

How podcasts influence medical students' learning – a descriptive qualitative study

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Background. Podcasting of lectures is increasingly used in higher education. It is popular with students as it provides a modern e-learning tool that reinforces learning and facilitates engagement with learning material. Podcasts have, however, not been used much in medical education in Africa. This article explores the influence podcasts have on how students in an African medical school approach their learning material.

Methods. This is a descriptive qualitative study encompassing six focus group discussions with a total of 38 students from each of the six study years in the medical programme.

Results. The feedback from the students called for continuous and extensive implementation. Themes identified included: a novel way to learn; complementing classroom learning; providing ease of mind (a safety net); and the influence of the lecturer on student learning. Students did not find that podcasts negatively influenced class attendance. Enthusiastic acceptance translated into active engagement with the learning material.

Discussion. The way the students used the podcasts fits the active learning double tenet of student activity and student engagement in using a particular instructional method. The podcasts allowed the students to be more adventurous in their learning and changed the way they approached their learning. Situating the learning in the students' context and within their control played an important role in this.

Conclusion. Medical education in Africa is moving towards larger classes and increasingly decentralised clinical training. Podcasts of medical lectures in medical schools in Africa are an innovative and effective tool to enhance medical students' learning.

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Podcasting is generally defined as recordings of lectures, tutorials and learning material in audio and/or visual format that can be replayed asynchronously on various electronic devices. There is a growing body of evidence on the use of podcasts in tertiary education internationally, and it has been described as an essential requirement for university students.^[1] Students are reported to appreciate the fact that they can use podcasts in their own time, place and manner, and have generally enthusiastically adopted their use.^[2]

In addition to data on how students use podcasts, interesting findings on the influence of podcasts on student learning are also emerging. Meade *et al.*^[3] found that podcasts had a beneficial impact on students' learning as they allowed for repetition, thus reinforcing learning and building the understanding of complex concepts. Podcasts also provided students with greater control over their own learning and reduced anxiety.

Many universities therefore offer web-based podcasts of their lectures, and the practice has become increasingly popular as the technology facilitating this has developed and is more readily available. The use of podcasts in African universities is however still limited, with questions around affordability, expertise, and practicality being asked, despite evidence of its low cost and ease of use in other settings.^[4]

The podcasting of second-year undergraduate medical lectures commenced in 2012 at the Faculty of Medicine and Health Sciences at Stellenbosch University, South Africa (SA) as a pilot project to increase student support.^[5] This was funded by the Stellenbosch University Rural Medical Education Partnership Initiative (SURMEPI) as part of its remit to improve the quality of medical education in Africa. As a result of overwhelmingly positive student feedback, the intervention was extended to other years of study in the 6-year undergraduate medical MB,ChB programme in 2013.

The aim of the study was to understand why the availability of lecture podcasts was popular with the students. Our objectives were to explore how the students were using the podcasts, and to discern if and how the podcasts influenced their learning. This article reports on the qualitative results of this study. It provides specific insight into changes into students' learning approaches as a result of the podcasts. The first question relating to use is addressed elsewhere in this issue.^[5]

Methods

This was a descriptive qualitative study in the interpretive paradigm. Six focus groups were held with students from each year from MB,ChB 1 - 6. A purposive convenience sample of 38 students were interviewed, 6 - 7 students per focus group. The respective class representatives identified students willing to participate in the study. Semistructured interviews were conducted by an independent research assistant from September to November 2013. Six questions guided the focus group discussions (Table 1).

The focus group interviews were audio-recorded and transcribed. The students' anonymity was protected. The transcriptions were analysed using ATLAS.ti software. Inductive coding was done and a code list compiled. From the code list, themes linking various codes were developed. Afrikaans quotes were translated into English. The students provided informed consent and ethics approval was obtained (S12/01/022).

Results

The feedback from the students on the lecture podcasts was positive, with calls for continuing implementation. They described the university as 'with it' and in step with the times. (Quotes are referenced with the year of study focus group, namely MB,ChB 1 - 6.)

Table 1. Questions used in focus group discussions

Did you use the podcasts this year?
 What did you use them for?
 How useful did you find them?
 How can the podcasts be improved?
 How did the podcasts help you to learn?
 Other comments?

