Using podcasting to enhance the experiences of healthcare apprentices in higher education

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Abstract

Podcasts are being increasingly incorporated into healthcare education programmes, particularly since the COVID-19 pandemic. Podcasts are valuable tools in education, allowing listeners to multi-task during episodes and use playback functions to aid understanding. This study aimed to explore the use of podcasts within paramedic education to enhance learner experience. This action research study involved apprentice paramedics enrolled in a modular-based bachelor's degree programme. A live teaching session was replaced with three podcast episodes uploaded to a virtual learning environment. Qualitative and quantitative data were collected through an online survey. Responses were analysed using reflexive thematic analysis and descriptive statistics. Of the 21 students who completed the survey, 100% were comfortable with the technology, 91% enjoyed the use of different podcasts and 86% found the podcasts engaging. Sixteen students had a generally positive experience with the content for this session, however two students responded negatively overall. Four themes were identified: Accessibility, Engagement, Flexibility and Embedding podcasts in Higher Education. Themes described podcasts as beneficial in widening access to knowledge and students appreciated the flexibility they offered. Engagement was dependent on podcast length, speaker enthusiasm and interest in the topic. Podcasts provide increased accessibility and flexibility to learning and knowledge acquisition. Length of podcast and speaker enthusiasm were key to maintaining engagement. Podcasts should be supplemented with key learning points and visual aids. Podcasts are effective tools for pre-post learning, remote, independent or additional learning, and revision. However, replacing live teaching sessions with podcasts is not recommended.

Keywords: *apprenticeship, education, experience, paramedic, podcasts*

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Introduction

Internationally, engagement with podcasts has exploded in popularity in recent years. These simple audio files have gained traction as valuable assets within multiple industries and are now being widely adopted in education (Ahmad Shahrizal et al., 2022; Burkett, 2023). Existing educational podcasts involve expert professionals sharing knowledge and experience about their specific fields. By creating engaging and entertaining content to establish a base of followers, speakers cover wide-ranging topics within a universal catalogue of subject matter relevant to professionals (Laing, 2019). With the growing use of technology-enhanced learning to support higher education, podcasts are increasingly incorporated into healthcare programme delivery, supporting flexibility with hybrid and remote working (Middleton, 2016). The informative and factual nature of podcasts are embedded within a broad spectrum of methods: soundbites, interviews, quizzes, case studies, and more. Additionally, podcasts promote accessibility with user-friendly functions such as playback, allowing greater mobility whilst learning in comparison to live presentations or lecture-style formats, reducing variation in learner experiences (Goldman, 2018). Podcasts can also be effective in navigating logistical challenges, removing the need for in-person attendance for students and guest speakers, demonstrating the added benefits of inclusivity, sustainability, and cost-efficiency through remote distance learning (Newman et al., 2021). The application of podcasts to learning in higher education is considered beneficial, as a modern alternative to traditional methods of information delivery.

However, unidirectional delivery of information has limitations. Being asynchronous and non-didactic, podcasts may afford learners fewer opportunities to interrogate, explore, or confirm their understanding of content. Additionally, information can become outdated if renewed evidence becomes available after the time of recording; therefore, the long-term impact of podcast episodes may be limited in dynamic disciplines. Moreover, podcasts require learners to be comfortable with technology and must maintain the attention of users solely through auditory means, which may not suit the preferred learning style of some individuals (Biggs & Tang, 2011). Therefore, this method of teaching in its current form cannot be universally adopted without contextual consideration and evaluation, and it is important to acknowledge that students may feel podcasts have a negative impact on their learning experience (Goldman, 2018).

This research was conducted within a modular-based, two-year, BSc Paramedic Degree Apprenticeship programme, as part of the usual teaching content for the 'Holistic Patient Care' module. The programme integrates distance-learning for theoretical content, providing the opportunity for learners to watch and engage with live sessions from various locations. Podcasts had been utilised in previous teaching; however, the learner experience, relevance, and success of podcast use in this setting had not yet been fully established. Therefore, the aim of this study was to explore the use of podcasts within apprentice paramedic education to enhance learner experience.

