Podcasts and learning

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The psychology, technology and production of podcasts

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LINE

Contents

Podcast explosion

Podcasting becomes mainstream

Podcasting took everyone by surprise, as do many consumer-led revolutions in technology. Led by the exquisitely designed iPod, podcasting has talked its way into the heart of the media landscape.

They're all at it; media giants, TV companies, corporates, newspapers. Ricky Gervais even got into the Guiness Book of Records with over 4 million downloading his hilarious Guardian podcasts. Who would have thought that audio would have been so popular a medium? But what is it about simple audio files of people talking that has caused all the fuss?

Educational podcasts

Duke University's unique trial in 2004 set podcasting in education on its way. The results of their first year in using iPods have now been released. The numbers are impressive; 1600 new students were given iPods with Belkin voice recorders. Subjects covered included; languages, music, engineering, computer studies, social sciences and humanities.

They were used to provide portable access to course content, as a classroom recording tool, field recording tool, study support tool and for file storage and transfer.

A surprising finding was the use of recording, which was taken up by 60% of students. This was more popular than listening to supplied material. The lesson here is that, when learners get a hold of this technology they use it – they're active.

Other reported benefits were convenience, namely reduced dependence on physical materials, location-independent access to materials, recording for reuse and recall and increased student engagement.

Needless to say, Duke gained many other benefits through the publicity (a boon in a competitive system that's looking for new students), increased collaboration with other institutions and a positive driver for the use of technology in learning in the University.

All of this good news led to an extension and expansion of the programme in 2005-6. Many of the language courses at Dukes now use iPods including Spanish, French, German, Italian, Russian and Hindi. It also extends into other subject such as philosophy, psychology, politics, music, computer science and education. An interesting angle was the partnership between Duke University and Public Radio International (PRI) to use digital audio files on iPods in Duke courses. News reports and excerpts from programmes are now accessible in class. This crossover from mainstream media to academia is long overdue and it is technology that is making it possible.

"personal, portable and powerful"

Why are podcasts popular?

Here are a few simple ideas that may help explain its popularity and effectiveness.

First, the gadgets are personal, portable and powerful. An MP3 player or mobile with an embedded MP3 player is 'your' personal gadget and goes with 'you' wherever 'you' go providing an amazing amount of high quality audio.

Secondly, there's time shift. You can choose to listen to what you want to at the time and place you choose. You are not under the tyranny of time and location. Podcasting has been described as the new radio. It has taken this old medium and liberated it from the confines of traditional radio stations. We can now create radio broadcasts and make them available on the web to be listened to and picked up at any time.

Thirdly, the internet has provided the perfect distribution medium. Broadband with its P2P networks, iTunes and other forms of distribution software have made access easy.

Fourthly, listening is a remarkably simple medium that requires no real learning. The technology is also easy to use.

It is now common to see people in public spaces listening to their MP3 player. Thousands listen to music or radio while sitting at their desk or in the car, on a train or aeroplane. It's a sit back and listen, reflective device that allows you to relax, think and learn.

Key questions

Here are a few questions we can try to answer before committing to podcasts for learning:

What's the psychology of audio learning?

What are the advantages of audio learning?

What type of technology are we talking about?

What type of content is suitable?

What's working in education?

What's working in corporates?

How do I make a podcast?

This paper attempts to answer these and other questions.

Podcasts – the psychology

Auditory memory

Our ears are more than just portals for sensory input. Ever thought why your ears have those folds and convolutions? Why aren't they simple funnels? It's because they cause sound shadows increasing our ability to locate the direction of given sounds.

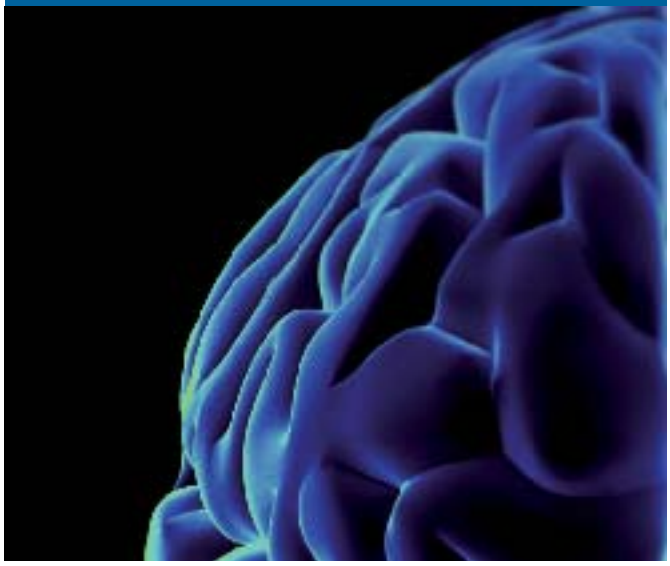
Hearing is also selective. We can home in on conversations even in the noisiest of parties. This is called the 'cocktail party effect'. Indeed, we can tune in and out of remarkable range of different sounds from different directions as we proactively seek the sounds we want to hear.