Table 2. Themes and subthemes

Themes	Subthemes
Novel way to learn	Auditory learning Fun and enjoyable Own time and pace Flipped classroom Interaction Integrates and makes connections
Complementing classroom learning	Clarify concepts Improved understanding Supplement notes Revision and reinforcement Supports class attendance
Providing ease of mind (a safety net)	Accessible and free learning resource Provides guidance and focus Helps with information overload Preparation for assessment Catching up
The lecturer's influence on student learning	Attitude towards podcasts In-classroom teaching skills Podcasts as quality improvement

MB,ChB 4 *'[There] is actually a fantastic example why I think the podcasts work well ... we all know there is an example of a subject where podcasts have not been released. I found this subject was much more difficult for me to master.'*

MB,ChB 4 *'It is fantastic when a university takes steps to be "with it" in this century that we are living in now.'*

The following themes were identified from the six focus groups, namely: a novel way to learn; complementing classroom learning; providing ease of mind (a safety net); and the lecturer's influence on student learning. Table 2 lists the themes and subthemes.

A novel way to learn

The students were consistently appreciative of the benefits the podcasts yielded for their learning. Most importantly, they provided a different and novel way of learning. Learning by listening emerged as a new and fun way of learning. Students listened to the podcasts while doing their nails, cleaning the house, at the gym, doing ward work, and travelling (among others).

MB,ChB 5 *'I'd been using basically visual input for 5 years, and then all of a sudden I was doing visual and auditory, and it's like a part of*

my brain maybe just lit up, and it was like, oh, this is what I'm missing out on.'

MB,ChB 1 *'So it is nice with the podcasts because they combine all the learning styles, and you can pause, use your textbook as reference ... I would lie on my bed and do my nails and the podcast could run ... I quite enjoy this.'*

MB,ChB 3 *'It's like you are sitting there at once, and instead of just going through your notes and writing; it's like you're using more of your brain so it just comes in quicker, it seems effortless. You could actually be doing something completely different, and just by hearing the lecturer speak again, it seems to filter through your brain.'*

The e-nature of the podcasts made it more interesting for the students to use than paper notes. They felt that the podcasts were convenient and could be comfortably studied in their own time and at their own pace.

MB,ChB 4 *'I mean it is much nicer sitting on a sofa eating popcorn while listening to a podcast during the holidays than lugging along your file with you and opening it ... This just works better.'*

MB,ChB 3 *'I have studied much faster and have – how shall I put it – with much less effort, got the stuff into my head and understood how it works. So it actually helped me a lot in studying more effectively.'*

The lecture podcasts influenced the students' approach to learning and in some instances changed the way that they learnt. Some students used the podcasts to prepare for future lectures. Senior students also alluded to the assistance the podcast provided them to make connections between concepts and enhanced clinical and practical application of knowledge now that they were in the clinical setting.

MB,ChB 5 *'When I started using podcasts I started being more comfortable with kind of non-traditional study methods. So I started downloading these apps on my tablet that I never used before, and that I always thought were a waste of time, and I started using them more. I started Googling clinical skills on YouTube more.'*

MB,ChB 3 *'You feel like working ahead ... then you could listen quickly to the previous year's lecture and then you sort of know what will happen in the next day's class and you could prepare your notes in such a way that you know what will be expected of you the following day.'*

MB,ChB 6 *'So you will see the lecturer's face in front of you, you will see the subject content, and you can connect it with a patient for example that you have seen in hospital, and it's not just lists and lists of things that you need to go through.'*

Complementing classroom learning

The students felt that the podcasts served as a tool that complemented classroom learning. The podcasts were often used to clarify difficult concepts that they did not grasp in class, and to supplement the notes they made during class. Students went back to the podcasts during their clinical rotations to refresh their knowledge and understand the relevance of the experience.