Literature Review

Within the literature, the pedagogical benefits and challenges of utilising podcasts in higher education have been discussed. The discursive nature of podcasts draws on a more engaging andragogical model, like cognitive learning theory, as reinforced by McNamara and Drew (2019). Within healthcare, Newman et al. (2021) demonstrated the diversity of podcast use in education and continuous professional development for several healthcare professions, including paramedicine and emergency medicine. Other research has considered the use of videos alongside podcasts, to demonstrate effective teaching of clinical skills remotely (Hurst, 2016). The development of podcasts can be a difficult but rewarding process, however the overall positive experience of listeners was demonstrated through high usage (Hurst, 2019; Newman et al., 2021). In Burke and Cody's (2014) study, 94% of nursing students called podcasts 'valuable tools', 86% believed it 'enriched their learning' and 95% recommended integrating podcasts more into their own and other healthcare courses. A further example of podcasts which enhanced listener experiences in paramedic education is 'Traum'cast', which involves accounts of the real-world civilian application of evidence-based clinical practice from military trauma management (Boutonnet et al., 2021).

Podcasts facilitate discussion around emerging research in medical and healthcare education, with new listening-behaviours emerging post-COVID. This creates opportunities through online platforms to communicate information more rapidly with a wider audience (Hurst, 2019; Roland et al., 2021). Burke and Cody (2014) reported that 55% of participants listened to educational podcasts in different situations, such as driving, walking, or using public transport, further acknowledging the flexibility and freedom podcasts offered. This is supported by Newman et al. (2021) and Thoma et al. (2020), who found most participants reported simultaneously performing other tasks while listening to podcasts. Participants, including paramedics, self-reported listening to podcasts to learn new content (75%), refresh learning (71%), and understand new research (76%) (Thoma et al., 2020).

Preston et al. (2016) embraced this innovation by creating the 'MDTea podcast', developing multidisciplinary team (MDT) working through education, focusing on management of common presentations for elderly patients. Discussing ideas about working with different healthcare professionals, using podcasts as a platform, facilitated greater interprofessional working. Such findings are of particular interest, as collaboration has been shown to improve clinical care and patient outcomes, and increase staff satisfaction (Epstein, 2014). Healthcare professionals appear more engaged with medical podcasts, but throughout the literature it is repeatedly stated that further research is needed to fully explore their benefits (Lee et al., 2022). Additionally, with limited free time, it can be a challenge for students to identify the most relevant and beneficial podcast episodes. Some researchers, such as Lomayesva et al. (2020), recommend podcasts for medical students to improve the efficiency of listeners' experience.

A systematic review, exploring the views of higher education students towards podcast use, found strong favourable outcomes in the university context; the predominant benefit being "flexible availability" of resources, although they acknowledged that not all students had positive experiences (Ahmad Shahrizal et al., 2022). This finding correlates with previous studies as, despite positivity towards podcasts, there is no collective agreement that every participant believed podcasts benefitted their education (Burke & Cody, 2014; Newman et al., 2021). In summary, existing literature suggests podcast use in healthcare education is on the rise and has significant benefits, although this approach is not suitable for every student. However, there appears to be no research specifically exploring podcast use within apprentice paramedic education.

Methodology

Action research (AR) is considered *practice-changing practice*, generating knowledge from one's own teaching practices to transform actions and understanding (Cohen et al., 2018, p.440). The analysis of one's own teaching methods, through reflexive practice and meaningful investigation, can be highly beneficial. AR methodology was suited to this project reviewing current teaching practices, exploring how education could be enhanced using student experiences to guide the process. Mertler's (2019) key elements within AR methodology resonated throughout this research: improving one's own educational standards, gaining a better understanding of students' experiences, and promoting interaction between the education provider and receivers. These elements can strengthen the professional relationship between all involved and any improvements can be swiftly adapted during the process. This further builds upon the existing experience and knowledge of the educator, creating growth within the individual (Dickens & Watkins, 1999).