The brain works on two levels here with two main types of auditory memory;

- auditory short-term memory (extending 2-20 seconds)
- auditory long-term memory

Short-term auditory memory has been measured by Glucksberg and Cowan (Memory for Non-attended Material, Cognitive Psychology, 1, 149-156, 1970) and lasts between 2 to 20 seconds. You experience this when someone speaks to you and you only catch its meaning when you recall it on a double take. Some features of this short-term memory include primacy and recency (remembering first and last thing heard) and the fact that strings of numbers, such as telephone numbers are better remembered when heard than read.

Long-term auditory memory seems to involve our semantic memory. The power of long-term auditory memory is shown in our ability to remember recall huge amounts of music. Mozart needed only one hearing to remember entire scores. Toscanini, the conductor, could also write down entire scores from memory. Then there's the legendary Mr Napoleon Bird who played tunes on the piano for 44 hours with no repetition. We seem to be aural geniuses.



Hearing and speech

Stephen Pinker Harvard's leading linguistic psychologist, makes the obvious, but interesting, remark that no hearing person would use sign language to speak to another hearing person. Speech and hearing are just too efficient.

The sex of the speaker is immediately recognisable and voices can be recalled after hearing as little as a single word. Normal speech is understood at 10-15 phonemes and even up to 40-50 per second when artificially speeded up. The visually impaired listen to text to speech translators ate speeds that amaze ordinary listeners.

Unfortunately, it is the genius of our brains on speech recognition that makes speech recognition software so difficult to write. There's a trade-off between understanding a huge number of words and understanding a huge number of people. Our brains can do this, software struggles.

In terms of learning hearing has some powerful advantages as listening allows the learner to:

- avoid dependency on reading
- overcome problems of illiteracy
- bypass dyslexia

In other words podcasting has educational advantages. It is not just a flash in the pan internet fad.

Avoids dependency on reading

Almost everyone is a grammatical genius by the age of three or four. We will have learnt not only how to how to listen but also how to speak. As Chomsky and the science of linguistics has found, children do not learn how to understand the spoken word, they are hard-wired with the skill. This is largely instinctive and rarely involves any formal teaching.

In linguistics, the spoken word has primacy over the written word in that language is primarily a spoken medium and instinctual, reading and writing are not. Indeed, many societies do not have a written language and those that do have emerged from surprisingly few incidences of writing's historical invention.

The primacy of speech and listening becomes obvious when we consider how difficult it is to learn how to read and write. Even after years of intensive learning, millions emerge with poor literacy skills. Compare this with the effortless acquisition of your first language.

English is particularly difficult. Its irregularity in spelling adds a considerable amount of time in learning to read and write. Six out of ten fifteen-year-olds can't write ten lines without making at least one spelling error (Brooks et al, Spelling It Out: The Spelling Abilities of 11 and 15-year-olds, NFER) and according to researchers at the Institute for Learning at Hull University, the irregularity of English spelling means that mastery can take anything up to four years more than in some other European countries. They estimate that around 25% of the school population needs the extra years to learn to write common words that have irregular spellings. To learn through listening bypasses this problem.

Overcomes problems of illiteracy

Even in countries that devote considerable portions of GDP to compulsory education still have problems in producing wholly literate school leavers.

This basic illiteracy shadows a person limiting their ability to learn as well as disadvantaging them in basic life skills and the job market.

Claus Moser's report in 1999 showed that more than 7 million adults in the UK could be described as having literacy problems. 20% of adults were described as being 'functionally illiterate'. A reinterpretation of the data put the national average even higher, at 24%, rising to an astonishing 40% in some areas.