MB,ChB 5 *'I think when I sit in class I do tend to write down a lot, I want to get everything, but I think it's a better learning method or whatever [it] is to sit in class and to actually concentrate on what the lecturer is saying, and then go back and have that idea of repetition, and then make the notes.'*

MB,ChB 4 *'My friend and I used the podcasts a lot. I remember, we used to go to class, come back and go over the podcast for the day and the section for the day, and that helped a lot in our studying, and we could see a reflection in the marks.'*

The podcasts were most commonly played at twice the speed to get to the parts least understood, or paused to study a particular area, including areas lost in class because of a fast pace or lapse of concentration. The students thought that the podcasts made for constructive study providing a broader perspective and approach to the work, and reinforcing understanding.

MB,ChB 4 *'I think class is very important, but I don't have the best memory, so for me to catch the very important things that I didn't manage to write down, podcasts were very important, and especially because you can always speed them up. You put them on two times speed and then they're even faster.'*

MB,ChB 3 *'It is very nice to be able to, especially when the lecturer is explaining a system or a process or a cycle, follow it step by step, and after each step or couple of steps you can pause to check that you are still on track and you have everything at hand and can fit everything together.'*

There were extensive discussions in the focus groups on the role of class attendance in learning. Overwhelmingly, and increasing with seniority, the students underlined the importance of class attendance, with podcasts being complementary to classroom learning and not replacing class attendance.

MB,ChB 3 *'I have been attending the classes, but one misses ... if you listen to the podcasts you realise that you have missed so much of what was said in class, and sometimes you misinterpreted things because you only have heard part of the sentences.'*

MB,ChB 5 *'I think it's important to say that my class attendance was bad before podcasts started, so it's not that I was like, oh, there are podcasts now and now I can miss class.'*

MB,ChB 6 *'In my view, personally I don't think the podcasts would have been as effective if I wasn't in class the first time, because then it's kind of just like listening to a lecture for the first time. I think it has its effect because I was in class.'*

Providing ease of mind (a safety net)

This theme relates to the students finding the podcasts to be an important additional and free resource in their study toolkit. The podcasts provided guidance as to which areas were important, increasing the students' confidence in their ability to master the subject and assisted in dealing with information overload.

MB,ChB 2 *'Extremely useful. Like I said, you can download it here for free on campus, and then put it on your memory stick and go home and watch it. It's free of charge and in your own time you can sit and listen to it.'*

MB,ChB 2 *'I think that's where podcasts help, like they really emphasise certain points where you can be like, okay, and they just put your mind at ease. Sometimes you have a million and one sources in the study guide, and you're, like, what do I have to focus on, when you can watch the podcasts you know what's important, what to focus on.'*

The podcasts were seen as accessible learning materials that were used in test and examination preparation, thereby reducing the stress of assessments. Some students felt that the podcasts improved their marks.

MB,ChB 4 *'Also, I find that when preparing for a test, it is nice just to go over it again, because you might not have made a note of something the lecturer said, and then when you can go over it, you can see what he said and try to remember that.'*

MB,ChB 3 *'I felt that regarding my marks, it helped a lot, especially going over things that I wasn't completely sure about, but after viewing the podcasts, it helps so much.'*

For those students who had to miss class because of unforeseen circumstances such as illness, sport events, and leadership responsibilities on campus, the podcast provided a very important resource to enable them to catch up on their learning. They felt that the podcasts rescued them in the case of unforeseen circumstances and provided them with reassurance and peace of mind.

MB,ChB 5 *'We are taught to be change agents, and that is time-consuming, and sometimes you can't do everything. Podcasts are sort of like something for those who are in leadership positions who can't really attend class, sort of a replacement, or not a replacement, but something to help them to be able to handle all these things at once.'*

The lecturer's influence on student learning

Much discussion was devoted to the role and influence of the lecturer on students' (classroom) learning. The students felt that lecturers should embrace podcasts as enhancing students' learning and not worry that podcasts will affect class attendance. Students thought that lecturers who are 'boring' or just read their PowerPoint slides are not contributing to students' learning, and that this influences the decision to attend class or not. It was suggested that lecturers be orientated in the benefits of podcasting and trained in the use of podcasts.