Ethics

Ethical approval was managed in line with the University of Cumbria Research Ethics Policy and the University Research Ethics Committee which has oversight for taught degree research applications. The research was undertaken, as part of a formal recognised qualification for Fellowship with AdvanceHE. As such, ethical approval was obtained through programme leaders and the project supervisor via delegated authority, and a formal ethics committee review was not required as per the policy. Ethical considerations were carefully reviewed prior to data collection; for example, participants were informed that participation was entirely voluntary, of their right to withdraw, and that participation, or non-participation, in the AR project would not impact the educational experience of any individuals. Informed

written consent was obtained prior to data collection, responses were fully anonymous, and data were collected and stored in line with General Data Protection Regulations, with permission to disseminate and publish the findings of the research included within the informed consent.

The Action Research process

As the intervention for the AR project was different to a traditional lecture, ongoing evaluation of its effectiveness to meet learner expectations was required. As identified through the concepts of AR methodology, this allowed the educator opportunities for continuous transformative change and enhanced the quality of future teaching, making improvements whilst simultaneously considering the experiences of the learners. Action research, as outlined by McNiff (2017), facilitated the cycle of observing, reflecting, planning, acting, evaluating and modifying, before moving in new directions:

In the *observing* stage, final year students on a Paramedic Apprenticeship programme completed a module titled, *Holistic Patient Care*, with a specific teaching session on *Multidisciplinary Team (MDT) working in Mental Health and End of Life care*. As this was the first version of the module, there was no existing content for this session which allowed staff to be imaginative with the delivery format during the initial design of the intervention.

In the *reflecting* stage, the researcher's own experiences of podcasts in higher education prompted further investigation into the use of podcasts to facilitate teaching and learning. McNiff (2017) describes the reflecting stage as the consideration of relationships between theory and practice, where the practitioner facilitates existing knowledge into more effective ways of delivering an outcome. A wider review of the literature was thus undertaken to establish where and how podcasts were being used and if this method could be impactful through a paramedic's lens.

In the *planning* stage, the researcher acknowledged a lack of expertise in relation to the complexities of MDT work between paramedic and specialist professionals. In line with action research theory, and the work of Efron and Ravid (2013, p.57), the planning of the intervention was reflexive, with the researcher needing to find "a balance between objectivity and subjectivity", acknowledging one's own limitations. This also built on recommendations identified from the literature review for interprofessional working and to embrace technology, whilst strengthening a modern approach to delivering content.

For the *acting* stage, instead of a live lecture, three existing podcasts with healthcare professionals were included within the session (see Appendix 1), encouraging students to take more responsibility for their learning, reflect on ideas, and initiate new meaningful conversations with peers to build professional relationships (Biggs & Tang, 2011). As the intervention was investigating 'multi-disciplinary teams', the speakers embraced the strengths and challenges of MDT working seen in clinical practice, sharing their thoughts and experiences on the subject. The podcasts covered a range of discussion topics relevant to the module learning outcome (see Appendix 2). A cohort of sixty students were asked to listen to three podcasts with specialist healthcare professionals. The podcasts were made available through the virtual classroom environment, for all students to access within a three-hour period. The students were free to move around to listen to these podcasts in the location of their choice, they could undertake other activities simultaneously, and they were not constrained to a presentation or computer screen, provided the learning was completed before the afternoon session to discuss the podcast content.

In the *evaluating* stage, observation of the intervention incorporated an online survey comprising of 12 questions, consisting of five-point Likert scales (ranging from 'Strongly Agree' to 'Strongly Disagree'), and two open-ended questions; **"***Please summarise your overall experiences and feelings towards podcasting in higher education***"** and "*Please tell me how you feel about podcasts for this session using only 3 words*". Survey questions included aspects of enjoyment, accessibility, overall learning experience and preference over other delivery types. The questions covered key points highlighted within the literature review, which were interpreted to be significant or interesting in relation to podcast use for paramedic higher education. The instrument was verified by the project supervisor but was not pilot tested.

In the *modifying* stage, the researcher reflected upon the critical question to establish whether the use of podcasting enhanced the overall learner experience in this teaching session. The outcome of the findings would be used to enhance practice and make further recommendations as part of the *moving in new directions* phase.

