

Music and learning

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Key learning points

- **Musical/rhythmic intelligence is one of several intelligences that can be engaged and inspired in order to aid learning anything.**
- **All learning is state dependent, music is one of the best 'state-changers' and anchors specific emotional responses.**
- **Certain kinds of music (60-80 bpm) encourage a highly suggestible alpha state in your learners – which is excellent for uploading technical or factual information. Use 'concerts' (speaking with music in the background) to preview or review information you want your learners to remember.**
- **Make sure you're using music in the classroom legally.**

The benefits of music

Music's reputation as the universal language is certainly well deserved, and recent studies are pointing more and more to the benefits of music in the learning situation.

One of the founding fathers of accelerated learning, Dr Georgi Lozanov¹ observed: 'a well-executed concert can do about 60% of the presenting work in about 5% of the time'.

How? Because music activates the limbic system and the content is therefore much more



likely to be encoded into long-term memory. Music has the unique quality of integrating the emotional, cognitive and psychomotor elements that activate and synchronise brain activity.

Evidence from schools shows that not only is the study of music beneficial in itself, but the introduction of music into any learning situation causes a marked improvement in maths, sciences and reading.

Many children have learnt their alphabet over the years by singing along to the tune originally composed by Mozart and known as 'Ah, vous dirai-je, Maman'. We know it better as...

Twinkle, twinkle little star
A B C D E F G

Perhaps this is one of the simplest and oldest examples of using music to aid the learning process. In terms of effectiveness

there can be little doubt that simple rhythms and tunes make excellent carriers of linguistic and numerical data which help to lay down information in the brain's long-term memory.

Expert research

Innovative research at the University of California in the early 1990s has shown the benefits of even limited application of 'the Mozart effect'. At the Centre for Neurobiology, Frances Rauscher and her team conducted a study in which undergraduates from the psychology department scored eight to nine points higher on the spatial IQ test (part of the Stanford Binet intelligence scale) after listening to just ten minutes of Mozart's Sonata for Two Pianos in D Major.²

Introducing music for concert previews and reviews

- Start by playing music during team and individual exercises. If this is new for people, give a minimal explanation of the research supporting it. Turn the music down if learners complain. You'll find that most learners forget all about it after a short time – which is what you want. You will notice an increase in energy level, retention and enthusiasm.
- Some learners in the corporate world may feel uncomfortable when closing their eyes during passive concerts – at least at first. It may be inappropriate in certain settings, and the facilitator needs to respect this. Where this is an issue, we sometimes use passive visual concert reviews which combine background music with watching a visual presentation – perhaps a repetition of overheads or flipcharts used earlier in the day.
- Ask the learners to take turns to read the material to each other.
- Have the group create an active concert review from written material or mindmaps and perform it for each other.
- Too much creates saturation. Aim for 30 per cent or less of the group time (unless you're teaching a music class).

Keep it legal

Licensing issues relating to music in the training room

The legal situation regarding using recorded music in public differs in the United States and the United Kingdom. ('Using music in public' is legal terminology, and includes running training courses even if they are in-house events and not public according to the customary definition.) These notes relate to the UK.

The rights to use recorded music are policed by the Mechanical Copyright Protection Society (MCPS). Do not confuse MCPS with the Performing Rights Society (PRS), who monitor live performances of music. MCPS issues licences for the use of recorded music in a huge variety of circumstances – in films and TV,

in advertisements, on records and in shopping centres. Outside film, TV and so on, they issues licences which relate to the premises rather than to the music. This means that, in general, buildings either have licences to use recorded music or can get them. Many hotels, conference centres and so on have such licences. All schools are covered for music used during classroom lessons by a blanket MCPS licence.

If your building does not have a licence, another route is to become licensed as a mobile DJ. This allows you to use any legitimately purchased CDs, tapes and records in any place. The mobile DJ licence can be obtained by calling the MCPS licence hotline on 0800 0684828.

In conclusion

Music has the ability to affect our learning processes, brain development, organisation and the refinement of our entire neurological system. Music elicits emotional responses and stimulates the limbic system, which must be accessed in order for learning to be encoded into long-term memory.

