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Shadow Podcasts: Exploring student perspectives of AI-generated supplementary learning materials

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ABSTRACT

This paper explores the use of AI-generated 'Shadow Podcasts' as a supplementary learning tool in higher education. Developed using Google's NotebookLM, the podcasts transformed lecture transcripts into short audio summaries, offering students an alternative means of engaging with course content. Deployed across five modules in two academic Schools within the Robert Gordon University, the podcasts were evaluated through a mixed-method survey of 85 students, combining quantitative ratings with thematic analysis of open-ended responses.

Analysis suggests the podcasts were well received, with most students rating them as good or excellent and noting improvements in their own engagement, understanding, and revision. The tool's conversational tone and ability to support multitasking distinguished it from traditional materials. Critiques centred on the artificial delivery, and lack of visual or detailed content. Students expressed interest in improvements such as more expressive voices, subtitles, video integration, and stronger alignment with assessments.

The study highlights the potential of generative AI to enhance educational experiences when used transparently and reflectively. While Shadow Podcasts are not being positioned as a replacement for live teaching, they offer a flexible, scalable, and engaging complement to existing resources. Future work will involve cross-institutional research and further exploration of the podcasts' impact on learning outcomes and curriculum design. This study contributes to the growing dialogue on pedagogically-grounded uses of generative AI in computing and business education.

Keywords: AI-generated podcasts, learning experiences, supplementary learning tools

Introduction

This study investigates the use of generative AI to create what we term 'Shadow Podcasts': entirely artificial podcasts narrated by non-human hosts. Designed to supplement traditional teaching, these AI-generated podcasts were piloted over a ten-week semester during the 2024–2025 academic year at a Scottish higher education institution, Robert Gordon University (RGU). The project team used Google's NotebookLM to produce the weekly Shadow Podcasts that transformed lecture materials into short, accessible audio segments.

These podcasts were based on transcripts from live lectures delivered during the semester. This ensured that the content remained current, relevant, and aligned with each lecturer's original delivery. It also minimised copyright concerns, as all material originated with institutional teaching staff. The primary aim of the initiative was to evaluate the Shadow Podcasts as tools for enhancing learning and recall. Unlike

standard lecture recordings or transcripts, these were posited to offer students a more casual and convenient way to re-engage with core content, that they had already had the opportunity to engage with fully in class and with complete Panopto video recordings of the entire lecture content available also.

It is important to emphasise that the Shadow Podcasts were not designed to replace lectures. Instead, they served as supplemental learning aids and were deployed across five modules in two academic Schools: the School of Computing, Engineering and Technology, and the Aberdeen Business School. This allowed the project to reach a diverse student cohort across undergraduate and postgraduate levels.

An important pedagogical dimension of the project was its unfiltered use of AI. Students were made aware that the podcasts were AI-generated and could include hallucinations or inaccuracies. Staff were instructed not to edit the content, encouraging consistent discourse and practice around the importance of critical engagement and the ongoing development of AI literacy skills, thus providing a secondary learning aspect to the resource.

Literature review

Podcasts in Education

The use of ‘traditional’ podcasts as a learning tool, specifically within higher education, is well-established. Early studies report that students appreciate the ability to review concepts at their own pace after having attended a lecture (Laing & Wootton, 2007; Lonn & Teasley, 2009), often leading to increased confidence in complex topics and a willingness to engage in more constructivist practice (Edirisingha et al., 2007). Over the past two decades, researchers have studied the efficacy of podcasts, noting improvements in student satisfaction and engagement (Do et al., 2024; Lonn & Teasley, 2009). Podcasts have been applied in a wide range of disciplines, with Fernandez et al. (2009) noting that they are "a complement to the traditional resources on a course, but not a substitute for them". Furthermore, Kurtz et al. (2007) show that these tools are most useful when they supplement traditional lectures, or are used as revision aids. Within computing education, podcasts have been leveraged in unique ways. Some instructors use podcasts to humanise the discipline, sharing industry interviews, career advice, or discussions on ethical issues in computing. Carvalho et al. (2009) describe a blended learning model where podcasts on networking theory complement on-campus labs. Student feedback in Computer Science and technical courses often highlights the value of podcasts for exam revision and clarifying code logic presented in lectures (Hernandez-Lopez & Mendoza-Jimenez, 2025). Pedagogical research suggests that podcasts can increase student engagement by offering alternative formats for content delivery and enabling learning beyond the classroom; however, it is noted that whilst high-quality and well-structured instructor podcasts have been linked to increased student understanding of key concepts, creating effective podcasts is a time-consuming endeavour that requires careful planning and production.