Data Collection

As the researcher was a paramedic clinical lecturer known to the students, a QR code was provided by a lecturer independent from the researcher. The QR code gave access to the participant information sheet, consent form, and a survey related to the podcasts the students had listened to during the morning teaching session. A 15-minute slot was allocated at the start of the afternoon for the convenience of any learners wishing to complete the survey. The survey responses were anonymous to mitigate impacts of power dynamics or bias on participants or the students who did not complete the survey.

Data Analysis

Quantitative data analysis is considered less effective in action research methodology (Efron & Ravid, 2013; McNiff, 2017). As a result, data analysis of the qualitative free-text responses was favoured, although descriptive analyses were conducted for the Likert scale items. For the question: "*Please summarise your overall experiences and feelings towards podcasting in higher education*", the six stages of reflexive thematic analysis (RTA) were performed, as per Braun and Clarke (2022). Qualitative data from the question: "*Please summarise your thoughts towards the podcasts used in this session in three words*", has been developed into a word cloud. Figure 2 collates the three-word summaries about participant experiences and highlights the most frequently used words in larger font.

An additional researcher with experience in qualitative analysis was invited to independently analyse the data, which enabled independent RTA between two researchers, to explore the social phenomenon in this context. Critical discussion between researchers allowed for the creation and consensus of subthemes and themes from the raw data. The consensus process improved the rigour for this study, ensuring that the inductive analysis of the data was trustworthy and reducing any potential influence of the first authors positionality (Byrne, 2022).

Findings

Of the 60 students registered for the course, 21 consented and completed the survey (35% response rate). Although the response rate did not achieve statistical power, the descriptive statistics demonstrated the overall positive trend that podcasts created. As shown in Figure 1, 100% answered Agree or Strongly Agree when asked if they were comfortable using the technology. 91% found the use of different podcasts interesting and 86% found the use of podcasts engaging. 71% agreed their learning experience was improved by podcasting in this session.

The words *engaging*, *informative* and *useful* were the words participants used most frequently in the three-word summary question, to describe their experiences of the podcasts used within the session (Figure 2).