A more recent study in 2003 of more than 8,700 adults in England aged 16 to 65 showed that 5% of adults have literacy skills below Entry Level 3 (1.7 million in total), the standard expected of 11-year-olds, and that 16% (5.2 million nationally) below level 1 (less than a D-G GCSE). The situation is improving, but even wit significant improvements these figures are shocking.

The problem is compounded in an education system tat is largely print-based. Few examinations involve oral skills, apart from second languages. This means that catastrophic failure is built into then system at a very early age.

One solution is to rebalance learning towards audio content, rather than reading and writing. Given the ubiquity of cheap MP3 devices the technical issues are minor. This would be a godsend for those who have difficulties in reading or who simply don't have the disposition to read lots of text.

Bypasses dyslexia

Dyslexia is defined as a "condition that affects reading, spelling and writing… It is particularly related to mastering and using written language." Independent of socio-economic background, it occurs in people with normal intellectual ability.

The Nathlie Badian study suggests that dyslexia, in the Western world, affects 4% of the population, regardless of socio-economic status or level of intelligence. This would mean that every 30 child classroom would have roughly one dyslexic child. It has since been stated by Pennington B (1991) Diagnosing Learning Disorders, New York, Guilford) that up to 10% (or even more) may show some signs of dyslexia. Some of our more famous dyslexics include Leonardo da Vinci, Einstein, Churchill and Hans Christian Anderson. Of course, many go on to higher education and great achievement in life, but often have considerable hurdles to cross on the way.

It would seem that dyslexia may be caused, or at least made worse, by a mismatch in the brain's processing of information through visual and aural channels. When we read, we sub-vocalise text and dyslexics seem to mismatch the sights with the sounds. Specialist teachers use hearing and other senses to improve reading skills. It is recommended that the child hears things first by being read to or listening to books on tape followed by reading the same book together.

Learning by listening obviously has significant advantages over reading and writing for dyslexics.

Listen to learn

When listening seriously, one is in an attentive but relaxed and reflective state, which is ideal for learning. Free from visual distractions and competing sensory channels, one can focus and reflect on the topic. Earphones often induce or heighten this sense of isolation and concentration.

Listening can be regarded as a primary channel for learning. Millions listen to talk radio and many fans of radio 4 extol the virtues of radio over TV. By focusing on the spoken word, the listener can use their own imagination to picture the context. This use of the imagination, can make learning, and recall, more effective than watching TV.

Learning involves active listening. Letting things wash over you while you work is not an effective way to learn. The famous Mozart Effect, where one plays music in the background to improve learning, has spawned a huge industry, yet also been shown to be non-existent in several recent trials. Listening to learn, despite the wacky theories about music and learning while you sleep, needs attention and effort.

A strong recommendation is to take notes while you listen. This has been shown to increase retention by 20-30%, especially if the note taking is structured, in your own words and uses useful analogies.

Podcasts – the technology

The primary digital format for consumer market audio files, whether they be music files, audio books or other spoken word recordings, is the MP3 format.

There are hundreds of MP3 players on the market and they are getting smaller, cheaper and more powerful by the day.

MP3 players are also appearing within other devices. The recent iPhone is regarded by some as the first breakthrough mobile device, camera and MP3 player on the market.

The iPhone has many functions in one device. It's a mobile phone, iPod and internet communications device with class email, web browsing, maps, and searching, all in one handheld device. The only input device is your finger.

What makes these devices special is a unique combination of physical qualities:

- Small, light and portable
- Massive storage
- Easy download
- LMS-like control of learning content

Small, light and portable

This really is pocket learning. These devices are now as small as packets of gum and are increasingly embedded in other small devices such as mobile phones and PDAs.

As consumer devices they are specifically designed to slip into your pocket, clip onto your lapel or simply hang round your neck. It's as unobtrusive a piece of technology as you can imagine. This puts it in a league of its own when one wants to pass the time in airports, planes, railway stations, trains and other temporary spaces. The anthropologist, Marc Auge, calls these 'non-places', spaces we inhabit temporarily.

It's now possible to buy a playback device that makes your MP3 player work through your car stereo. The add-on device searches for a spare frequency on your radio. Some cars even have this built-in.

And if you want to listen in a fixed location, cheap docking stations are also available. Some, like this one from Bose, also charge your device while it plays.