Generative AI in Education

There has recently been a significant shift in how AI technologies, particularly Generative AI, are perceived and used in society (Zyda, 2024). These tools have evolved significantly, transitioning from a challenging, error-prone discipline to a ubiquitous tool across diverse fields and contexts. They are now accessible to millions of users around the world at all levels of digital literacy (Ciampa et al., 2023), making them a crucial part of today’s digital landscape. The rapid advancements in deep-learning algorithms have greatly

enhanced the capabilities of large language models (LLMs), fostering a growing recognition of their potential reliability and utility in educational contexts (Beluzzi et al., 2024). Rather than viewing Generative AI tools as disruptive, many educators and institutions are beginning to embrace their transformative possibilities across curriculum design, teaching strategies, and assessment practices.

In the UK, several Higher Education institutions and policy bodies have proactively updated their frameworks to support thoughtful integration of AI, emphasising assessment innovation, academic quality, and integrity (QAA, 2023a, 2023b, 2023c). This shift highlights an emerging consensus that ethical and pedagogically grounded uses of AI can enrich the learning experience (Denny et al., 2024; Finnie-Ansley et al., 2022; Gabriel et al., 2024). While concerns around data privacy and responsible implementation remain, they are increasingly viewed as manageable challenges within a broader commitment to modernising education through AI (Smith et al., 2024; Zarb et al., 2024a). As institutional policies continue to evolve, the emphasis is gradually moving from risk mitigation to opportunity maximisation in AI adoption.

The integration of generative AI tools and technologies is introducing innovative ways of enriching both teaching and learning, particularly when it comes to fostering responsible and ethical use. Research highlights the value of these tools in supporting and enhancing student learning, particularly in understanding and scaffolding complex topics such as programming (Becker, Craig, et al., 2023a). Generative AI has demonstrated its value across a range of learner proficiencies, offering capabilities such as generating functional code from natural language prompts, explaining error messages, assisting with debugging, and suggesting coding self-tests (Becker et al., 2023a; Becker et al., 2023b). These capabilities signal a broader opportunity to reimagine the computing curriculum, from foundational concepts to innovative pedagogical strategies (Becker et al., 2023b). AI, whilst divisive, is starting to be seen as a tool to boost student engagement, support diverse learning needs, and foster the development of future-ready graduate attributes (Mahon et al., 2024). Some of the criticisms of AI-generated audio content thus far have included: that this content was found to cause "distraction, discomfort, and disconnectedness [..] due to low human-likeness" (Arkün-Kocadere & Çağlar-Özhan, 2024); “decreased trust, lower learning experiences and negative emotions” (Xu et al., 2025). Educators must take proactive steps to integrate AI thoughtfully, ensuring that academic integrity and meaningful learning remain at the core of this evolving educational landscape.

Method

Institutional Context

RGU offers a range of undergraduate and postgraduate degrees. This study was primarily carried out in the School of Computing, Engineering and Technology (SoCET). Two modules also ran in parallel across the Aberdeen Business School (ABS) and the podcast pilot extended across both Schools.

The study took place during Semester 2 of the 2024–25 academic session, spanning SCQF Levels 7 through 11 (ISCED 5-7) . For the purpose of this paper, we use the term “module” to indicate a single unit of study (usually 15 SCQF credits, equivalent to 7.5 ECTS) and “course” to refer to the full programme of study.

Podcast Generation

Google's NotebookLM (Google, 2023) enables users to generate AI-powered outputs, such as summaries, explanations, or even podcast scripts, based on uploaded documents and content. By uploading lecture transcripts and related materials, faculty were able to quickly produce weekly podcasts that reflected core course content. Prior to conducting the research, ethical approval for all parts of the study was obtained in accordance with RGU's institutional Research Governance and Ethics procedures, with approval granted by the relevant School-level Ethics Committee (Robert Gordon University, 2024).