Figure 1

Results from Likert-scale items

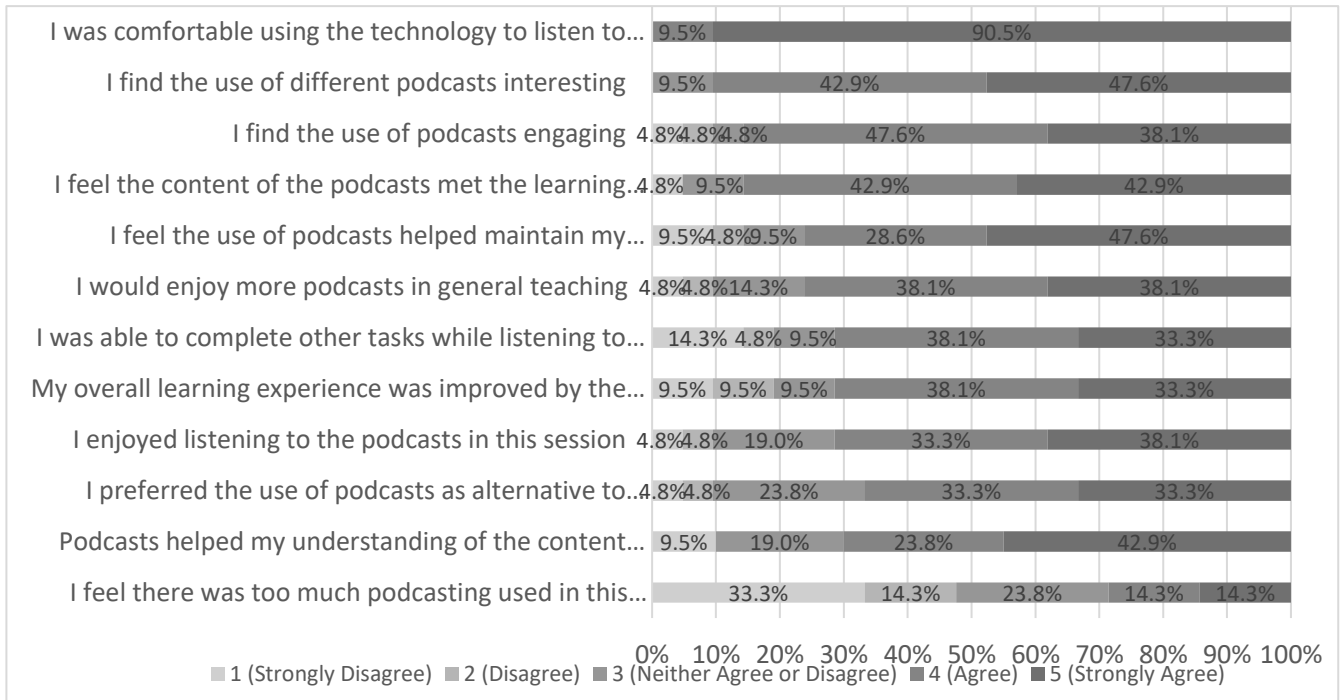|	1 (Strongly Disagree)	2 (Disagree)	3 (Neither Agree or Disagree)	4 (Agree)	5 (Strongly Agree)
I was comfortable using the technology to listen to…			9.5%		90.5%
I find the use of different podcasts interesting			9.5%	42.9%	47.6%
I find the use of podcasts engaging	4.8%	4.8%	4.8%	47.6%	38.1%
I feel the content of the podcasts met the learning…	4.8%		9.5%	42.9%	42.9%
I feel the use of podcasts helped maintain my…	9.5%	4.8%	9.5%	28.6%	47.6%
I would enjoy more podcasts in general teaching	4.8%	4.8%	14.3%	38.1%	38.1%
I was able to complete other tasks while listening to…	14.3%	4.8%	9.5%	38.1%	33.3%
My overall learning experience was improved by the…	9.5%	9.5%	9.5%	38.1%	33.3%
I enjoyed listening to the podcasts in this session	4.8%	4.8%	19.0%	33.3%	38.1%
I preferred the use of podcasts as alternative to…	4.8%	4.8%	23.8%	33.3%	33.3%
Podcasts helped my understanding of the content…		9.5%	19.0%	23.8%	42.9%
I feel there was too much podcasting used in this…	33.3%	14.3%	23.8%	14.3%	14.3%

Figure 2

Participants' words used to describe their podcast experience in the session

The three-word summary can be further contextualised through qualitative data. Thematic analysis revealed a spectrum of answers to the research question, categorised into four themes:

- Podcasts as an accessible learning tool

- Engagement with podcasts

- Podcasts as a flexible way of learning

- Embedding podcasts into Higher Education

Podcasts as an accessible learning tool

Most participants found that podcasts allowed easier access to knowledge compared to traditional formats. Podcasts were often more engaging than lectures, breakout rooms or PowerPoint presentations, which one participant described as *dry and monotonous*. This is supported by users who appreciated the accessibility of podcasts towards improving their knowledge, as podcasts had: "…regularly been used as a student to help summarise and rapidly dissect information that is easier as a learner to absorb", and, "I feel I take it in better than a PowerPoint presentation".

This medium was also beneficial for those with different preferred learning styles as it made the information accessible. One participant described podcasts as a: "…useful tool to support learning and are great for people who need information in different formats to learn". Other participants outlined how podcasts were preferential to other learning formats, and helped them to access knowledge: "'This form of knowledge access is useful to me as I struggle with traditional forms of learning due to ADHD and autism". Naturally, there was not a unanimous consensus with one individual stating: "I personally don't absorb the information as well".

Engagement with podcasts

The second theme, 'Engagement with podcasts', evolved from participants directly commenting on their overall enjoyment of podcasts and engagement with the content, as either engaging or non-engaging. Participant views on engagement were based around the topic, length of the podcast, the quality of expert professional speakers, and energy and enthusiasm of the host, with a participant noting, "I prefer podcasts with friendly hosts, and a little injection of humour or levity, this helps with engagement and makes me want to continue listening". Another participant noted the importance of the topic for engagement: "I do find if I am interested in the topic I will engage more with it".