> “anything from short quick-fix playlists to complete curriculum structures”

Massive storage

Speech can be stored at a lower sampling rate than music. However, the storage capacity of most devices is such that you will be able to load dozens, if not hundreds, of hours worth of material onto one device. Battery life is also increasing dramatically and the quality of the sound is superb, only a tiny bit poorer than CD quality. Many devices also have ‘spoken word’ equaliser settings.

Easy download

MP3 players also come with their own management software. iPods come with iTunes, and allows you to download or import audio files to a PC or MAC, then automatically across to your iPod. This process is simple and largely automated.

Smart LMS built in

In iTunes, for example, each audio track has 23 pieces of information that are under your control. This is like having meta-tags and they can be used to control the delivery of learning content.

Metadata

Descriptions of content allow you to attach information about the genre, subject, topic, author and so on. Time data is also tracked according to date added. Modified, year of creation, last played and number of times played. It allows you to rate a piece of learning from, 1-5.

Playlists

A playlist is a homemade combination of tracks. Playlists can be set from a formal curriculum, tailored to an individual’s needs or training gaps or self-selected. These playlists exist over and above the audio files and can be edited and deleted at will, without affecting the underlying stored content.

You can literally create anything from short quick-fix playlists to complete curriculum structures. Smart playlists are also possible.

Smart playlists play to a set of pre-determined rules. These rules contain a sophisticated logic including; contains, does not contain, is, is not, starts with, ends with.

There are also sophisticated rules for time including; is, is not, before, after, in the last, not in the last, in the range.

Rules can also be created to determine the playlist by; category, time and quantity. You can set up a smart playlist to just play the learning objects you have yet to hear. A smart playlist can be used to select learning objects you’ve recently added for more reinforcement. You can even create a playlist around a keyword, with the song name containing, let’s say, ‘sales’. These smart playlists will even update themselves over time.

Feeds

An often underestimated feature are feeds such as RSS, which push selected content out to users.

Podcast – the content

Podcasts are almost everything that is downloaded and listened to, apart from music. They come in all sorts of shapes and sizes.

Mainstream media content

There's broadcast stuff from TV, radio and newspapers that's time shifted so that you can listen to it at the time you choose. News, humour, reports and interview podcasts are now part of the media landscape. It is fascinating to see how non-audio media such as newspapers and magazines have taken to this enhancement of print.

An interesting example was the famous Ricky Gervais Guardian podcasts. These achieved cult status with their lunatic style and the laconic Pilkington.

Event content

There are conference summaries where you can catch up with the presentations you missed, or at a later date. Powerpoints are less than half the story so audio podcasts are often more useful. These are sometimes provided online before a conference (see Masie's Learning 2005/6) or on CDs or cheap flash drives.

Expert interviews

In terms of knowledge management key talks by the CEO or senior managers are often distributed in this fashion. It is much easier to produce and distribute than video.

Interviews with gurus and experts are also common. To hear the voice of a respected academic, author or expert is to hear the real person. This adds an extra dimension to learning in terms of recall.

Audio books

Free and commercial audio books are another possibility. For free books there are the free download P2P sites such as Limewire and Kazaa. Project Gutenburg http://promo.net/pg/ is a good source for free classics and there are plenty of sites that sell audio books such as http://www.audible.com/. Most best-selling management books are available in audio format. This can be more convenient for sales people on the road. You can even download the bible to read on your iPod (iGod) from http://www.kainjow.com/biblepod/.

Learning content

While there are endless content opportunities, some topics are more likely than others:

- Management topics
- Sales training
- Compliance topics
- Schools revision content

Managers are often on the move, short on time and in need of refresher training. It is natural, therefore, that this type of training be made available.

Sales training has similar appeal: large mobile populations in need of product knowledge and sales training.

Compliance is another winner, with increasing numbers of people needing to do annual compliance training.

Lastly, there's school revision. As we saw at the start of this paper, the technology is already being used in US universities. It is only a matter of time before iPods, far from being banned in schools, will be used to record and deliver learning.

We can tie this into performance support. A lot is made of the idea of "just in time" learning, but in practice, you never have the time to sit in front of your PC just before a sales meeting. You're on the move. iPod learning enables you to make that time productive – true performance support.

Learning content for the iPod including study guides, tests and language learning.

http://podcasts.yahoo.com/ allows you to search for and rate podcasts. It has hundreds of 'education' related podcasts from around the world.

Podcast content

Podcasts in education

Podcasting in schools

Some schools in Scotland, namely Musselburgh Grammar (my wife went to this school), and Sandaig Primary School in Glasgow, have been doing fine things with podcasting.