Participating module leaders were provided with an overview of the initiative, a sample podcast for demonstration purposes, and were invited to explore Google's NotebookLM Privacy Policy (Google, n.d.). Once opted-in, staff uploaded transcripts of their lectures and, in some cases, accompanying presentation slides to their own secure instance of NotebookLM. All materials used were compliant with academic fair use, and informed consent was obtained from each contributing lecturer.

The podcasts were generated with minimal prompting. A standard prompt was provided to NotebookLM: "Make a short podcast (no more than 15 minutes) about the attached material." The outputs were not edited and were uploaded directly to the institution's Virtual Learning Environment (VLE) with the following text: "These podcasts were generated by NotebookLM with minimal prompting. No manual editing or review was performed before uploading. Please note that these podcasts are artificially generated and may contain inaccuracies, omissions, or misinterpretations typical of AI-generated content. You are advised to verify critical information independently using the material available to you."

At the start of the 10-week semester, students were introduced to the concept of shadow podcasts and were informed that these would form a weekly part of their learning environment. As part of this, staff encouraged ethical discussion surrounding appropriate AI use, hallucinations, and the critical role of human judgement in reviewing AI outputs. Student engagement with the podcasts was entirely optional. Podcasts were generated and uploaded weekly by the academic staff.

Questionnaire Design

To evaluate the use and perceived value of the podcasts, a questionnaire was issued to students across the affected modules. The sample drew from a diverse student population: the undergraduate cohort consisted of predominantly Scottish-domiciled students aged 18 to 23, while the postgraduate cohort included students from Nigeria, India, Pakistan and several other regions, all students on the participating modules were invited to take part in the study, and as such the sample was self-selecting, the demographic breakdown is presented in the following section.

The questionnaire was built using Microsoft Forms. The questionnaire design was reviewed in collaboration with academic colleagues to ensure clarity and academic rigour. This included 14 questions, including both quantitative (Likert-scale) and qualitative (open-ended) components. Basic demographic information was collected first (programme of study, level, and gender), followed by usage frequency, perceived usefulness, and perceived quality of the podcasts. Likert-style questions were deliberately set on a four-point scale to prompt students to lean one way or another, rather than selecting a neutral midpoint (Rokeman, 2024). The dataset comprised 85 responses. Given the exploratory nature of the study (Creswell & Poth, 2016) and the sample size, quantitative analysis was limited to basic descriptive statistics. Inferential tests were not performed (Field, 2024), as group comparisons (e.g., by gender or level) were not expected to reveal meaningful differences.

While the data set was small (85 responses), thematic analysis was used for the qualitative responses, focusing on student perceptions and experiences (Braun & Clarke, 2021). Open-ended items invited deeper reflection on what students liked most and least about the podcasts, how the podcasts could be improved, and any additional feedback. Students were given two weeks to complete the survey, and all responses were anonymised. The primary focus was on the thematic analysis of the qualitative data. The responses were reviewed using Braun & Clarke's (2021) six-phase framework, moving from familiarisation, through coding to identification and discussion of themes. The research team independently coded the data before collaborating to identify the overarching themes. This analytic strategy follows similar approaches in prior pedagogical research at the Robert Gordon University (Pirie et al., 2025; Zarb, et al., 2024b) and aimed to produce findings that could inform future iterations of the podcast pilot and wider integration of generative AI within curricula.

A pre-summative feedback data collection window was selected deliberately to evaluate how students were using the podcasts before they received grades, thus reducing the influence of performance bias (Salkind, 2010). The aim was to capture insights into whether the podcasts were used as revision tools or preparation aids for assessments and coursework.

Results & Analysis

Participants

All invited students were enrolled on one of the following courses; BSc (Hons) Computer Science, BSc (Hons) Computing and Creative Design, BSc (Hons) Cyber Security, BSc (Hons) Data Science, BA(Hons) Digital Marketing and MSc Digital Marketing. Whilst a course-by-course breakdown is possible, the resulting numbers would be too small for this to be meaningful. In this section, we present the demographics and level of the whole population, with results emerging from this complete dataset.

