorous inspection. Automatically generated quizzes (or assessments) are meaningless if they are not clearly enhancing the learning experience.

Importantly, issues of intellectual property, copyright and privacy should be carefully considered when using any Generative AI tools.

It must be clear who 'owns' the generated learning content and what use can be made of it (commercial or otherwise).

Also, copyright issues over any additional material incorporated into the lesson by the tool (images, videos, external resources) must be thoroughly examined.

The privacy of any content uploaded to the Generative AI tool as well as any data produced by the learners must be taken into consideration.

There is also the question of bias to be considered - is the Generative AI model being used to create the content free from bias?

It should also be pointed out that, currently, not all of these tools have the functionality to analyse the learner data from the embedded quizzes and assessments making these elements operate as 'learning aids' rather than measurement tools.

However, a number of these platforms are developing this functionality as well as allowing integration to existing LMSs (using SCORM, for example).

## Use Case B - For the Corporate World

### **Proposed Course:**

A micro-learning lesson on Password Management for general adult audience/corporate employees

### **Source Material:**

The source material was generated using OpenAI's free-to-use Chat-GPT3.

The following prompt was entered in to the ChatGPT dialog box:

“Can you give me a 1000 word introduction to password management?”

The content generated by ChatGPT was then copied into a file and saved as a PDF.

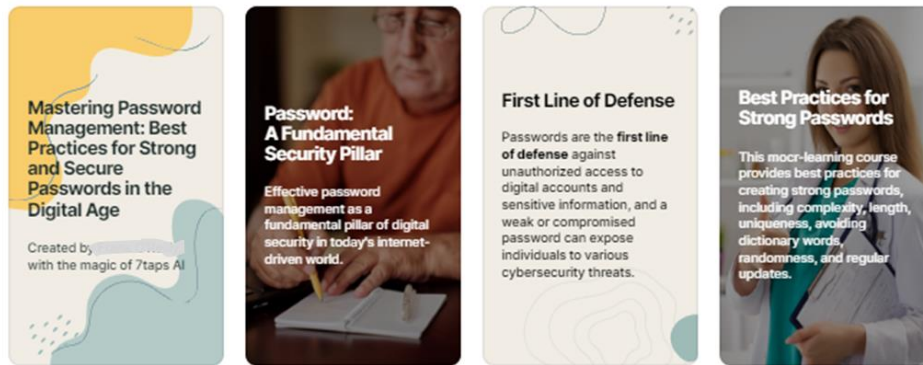
### **Generative AI Tool Employed:**

The Generative AI tool 7Taps was used to create a micro-learning lesson on the topic of Password Management.

The 'Transformer' option was chosen in 7Taps to create the lesson and the PDF file created in the previous step was uploaded to the platform.

The 7Taps tool then created a lesson composed of a single chapter and fifteen cards.

## Mastering Password Management: Best Practices



*Figure 25: Corporate use case learning content created using 7Taps*

The 7Taps platform optimises the learning format for a smartphone screen, however, the content renders perfectly well on a desktop.

Cards in the lesson can be edited, moved or deleted and new cards in a variety of formats can be added.

In this example, a link to the publicly information website has been added to a card to provide further information.



*Figure 26: Corporate use case learning content with external link*

The 7Taps platform is an example of a Generative AI-powered tool that offers a complete solution for learning professionals - from initial design to deployment and management via an LMS.

### **What this Use Case Tells Us About the Potential of Generative AI**

The 7Taps tool demonstrates how Generative AI can be incorporated into a simple, 'lite' platform that allows small 'nuggets' of digital learning content to be quickly drafted.

The editing facilities offer the learning professional the ability to easily change the format and content of the lesson demonstrating the potential of these tools to greatly streamline the content creation process.

As with all Generative AI tools, caution should be exercised when it comes to the quality of any learning content produced. The outputs generated need to be verified by a subject matter expert and the course design checked for pedagogic coherence. Also, the security and privacy of any data on these platforms needs to be assured.