Acknowledgements

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References

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- 4 A Denney, 'Quiet Music: An Intervention for Mealtime Agitation?' *Journal of Gerontological Nursing*, vol 23, no. 7, July 1997.
- 5 P MacLean, *The Triune Brain in Evolution*, Plenum Press, 1990.
- 6 S Ostrander and L Schroeder, *Superlearning 2000: New, Triple-fast Ways You can Learn, Earn and Succeed in the 21st Century*, Souvenir Press 1996

Authors

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James Smallwood designs and delivers creative, innovative and effective training solutions. James has a teaching degree and is qualified in psychometrics and 360-degree appraisals. He is also a qualified Ropes Course instructor who is equally at home running programmes in the classroom and outdoors. With a background in teaching, sales, training and project management he is an empathic coach and an outstanding presenter who loves to make learning fun.

How does music affect our body and brain?

The effects of music on the body were first recorded in 1924.³ Pulse rate, blood flow, blood pressure and electrical activity in the heart were measured. In general terms, faster music speeds us up and slower music relaxes us and slows us down, although the effect varies from individual to individual.

A new study on the effect of music on Alzheimer's patients in a long-term care facility – conducted by Ann Denney, MSN, RN, and published in the July 1997 issue of the *Journal of Gerontological Nursing*⁴ – used two of LIND's Relax with the Classics recordings, *Largo* and *Adagio*. The study showed a 57 per cent reduction in verbally agitated behaviours and a 59 per cent reduction in physically agitated behaviours.

Ann Savan (Aberdare School, Wales) uses Mozart to calm her science students. Pulse rates and blood pressure decrease, allowing students to concentrate on tasks and reducing frustration. This translates into improved attention and work in class, and ultimately into taking exams where this had not been an option before (*Newsnight*, BBC TV, 9 July 1999).

Studies in Austin, Texas, demonstrated that half of the expectant mothers who listened to music during childbirth did not require anaesthetic. 'Music stimulation increases endorphin release and

decreases the need for medication. It also provides a distraction from pains and relieves anxiety,' said a researcher.

Dr Paul Maclean at the National Institute of Mental Health⁵ says, 'the emotional or limbic system of the brain is so powerful that it can either facilitate or inhibit learning and higher order thinking skills. Listening to music appears to involve the brain at almost every level, even evoking emotional feelings, utilising both the cortex and limbic systems that can enhance long-term learning.'

Musical/rhythmic intelligence

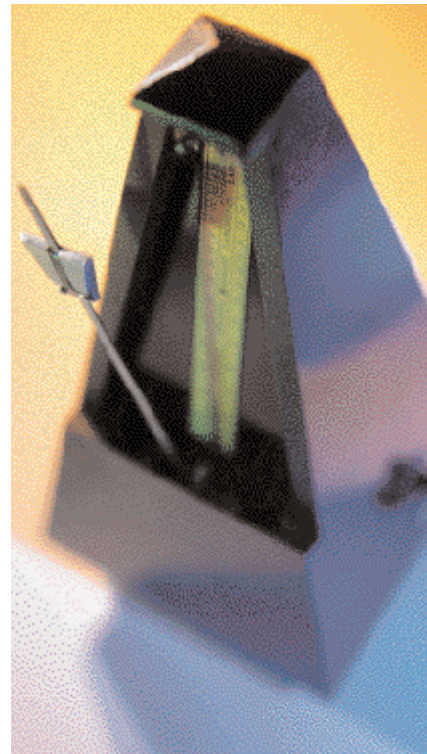
Musical or rhythmic intelligence can be described as sensitivity to pitch, rhythm, tone and melody. According to Gardner's research, enjoying music – either as a composer, performer or listener – is the earliest form of human giftedness to emerge in child prodigies.

Appropriate training methods:

- Rhythmic tonal patterns in speech.
- Exaggerating volume, tone and intonation.
- Music.
- Humming.
- Singing and writing songs.
- Writing and performing rap or poetry.
- Emphasising key points with sound – for example clap, bang the table or whistle.