Demographics

85 students responded to the questionnaire; all responses were valid. Table 1 shows self-reported gender. The majority of respondents identify as male, making up 48 out of the total group, followed by females at 32. Non-binary respondents, and those who preferred not to disclose their gender, represent a smaller portion of the sample.

Table 1 Survey Respondents by Gender

Gender	Responses
Male	56.5%
Female	37.6%
Non-binary	2.4%
Prefer not to say	3.5%

Table 2 shows the students' stage of study at the time of the survey. Most respondents are undergraduates, with first and second years jointly accounting for a significant majority of participants. This suggests that students in the earlier stages of their academic journey may rely more heavily on educational support and resources, highlighting a potential need for targeted assistance to help them transition effectively into higher education, reinforcing previous research in the field (Siegel & Zarb, 2016; Zarb et al., 2018; Zarb & Siegel, 2018). This could also suggest that students' level of reliance on additional support materials may decrease with experience as they gain confidence in their subject discipline.

Table 2 Survey Respondents by Gender

Academic Level	**Responses**
Undergraduate / First Year	42.4%
Undergraduate / Second Year	36.5%
Undergraduate / Third Year	1.2%
Undergraduate / Fourth Year	8.2%
Postgraduate / Masters (MA, MSc, ...)	11.8%

Usage and overall impressions

Table 3 shows the results to the question "How often did you use the Shadow Podcasts?". The distribution is skewed towards less frequent engagement, which is typical of revision tools, reinforcing work reported by Fernandez et al. (2009). Participants who responded rarely or never were directed to the end of the questionnaire and asked to elaborate on their responses. Of these respondents, most were not aware of the Shadow Podcasts, or indicated a preference for other study methods: "Have not needed to yet but may use as form of revision for exam". Some expressed scepticism about AI accuracy or found AI voices unpleasant: "The generated voices were too uncanny valley that I couldn't listen".

Table 3 Self-reported Frequency

Frequency	**Responses**
Daily	1.2%
Weekly	14.1%
Occasionally	32.9%
Rarely	17.6%
Never	34.2%

One student indicated a preference of human-led content over AI-generated material: "I'd much rather listen to a podcast by [the lecturers] discussing their lessons". Participants who responded daily, weekly or occasionally were invited to elaborate on their use and experience of the shadow podcasts, starting with a rating of their perceived quality. This rating is shown in Table 4, with many students responding positively. Over 80% rated the podcasts as either good or excellent. No respondents rated them as poor, which was

notable considering the experimental and unpolished nature of the AI output. This suggested strong engagement and perceived value, supplementing the existing recorded lecture content.

Table 4 Ratings summary

Rating	Responses
Excellent	25.0%
Good	55.4%
Average	19.6%
Poor	0.0%
Very Poor	0.0%

Students were asked *Please indicate your level of agreement with the following statements*. The results of this are shown in Figure 1 below.