Four users noted that they got *distracted* if listening for too long, with one noting this could be as little as "20-minutes". *Short and punchy* podcasts were optimal for teaching and prevented students feeling like they had *not take[n] much from it:* "Sometimes podcasts, like PowerPoints can be lengthy and easy to switch off, and therefore feels like I am not fully engaged". Additionally, it was noted that multiple podcasts in quick succession may become overwhelming: "Three all in the same space was maybe a bit much".

However, previous experience of podcast use appeared to influence participant engagement with this platform, with some having already engaged with podcasts in education. This allowed them to compare their previous experience of podcasts to those used in the session, with key elements of maintaining attention and engagement with the content: "I think as in the resus room there would need to be a higher calibre of guest speakers to bring energy, enthusiasm and expert knowledge".

Podcasts as a flexible way of learning

The third theme, 'Flexibility', had subthemes which very much aligned with 'task-focused' objectives, allowing participants to simultaneously learn whilst multi-tasking or on-the-move: "Really good, allows you to learn whilst doing other stuff, cleaning or just going for a walk" and "Can be done at anytime of the day and could learn in the car on the way to work…"

The other subtheme was 'time-focused' objectives, including coming back to the learning when it is convenient, such as revisiting, rewinding and revising content: "I also like to be able to rewind sections easily to [relisten] to parts I missed or misunderstood".

The phrase *at my own pace* was coded multiple times, showing the benefit of pausing recordings to suit peoples' listening needs, including, "I think this is a great idea and allows the learner to listen at their own

pace and ability to go over, rewind or re-listen as needed" and "I enjoy the opportunity to absorb information at my own pace, i.e. can pause or rewind sections as necessary…"

Embedding podcasts into Higher Education

The final theme of 'Embedding podcasts into Higher Education' can be summarised into two subthemes. The first subtheme: 'Podcasts as a supplement to classroom teaching' represents the viewpoint of some participants, who felt that podcasts were not valued in replacement of teaching time and should be an additional tool, as one student commented: "In terms of podcasts being created to act as part of a teaching session, I do not believe that they are useful".

Some individuals stated their classroom time was inappropriately utilised and *not appreciated*. One student claimed lecturers were "taking away from valuable classroom discussions or group activities", by using podcasts instead of teaching, whilst another stated they should instead be "actively taught". This may have been linked to preconceptions around asynchronous learning that was already taking place: *"At times I feel like a YouTube qualified medic"*, and, "..having had multiple lessons saying go listen to a podcast feels like the lecturers are cheating and instead of teaching a subject passing it off to a podcast". However, this is not universal, with one directly stating podcasts were helpful to their "overall higher education experience" and another declaring that podcasts create an equilibrium for learning: "I try to strike a balance between using podcasts to supplement my learning and actively participating in class to get the most out of my education".

The second subtheme: 'Supplementing the podcast' outlined ways in which podcasts as a pedagogical tool could be enhanced. Participants made recommendations of how best to supplement their learning through podcasts, noting that a *summary* of content at the end would have been useful, as well as highlighting key points of the discussion at the beginning for people to listen out for during the episodes, and providing accompanying visual aids to support: "…it would be useful, to summarise at intervals or at the end of the podcast, how the podcast we're listening to, directly links to the assignment in hand", and, "I would also like to receive directed themes to consider alongside".

Discussion

The main feature of this research's critical question was to establish whether the use of podcasting enhanced the overall learner experience in this teaching session. Sixteen participants agreed that their overall learning experience was improved, which suggests the intervention was mostly successful for this group of apprentice paramedics.

Regarding accessibility, all participants agreed that they were confident using the technology to listen to podcasts. Such a finding was important, as the podcasts were distributed online, and this perhaps demonstrates growing confidence with different learning technologies in education in the post-COVID era. The confidence of participants aligns positively with existing literature, which encourages educators to embrace technology for a more modern approach to information delivery (Biggs & Tang, 2011). This alleviated concerns related to accessibility and inclusivity raised in the emerging pedagogical literature (Spaeth & Pearson, 2023), as podcasts can promote accessible education, including for individuals with diverse learning needs (Dwyer, 2022). Podcasts act as a tool that allow users individuality in their learning styles and greater absorption and retention of knowledge, creating supportive learning environments for hybrid models of engagement.