John Johnston has used podcasts by himself and the children at his school, using Audacity. It gets them listening, working together. He sees podcasting as having huge potential because it's so easy – basically a laptop and a microphone. Scripted, recorded and edited by the children at lunchtimes and at home he has witnessed the excitement and strong sense of ownership. What's more they listen to themselves and each other. He is convinced that podcasting is a technology with huge educational potential.

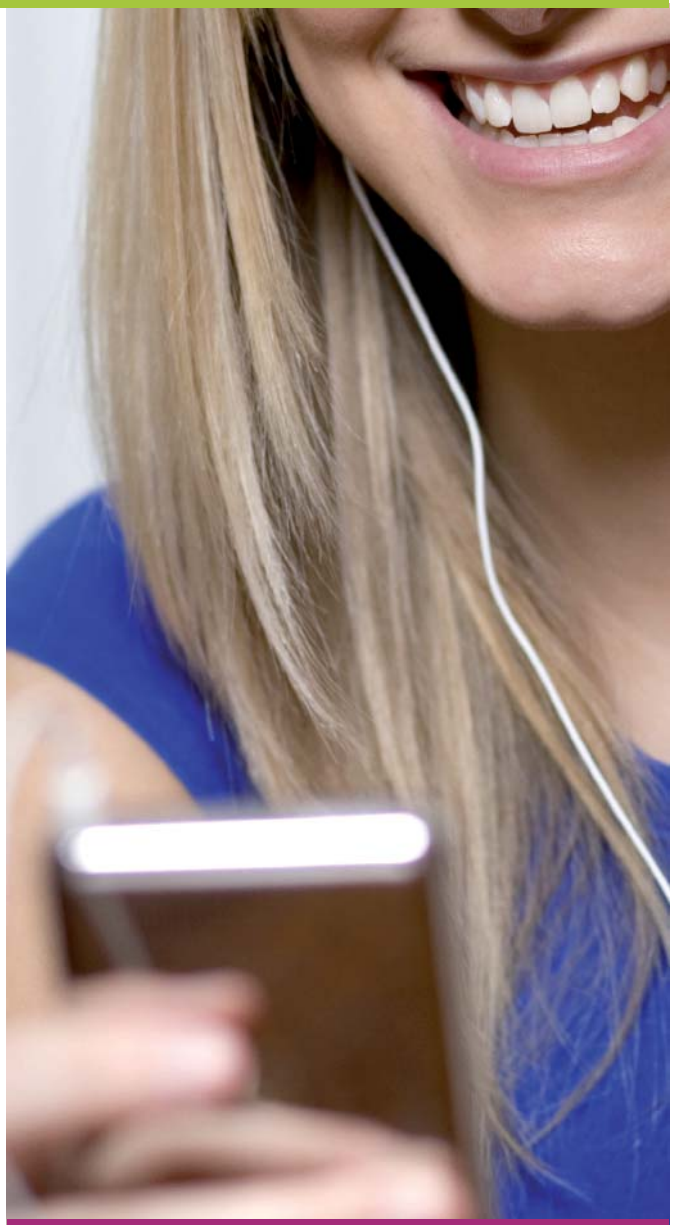
http://www.addysg.org.uk/ipodined/news.php?extend.32

Podcasting in higher education

We've already mentioned the pioneering Duke Univerity trial but bthere have been others. Georgia College and State University has some great testimonies from staff and students on this site.

http://ipod.gcsu.edu/

It's hard to beat these student recommendations. You can feel their enthusiasm for this technology and how it really does energise their learning.



Like many of these initiatives, there's a champion. This guy's Randall Thursby, University System of Georgia's Vice-Chancellor for Information and Instructional Technology, which in 2002 started to use his iPod for work on his long commutes to work.

Since then they've been enhancing their course using iPods in languages, psychology, art history, politics, literature and music. They've built this slowly, building on their experience so that demand is created among students and faculty.

"iPod recording helped me a lot. I now understand better why people suggest reading a paper aloud before submitting it. I listened to myself and tried to imagine I had not read anything about Bede."

"Listening to a recording helps to get words and phrases and sections of the material in better order. I initially listened to how I had my information arranged and thought my speech would flow better with a rearrangement of the text. That's what I did that caused more practice."