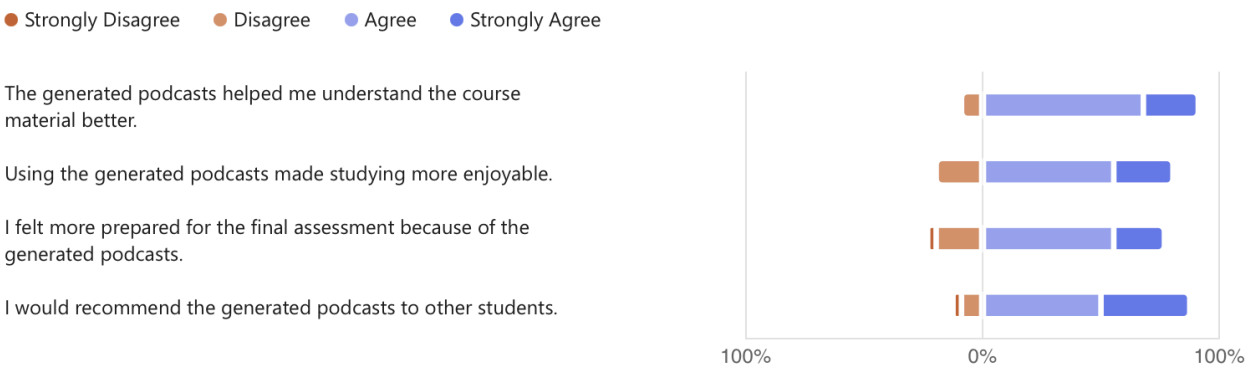

Figure 1. Responses reflecting the degree of agreement with selected statements

The positive ratings are significant because they suggest that students are more likely to engage with and return to tools they perceive as effective. In this case, the AI-generated podcasts successfully balanced clarity, accessibility, and delivery; key elements for supplementary learning (Do et al., 2024). The absence of negative feedback further indicates that, despite minor criticisms, the core design resonated with learners and supports wider adoption in blended learning settings. Most students felt that the podcasts helped them better understand the course material, suggesting that the format successfully made complex concepts more accessible. This matters because comprehension is central to effective learning, and tools that support understanding can play a vital role in scaffolding academic success, especially for students who benefit from repetition or alternative formats of delivery, as indicated by Laing and Wootton (2007).

Many students also found the podcasts made studying more enjoyable. While enjoyment might seem secondary, it has important implications for engagement and motivation (Fernandez et al., 2009). When students find a resource appealing, they are more likely to return to it, develop consistent study habits, and take greater ownership of their learning (Do et al., 2024). This indicates that podcasts may serve not only as a support mechanism, but also as a catalyst for more active and autonomous revision behaviours. A further insight from the data was that most students felt more prepared for assessments after using the podcasts.

This highlights their potential value not just for comprehension but for confidence-building and assessment readiness, two factors that significantly influence academic performance and wellbeing, particularly in high-pressure learning environments (Do et al., 2024).

Finally, a strong majority of students said they would recommend the podcasts to others. This peer approval is meaningful; it signals that the podcasts are viewed as credible and worthwhile, not just by individuals but within the broader learning community (Hernandez-Lopez & Mendoza-Jimenez, 2025). It also suggests the potential for wider adoption of this approach across disciplines and programmes, especially where quick, scalable supplementary materials are needed.

Flexibility and Accessibility

Understanding what the students liked about the podcasts would enable further enhancements and refinements, accordingly students were asked “Which aspects did you find the most useful?” with the results being found in Table 5.

Table 5 Reasons for using the material

Rating	Responses
General review of material	34.6%
Hearing a confusing topic in a new way	17.7%
Making up for a missed class or portion	20.0%
Auditory / visual learning option	13.8%
Assessment preparation	13.1%

The data in Table 5 highlights the podcasts’ value as a supplementary tool rather than a replacement for traditional teaching (Kurtz et al., 2007). Most students used them to review material, indicating their usefulness for consolidating understanding without the time burden of full lecture replays. A notable number also used the podcasts to catch up on missed content, showcasing their flexibility and accessibility. These findings suggest that even lightweight, AI-generated content can effectively support learning continuity and extend the reach of classroom teaching. Students identified key strengths in the tool’s flexibility and accessibility, especially for multitasking or revisiting content. A central theme that emerged was accessibility, not just in terms of physical access, but in how the content was presented: simplified, summarised, and more engaging than traditional revision tools (Kurtz et al., 2007). Many students praised the brevity of the podcasts, noting how they condensed key lecture content into a more manageable form: “It was a condensed version of the lecture so less information overload”, capturing a widespread appreciation for the way the podcasts distilled complex material into more digestible insights. The shorter format also meant that learners could revisit content without feeling overwhelmed: “I can go back through and listen to them over and over to refresh my understanding.”

Another frequently cited benefit was the conversational tone of the podcasts, which helped make academic content feel more approachable. The dialogue-style structure, with questions and answers between virtual speakers, was especially well received: “I liked how the podcasts were normal conversation. Also, in the podcast, the guy would ask questions and the lady would answer them... They would explain a lot of information in a short amount of time". Several students also highlighted the multitasking potential of the

format, aligning the podcasts with their existing media habits: “I could listen whilst I got ready or done the dishes so it helped me make good use of my time.” This indicates not only an appreciation for flexible study tools but also a growing alignment between academic materials and students' media consumption behaviours.