Participants in this study specifically commented that the podcast method was useful for their education and, similarly, that conventional teaching delivery formats like presentations or traditional lectures are not always conducive to learning. However, whilst this may be true for some participants, it is not unanimous. Similarly to the wider literature, two participants stated they did not absorb the information as well and that they would prefer a more transmissive pedagogical approach. Ahmad Shahrizal et al. (2022) suggested that some individuals may prefer to use podcasts for entertainment rather than educational

purposes depending on preferred learning styles. As such, it would be unwise to associate podcasts in teaching with ubiquitous success in any study group.

The most significant finding was the overall positive feeling towards engaging with podcasts for learning. This demonstrated students' willingness to engage with podcasts as an alternative to conventional pedagogy. Some participants did not find the podcasts engaging, either being distracted, 'switched off' due to prolonged length, or a fundamental lack of interest in the topic. Conversely, other participants noted the enthusiasm of the host and guests, and having selections of podcasts preserved their interest and engagement. This finding aligns with previous research (Burke & Cody, 2014) highlighting the importance of diversity and inclusivity when deciding on topics of conversation and speakers via this medium. Moreover, existing users of podcasts demonstrated favourable opinions of their integration within this project, demonstrating that familiarity and personal preference may impact the level of engagement with any pedagogically focussed podcast.

It was evident from the results that the tolerance level of listeners may be limited by time. Three back-to-back episodes were considered *too long*, making it challenging to maintain attention with the task. The selective use of shorter podcasts may promote engagement with more students. This finding supports the idea of recommended time constraints, and the importance of selecting specific resources for learning, aligned with learning outcomes (Lomayesva et al., 2020). As such, it may be more beneficial to integrate podcasts as an additional breakout room or post-learning activity in future, rather than as the focus.

Flexibility with podcasts can be summarised as *task-focused* or *time-focused* benefits. Half the group agreed they were 'able to complete other tasks while listening', supporting Thoma et al.'s (2020), success with multitasking whilst learning. Further research agrees that flexibility and freedom to learn while on-the-move were extremely beneficial aspects of podcasting for some users (Kirkwood & Price, 2014), reinforcing the benefits seen in this project. Conversely, it could be argued that if listeners are simultaneously completing other tasks such as driving, that their full attention is not afforded to the learning content. Therefore, for topics of importance or requiring greater depth and discussion, this may not be the most effective method of dissemination, as it cannot be guaranteed the students are fully listening and absorbing the material. Flexibility also relates to students being time-precious, with participants noting the ability to pause, rewind and replay are valuable assets of a recording, which cannot be mimicked in live sessions. Consolidation of knowledge and understanding through this method should not be undervalued and shows an important discussion point in allowing users to learn 'at their own pace', reinforcing the andragogy of independent learning in higher education.

Whilst participants considered podcasts supplemental to learning, or as a useful revision tool, there were negative comments, particularly around podcast use in replacement of live lectures. These included not having opportunities to clarify misunderstandings with teaching staff, distracting students from valuable group work, and not fully understanding the benefit of the podcast. Such concerns demonstrate a need for clear guidance when using podcasts within teaching sessions, as interestingly, students felt lecturers were 'lazy' or 'cheating'; a finding that has not been widely addressed in existing literature. Learners also recommended that supplements to the podcasts would be beneficial, including visual aids to work through simultaneously, learning outcomes related to the content, or a summary of key points discussed at the beginning and end of each episode. These recommendations identify weaknesses of podcasts within higher education compared to entertainment purposes, highlighting that staff must recognise that students still value direct interaction with academic colleagues.

Table 1 outlines recommendations for embedding podcasts into higher education, using the findings from this research. Further research should explore student experiences when engaging with podcasts as a formal educational method. Additional research would be beneficial to investigate how to integrate podcasts more effectively into paramedic higher education to further enhance the overall learning experience.