MB,ChB 4 *'So I think it's an important platform that even lecturers understand why the podcasts are initially there, because some of them don't have an idea how important they are to students.'*

MB,ChB 3 *'I also think that the lecturer who is really gifted to teach will still attract students to attend class. I have made sure that I never missed any of Prof X's lectures and that I used the podcasts because I knew he is good. But with lecturers where I sat in class and they were boring ... I didn't bother to go back because I wasted my time there falling asleep.'*

The students felt that the podcasts could be used as quality assurance for lectures, in a formative and constructive manner. They thought that student feedback on podcasted lectures could be useful to improve lectures and align

them with students' learning needs. The students suggested that lecturer interaction on the podcast website could be developed for those lecturers who are interested in it.

MB,ChB 6 *'I think it's actually quite a useful, like, quality improvement cycle, in terms of the faculty then actually knows a thousand students have watched this, a thousand students have given an average grading of two out of five for this lecture; something needs to happen with this lecture, this is not something which can go on.'*

Discussion

The positive feedback emanating from the qualitative data affirms that the podcasts are clearly beneficial to our students. This however places a responsibility on faculty to ensure the sustainability of the initiative over time.

Perhaps the most exciting finding from this study relates to the way the podcasts have changed our students' learning styles.^[6] Students utilised the podcasts to master the content and then used the classroom interaction as an opportunity to clarify concepts and deal with difficult subject matter. They therefore introduced a flipped classroom effect by using the podcasts to prepare for a lecture and using the lecture time for questions and clarification.^[7] They became more adventurous in their learning and tried different approaches, with good effect. Situating the learning in the students' context and within their control seems to have played an important role in this. As young adults growing up in the technological age the students liked the concept of mobile learning, using their own electronic devices. The novelty of the auditory input provided a refreshing and different learning experience.

All of these factors played into enthusiastic acceptance coupled with a fresh energy and motivation for learning which translated into active engagement with the learning material. Although we do not dispute that some students' use of the podcast would be largely passive, our results point to active engagement. The way they used the podcasts fits the double tenet of active learning, namely student activity and student engagement using a particular instructional method.^[8,9] The essence of this is captured in a quote from the MB,ChB 2 focus group: *'So if I'm pausing and I'm talking back, it's kind of like I'm making up this conversation with the lecturer in my own private room, or wherever I'm studying, and I'm also learning at the same time.'* Active learning leads to (among others) improved academic achievement, greater student self-esteem, and positive student attitudes towards the learning experience.^[8,10] While we need to do more work to explore the cause-effect of these benefits in our work, we are encouraged by the emerging trends.

The debate on whether podcasts impact negatively on classroom attendance remains the biggest barrier to faculty accepting podcasts as a teaching tool. Although most of our lectures are podcasted, there are still a few modules where the lecturers are not allowing podcasting. Our data strongly support others' views,^[4] that podcasts complement rather than replace classroom learning. We want to argue that there should no longer be a place for a classroom lecture without a podcast, given the positive spin-off on students' learning. The advantages and disadvantages of podcasts for lecturers, however, need to be explored and addressed, something that we are doing in a related study.

Our study is limited in its generalisability as it was performed in only one medical school in Africa, which context may be quite different from others on the continent. We have however had extensive interest from medical schools north of SA in introducing podcasting, and have supported them with technical assistance. Our sampling was based on volunteer students and could therefore have biased the results on the positive side. The focus group discussions attempted to address this by exploring both advantages and disadvantages.

Now that we have confirmed that podcasts appear to offer benefits to students in the African context that are similar to those reported internationally, the question as to how we ensure that medical education in Africa benefits from this becomes key. Clearly the affordability for the student is a plus factor. Involving students in the recording of the podcasts in the classroom increases their ownership and reduces the need for extra personnel.^[5] Our experience has shown that once the podcast system has been created, very few additional resources are needed to maintain it, except for technical assistance in trouble-shooting.

Conclusion

The focus on increasing the health workforce in Africa is leading to large classes of students and an emphasis on decentralised clinical training.^[11] Podcasts improve the quality of classroom learning, as has been argued above. They also provide opportunities for understanding difficult concepts and for revision and student support, all of which are challenges with large classes of students. With decentralised clinical training, podcasts logically facilitate training on a dispersed platform. We therefore argue that podcasts of lectures in medical schools in Africa are at least as important, if not more so, than those outside the continent.

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