Developing your musical/rhythmic intelligence

- Join a choir – or just sing in your car, in the shower, anywhere. (This has other pay-offs for trainers too: in terms of developing your speaking voice and giving you more richness and presence in your delivery style.)
- Learn to play a musical instrument.
- Listen for naturally occurring rhythms in footsteps, birdsong – even washing machines.
- Make up a jingle, rap or rhyme of things you want to remember.
- Listen to background music whilst doing other things.



Case study

Technical training and music

Hideo Seki of Tokyo⁶ used music to teach a course on electricity and magnetism to his computer science students. The first day was devoted to goal-setting and positive suggestions by and for the learners. The rest of the programme was sequenced like this:

- Ten minutes of mood-setting music as learners arrive.
- Presentation of new material through lecture with no music.
- New material presented visually with overhead projector – with more active music and learner involvement.
- The same material presented to slow, instrumental music, with the learners just listening.
- Energising music as the learners leave.

In the exam, three times as many students than in previous classes achieved scores better than 80 per cent.

How can you use music in your training?

Well-chosen music leads to:

- relaxation and stress reduction;
- fostering of creativity through brain-wave activation;
- stimulating motor skills, language and vocabulary;
- better class discipline, and group rapport;
- increased attention span;
- settling hyperactive learners;
- a more focused and aligned group;
- improved long-term retention and memory.

The pulse of the body (heart rate) tends to synchronise (entrain) with the beat of the music, so choose different beats depending on the effects you want to create. This explains how slower, baroque music can have the effect of reducing the pace of a workshop – allowing learners to focus.

Uses of music in the classroom

- As a call-back 'anchor' after breaks or group activities.
- As a state changer or energiser.
- Active learning concerts.
- Passive learning concerts.

What kind of music and why?

Whilst you don't have to become an expert on brain-wave patterns to introduce music into your learning events successfully, it's useful to understand the basics

Brain state	Rhythm of brain waves	Heart/pulse/ beats per minute of music	How it feels
Delta	0.5–3 cps	Resting rate	Deep, dreamless sleep, no outer awareness
Theta	4–7 cps	Resting rate	Unconscious, light sleep, deep meditation
Alpha	8–12 cps	60–80 bpm	Aware, relaxed, calm, high suggestibility, daydreaming
Beta	13–40 cps	80+ bpm	Normal waking, consciousness, alert, active

Note: cps = cycles per second, bpm = beats per minute.

about why certain kinds of music should be used in different situations. Look at the table below showing the relationship between brain rhythms and beats per minute (of the heart, or of the music).

The alpha state is excellent for learning facts, synthesising new knowledge, strengthening long-term memory and nurturing creativity. It's interesting to note that the rhythm of ocean waves, like music at 60–80 bpm, can stimulate alpha brain waves in some people – perhaps that's why we find the ocean so relaxing.

As a general rule, use slower and quieter music (around 60 bpm) for passive reviews and faster and louder music (around 80 bpm) for activities.

Types of music for 'sound surfing'

State changers and energisers

Your play list for these needs to change as contemporary and popular music changes – and depending on the age and preferences of your group.

Preview

Short, light, fun, attention-getting 3–7 minutes whilst doing initial overview

Dramatic music, Mozart, Beethoven, Haydn

Film themes, music from the shows; well-known TV adverts, fun pop and rock or new age

Active concert

For detailed content speak over a background of instrumental music. Let the music play first for 10–30 seconds – don't compete, just join in. Use the pauses in the music. Pause during very loud or active parts. Reading or speaking with music is a skill – like any other – that needs to be practised. Tape yourself and listen to the results. Get to know the rhythm of the piece of music you'll be using.

Classical (c. 1750–1825) and Romantic (c. 1820–1900) New Age instrumental music. Use music that was deliberately composed to lift the spirit (for example Handel, Vivaldi, Corelli, Bach, Pachelbel) 70–80 bpm.

Passive review

Eyes closed and relaxed – 5–8 minutes.

60–70 bpm.

Review content of day.

Baroque (c. 1600–1750)

Choose pieces characterised by soothing strings – for example violins, guitars or harps.

Avoid brass or horns, which have lower frequencies and can sound too abrupt and noticeable for getting into an alpha state.

Choose music carefully –

depending on your outcome. Don't just choose music that you like (although at least this will keep you in a great state).