Table 1

Summary of recommendations for using podcasts in education

Recommendations
• Consider podcast length less than 20 minutes to maintain engagement
• Consider providing supplementary visual materials alongside audio materials
• Use podcasts as an additional learning tool rather than to replace live teaching
• Provide a summary of learning outcomes to relate content back to an overriding aim
• Consider guidance for listeners about the key highlights from the recording
• If the content is considered important, other activities may not be suitable to co-listen or simultaneously complete other tasks
• Variety within episodes is important when discussing different topics or inviting guest speakers

Limitations

Whilst AR has the advantage of gaining in-depth knowledge relevant to a specific problem that was both personal and unique to the researcher, this specificity also created limitations. AR lacks replicability, due to the inability to repeat this research by others not experiencing the same phenomenon. Whilst AR can contribute to power-relation issues between staff and students, this was managed by distancing the researcher from the students during the research process, using an independent lecturer for enrolment and data collection (De Oliveira, 2023). As the results are specific to this research setting, they are not representative of podcasts in higher education as a whole. However, generalisability was not the aim of this study, and the study has produced findings that contribute to the wider pedagogical literature and provides areas for further exploration.

Conclusion

The most prominent words recovered from the data - *engaging*, *informative* and *useful* - evidence positive aspects of podcast use in teaching to enhance learner experience. Promoting flexibility to multitask whilst listening, working at people's own pace, facilitating different learning styles and providing alternatives to traditional pedagogy are all benefits. However, as expected, podcasts did not satisfy the needs of all students, with negative comments emerging around length of listening time and the use of podcasts to replace live teaching. As part of AR methodology, reflecting on this feedback will be important for future teaching practices to move in new directions, using podcasts as additional learning tools rather than as the main teaching session. A future AR project will continuously evaluate whether podcasts are effective as a post-learning tool, to ensure that the content is still valid to the subject material.

Ethical approval

Ethical approval was managed in line with the University of Cumbria Research Ethics Policy and the University Research Ethics Committee.

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APPENDIX 1

Guest speaker details

Guest Speaker Job Role	Background
Mental Health Paramedic	Works for NHS ambulance trust on joint response vehicle with mental health practitioner responding to emergency ambulance calls- previously been a guest for other podcast series
Mental Health/ Custody Nurse	Works for NHS Mental Health centre; recently left role as mental health nurse in police custody – no previous podcast guest experience
Palliative care Nurse & Paramedic	Both work for NHS ambulance trust; responsible for trust-wide palliative care team and end-of-life response car project- no previous podcast guest experience

APPENDIX 2

Discussion template for learning outcome, questions and possible discussion points

Module learning outcome 1: Build a critical understanding of interprofessional working in Mental Health and Palliative Care'	
How do you promote the health and wellbeing of patients living with Palliative care, Mental Health or progressive degenerative diseases in your discipline?	• Encourage discussion on specific needs for the patients involved • Challenges and difficulties in care • Benefits and positives to care • Legislation and safeguarding • Assessment tools
Which other NHS bodies or Agencies do you regularly work with as an MDT?	• Collaborative working with primary care • Working alongside Ambulance Services • Working with hospitals and other non-NHS services • Referral processes • Organisational issues
What improvements could be made within your role and the ambulance service to improve the Wellbeing and Mental Health of your patients?	• Discuss current involvement with pre-hospital clinicians • How can paramedics improve the care for this group of patients? • How paramedics could better access this route of care and improve working alongside your profession?
What do you consider the most important aspect of your role in caring for your patients' Mental Health and Wellbeing?	• Discuss personal feelings towards negatives and positives of care • Discuss guidance or policy of local Trust or employer • How can Paramedic colleagues share this aspect? • Raise awareness of key conditions associated with your role
What are the common mistakes or misconstrued facts about your role and/or patients that you feel the learners need to understand?	• Communication needs of patients • Handovers with staff • Expectations of services (patience and understanding) • Common Medications/Drug/Alcohol misuse fact-checking