Drexel School of Education has a long history in using technology in learning. They had a deal with Apple way back in 1984 to provide computers for students and have just given (late 2005) the students in their Master of Science in Higher Education program the latest iPods.

Drexel has an online subsidiary and have been attracted by the video capability of these new iPods. It's not only teacher to student but student to teacher, and student to student that is encouraged. The more interaction the better.

They're also looking to be more innovative and creative in assignments creating a cool campus online with an iPod Higher Education Lecture Series and the creation of an online Research Consortium, Student Information Exchange Lounge, Green Room, and iPod Higher Education Career Resource Center. Students will be able to upload/download audio and video interviews, showcase assignments/research, share resources, post e-portfolios created with the iPod, and access the program's online student research journal.

These and many other trials show that there's a wide range of possible uses of audio learning in education.

Podcasts in corporates

A major bank has recently trialled podcasting with sales staff. It was felt that short sales training and product knowledge would sit well with this audience, who are often on the move and need to be fed with regular updates.

Producing podcasts

Planning your podcast

Allocated production time

Allow 1 hour production time for every 10 minutes of actual finished material. You'll need time to set up, brief, rehearse, record and possibly re-record. But don't tell them the end product's going to be just 10 minutes!

Prepare questions

Some good podcasts are just a speaker letting rip, but for most interviews you'll need some structure. One method is to get your interviewee to submit 5-7 questions the day before or at least prepare questions that meet your objectives and send them to the interviewee

Interview

The actual interview needs to be structured and it's always best to ask simple, open questions, especially 'Why?' questions. But try to keep podcasts conversational. It's this sense of someone being personal that often works for the listener.

Write down your 3 to 4 objectives in front of you. Play it back at the end and ask if they want anything changed.

Length

On the issue of length, there are no absolute rules, although most experienced listeners and podcasters will recommend that they be as short as you can make them without compromising your objective. For some it's a full hour or more, some 10-15 minutes, others 5-8, others 2-3. There's no hard and fast rule, but like most learning experiences, less is often more.

Recording your podcast

Environment

Choose quiet room and switch off any air conditioner and close the windows. A 'Quiet – recording in progress' sign could also come in handy. Provide a glass of water.

Do a first run

Do a pre-interview to let them talk out a little. This will get rid of any nerves. The second take will be much better and more natural. Tell them to be conversational, short and to avoid jargon

Equipment

The sound quality will only be as good as your microphone, so it's worth buying a good one, with a stand and getting its position right. A lapel mike can work well. Choose your recording level and compression rates carefully and listen back through a poor PC with poor speakers. Portable recording devices are obviously required and some convert straight to MP3.

Editing

With narration listeners expect high quality; however, with interviews people forgive the stumbles and poorer quality. Don't spend too much time cleaning up the edit – it's all part of podcasting's charm.

It's also wise to provide a text transcript – some prefer and want the printout.

Put audio into flash as it avoids soundcard

www.ipodined.org

Conclusion

Nomadic learning or m-learning has assumed that the mobile phones and/or PDAs are the most probable devices for delivery. In practice, simple MP3 players may be more effective. IPods, in particular, have taken the market by storm. Indeed Apple has been transformed by the iPod.

So does the iPod, and similar devices, offer a new channel for learning? This is already happening. The iPod is now being used as a spoken word playback device. It is clear that its consumer appeal and ease of use makes it suitable for learning through listening.

Does it free learning from the tyranny of time and location? These devices are mainly used when we are on the move. They fill in dead time.

Is listening an effective way to learn? We have seen that auditory memory can be extremely effective when supported by note taking and practice.

Psychologically, we have seen how:

- Hearing is a strong learning channel
- Listening is instinctual, reading is not
- Listening gets round illiteracy
- Listening gets round dyslexia
- Listening frees eyes and hands
- Listening is socially acceptable
- Listening is aligned with lifestyle
- Listening and learning go hand in hand

Over and above the psychological factors, we have the physical factors:

- Ergonomic, small and light
- Immense storage and superb sound quality
- Playback through other devices
- Easy download and updating
- Great user control of content

On content we can see a number of opportunities:

- Free audio books
- Commercial audio books
- Radio content
- Conference recordings
- Commercial audio learning

And in terms of types of content, some front runners could be:

- Management topics
- Sales training
- Compliance topics
- Schools revision content

This may turn out to be a piece of consumer electronics that makes a significant contribution to learning.