"Cringey" dialogue and a lack of specificity

Students were prompted to answer the question “What did you like least about the podcasts?”, whilst feedback on the shadow podcasts was positive overall, students did raise several critical points that highlight current limitations in the use of AI-generated audio for learning. This section explores the most common negative aspects reported by students, including the often "cringey" or unnatural tone of the AI voices, a lack of specificity or depth in the content, and the absence of visual support such as video or slides. These issues point to areas where refinement is needed to improve both the clarity and credibility of AI-generated learning materials. A recurring concern was the lack of visual support, especially for modules involving technical content. Several students noted that having “a video to go along with it” or at least “slides or subtitles” would make the podcasts more useful, particularly for more conceptual or abstract subjects.

The AI-generated nature of the content also drew mixed reactions. For some, the delivery felt unnatural or emotionally flat: “It didn't sound very human, felt too much like it was a machine so lacked emotion.” Others mentioned the dialogue could be awkward or even off-putting: “Hard to listen to because they're too cringey,”. Issues with audio quirks, such as overuse of filler words e.g. “like” or “right”, and inconsistent clarity were also noted, making some podcasts difficult to follow, which reflects the findings reported by Arkün-Kocadere and Çağlar-Özhan (2024). Substance and structure were another point of critique. A few students expressed frustration that the podcasts either over-explained or missed key content: “Sometimes they would explain more information than the one included in the course. Sometimes they would not include enough.” This unevenness left some questioning their usefulness for assessment preparation (Do et al., 2024).

Students offered a range of thoughtful and constructive suggestions for improving the shadow podcasts, many of which focused on enhancing clarity, accessibility, and relevance. A common theme was the desire for greater depth and precision in the content. As one student commented: “Be more detailed… some more information about the lecture would make it more useful in terms of learning.” Others echoed the need for richer academic substance, suggesting the podcasts could be “slightly longer” or tailored to “more specific aspects of the course.” Delivery style also came under review. Some respondents proposed changes to the conversational tone, asking that the content “get straight to the point rather than conversating,” and noted a preference for different voice types: “different voices, less bad jokes” and “have an option to have a local accent”. There was also interest in more human-like or emotionally expressive narration, with one comment suggesting a switch in model to allow “more emotion behind the voices.” At the time that this study was carried out, the "Audio Overview" function on NotebookLM was only available for American English. Accessibility improvements were frequently raised. Students asked for a transcript, the option to download episodes, and the inclusion of timestamps for easier navigation. A few proposed video versions to accompany more technical content, especially for modules involving code or visuals. One suggestion was to integrate podcasts directly into each lesson’s learning environment, so they are “not forgotten after one or two listens.”

Lastly, students wanted closer alignment with assessments: “more assessment-related material” and “answers to questions students might have had.” These responses suggest that while the format was welcomed, more intentional alignment with course structures and learner needs could significantly improve its impact.

Podcasts as supplementary tools

Students clearly distinguished between expected learning resources and Shadow Podcasts, reinforcing the idea that Shadow Podcasts were complementary to, rather than a replacement for, traditional learning materials. Their standout value lay in their flexibility, accessibility, and ability to reinforce lecture content in novel ways.

A common theme was multitasking. Many students described listening to the podcasts while engaging in other activities: “I listened to them on the bus,” “while working on SQL code,” or “while completing other tasks on my laptop.” This passive-yet-productive form of revision distinguished the podcasts from more static materials like lecture slides or textbooks. The podcasts also stood out for their more relaxed and engaging tone. One student noted, “It was something different so I was genuinely excited... it’s just a lot more engaging than sitting through a 3-hour lecture again.” This supports the work done by Do et al., (2024) who discuss the entertainment value of the medium and its pedagogical benefits. Others found them useful in preparing for assessments or clarifying notes, helping to consolidate their understanding without the time demands of full lecture reviews. Several respondents also used them as a post-lecture reinforcement tool (Fernandez et al., 2009), providing a secondary explanation or summary: “After a lecture, listening to the podcast would help me review the material and have a different explanation.” For those who missed sessions or needed a recap, the format offered a condensed route back into the material: “I watched the lecture but a quick summary after was helpful”.

In essence, students used the podcasts not as primary teaching tools but as supplements, effective for repetition, reinforcement, and review into everyday routines, thus enhancing the reach and range of traditional learning experiences, “They were a good supplementary resource, but I prefer real recordings and visual demonstrations from lecturers”.

Conclusion and future work

Conclusion

This study demonstrates that AI-generated Shadow Podcasts can serve as an effective and well-received supplementary learning tool in higher education. In a context where teaching staff face increasing time pressures, the ability to generate weekly podcasts quickly and with minimal intervention was a key part of the pilot design. With the aim of the paper being to capture insights into whether the podcasts were used as revision tools or preparation aids for assessments and coursework, the results show that AI-generated podcasts can be of significant benefit as supplementary and supporting materials. The majority of students reported that the podcasts improved their understanding of course material, made studying more enjoyable, and helped them feel more prepared for assessments. Their concise format, conversational style, and flexibility to support multitasking were particularly valued, distinguishing them from traditional lecture recordings or slides. Crucially, students saw the podcasts not as a replacement for teaching but as a useful complement; particularly for reviewing content, revision purposes, catching up on missed material,

reinforcing learning in accessible ways and when preparing for assessments. This reinforces existing literature around the value of diverse learning formats and highlights a growing appetite among learners for flexible, media-rich study aids (Arkün-Kocadere & Çağlar-Özhan, 2024; Do et al., 2024; Hernandez-Lopez & Mendoza-Jimenez, 2025; Pirie & Keenan, 2025). However, students also identified clear limitations, including the artificial tone of AI voices, lack of visual support, and inconsistencies in depth or coverage. These findings point to important areas for refinement, including the need for greater emotional realism, tighter alignment with assessments, and improved accessibility features like subtitles or video integration.

Overall, the findings suggest that with thoughtful implementation, generative AI tools like Shadow Podcasts can enhance blended learning environments, support varied learner needs, and serve as a vehicle for building AI literacy. Shadow Podcasts offer a scalable, efficient means of enriching the learning experience, and present a promising model for integrating generative AI into higher education in a pedagogically meaningful way. As higher education continues to adapt to the realities of digital transformation, such tools offer a promising path for innovation in content delivery and student engagement.

Limitations

While the findings of this study are promising, some limitations must be acknowledged. The most notable is the relatively small sample size: 85 students across multiple modules, which limits the generalisability of the results. Furthermore, participation in the research was voluntary, introducing a self-selection bias that may have skewed responses toward more positive experiences. Those who engaged with and appreciated the podcasts were arguably more inclined to complete the survey, meaning that critical or disengaged voices may be underrepresented. As such, the results should be interpreted as indicative rather than conclusive. A more robust and systematically sampled study would be needed to provide stronger evidence of effectiveness and broader applicability. However, these early findings offer a useful foundation for future exploration and refinement of the approach.

Future priorities

This study represents the beginning of a broader research agenda. The team is currently working with a partner university to conduct an international, cross-institutional study exploring differences in the reception and use of Shadow Podcasts across varied educational contexts. The team is currently adding a longitudinal, phase 2 of the study to the growing body of work, which will collect more student feedback and faculty's perceptions on the integration of the tool to their curricula. Future research will also examine the impact on learning outcomes, such as revision habits, assessment performance, long-term retention, and consider refining AI prompts to better align with lecture content or support user-generated summaries.

Interestingly, students did not comment on content accuracy or AI hallucinations, possibly due to the disclaimers included with each podcast and growing awareness of AI limitations. This remains a valuable area for further exploration. Feedback also indicated that Shadow Podcasts may be especially effective in content-heavy or conceptually dense subjects like research methods or AI for problem solving, where structured weekly breakdowns could enhance clarity.

While the current study has limitations, it demonstrates strong engagement with a new learning modality. Integrating AI tools like NotebookLM into educational practice offers both practical benefits and opportunities for developing critical AI literacy. The team hopes this work contributes to broader

conversations on AI in education and encourages further experimentation with creative, student-centred approaches.

Biographies

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