

Sustainable Knowledge Transfer with the Power of Music!

Bringing Emotions and Intellect together with Learning Songs.

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Hans-Jürgen Boßmeyer has many years of experience as a knowledge manager and trainer in the industry and is still very active today as a singing lecturer. As co-author of the book "Coaching, Teaching and Learning with Music", he has scientifically substantiated the pedagogical power of music, among other things, but also illustrated it with many examples. With the podcast series of the same name on his website (<https://www.learnwithmusic.net>), he would also like to inspire a broad public for his passionate topic. Under the menu item "Song platform" on his website, he has also made his own examples of educational songs freely available for pedagogical use. Since the release of Chat GPT, he has been experimenting with the use of AI-based chat bots to support the learning song method.

Abstract

Music can unleash incredible powers. We have been influenced by music since birth, it touches our innermost being, it can help to reduce stress and depression, to get better faster and, in particular, to learn better through learning songs. The learning song method has been tried and tested for a long time, both with children and adults and even for lifelong learning. Our brain remembers what we sing much better than what we just say, because sounds are perfect memory aids that appeal not only to the head but also to the gut, i.e. the emotions. This works particularly well if the text in the learning song is rhymed. Rhymes also anchor messages in our brain. Using learning songs to impart knowledge is not an art or even a difficult craft. The music with the content set to music worms its way into our brain and stays there longer. The learning song method has the potential to be increasingly used in education. Further research will need to be carried out into what is required to achieve this, including the role that the rapid technological development of AI-based chat bots can play in the writing and presentation of learning songs, for example.

Introduction

This specialist article entitled "Sustainable knowledge transfer with the power of music" with the special aspect of "Using learning songs to bring emotions and intellect together" is based in large part on my book "Coaching, teaching and learning with music", which I wrote with two colleagues (Boßmeyer, Brauer, Flynn, 2020) and my podcast series with six episodes of the same name, which can be accessed individually on my website www.learnwithmusic.net. We start with an explanation of the incredible power of music and its diverse effects, including its pedagogical impact, then move on to the observation that learning with music or learning songs is already a very old cultural asset, then lead to the statement that learning songs can be used for lifelong learning and conclude with practical tips on concrete application examples as well as an outlook on the future use of AI-based chat bots to support the writing and presentation of learning songs.

The incredible power of music and its effects

Music is pure emotion. It can inspire. It can put you in a trance. It can also inspire us to dance and clap along. Even in everyday life, music can unleash our powers. Especially when the burden of life weighs so heavily, we don't want to do without the balancing sounds of music. Music also promotes social skills and brings people together. A long-term study at several elementary school in Berlin (Bastian 2001) has confirmed this. Music in the classroom significantly increased the social skills of the children involved. Pupils were less marginalized because everyone could and wanted to take part.

Other studies have found that singing together in nurseries and schools promotes language development. It regulates emotions and strengthens social bonds, even between generations (Kreutz 2015:67/68). Music can also have healing powers. Listening to music supplies the brain with dopamine. The happiness hormone has a surprising effect on illnesses. Practical experience also clearly shows this. Parkinson's patients start to dance, Alzheimer's patients remember things again, stroke patients learn to speak again and depressed people's moods brighten.

To summarize again: Music stimulates emotions, increases well-being and brings buried knowledge back to the forefront (Schall 2012, Schröder 2011). Further findings on the positive healing effects of music have been published (Koelsch 2019:62, Altenmüller 2018: 450, Fusar-Poli 2018, Särkämö 2018, Hörmann 2009).

Certain songs make us remember events and periods in our lives particularly well, those that have made us smile and others that we would much rather forget. So researchers also investigated how music supports our memory.

This aspect addresses the pedagogical power of music, which has found its way into many concepts in schools and further education. Many studies with test subjects who were presented with content musically, rhythmically or only spoken for the purpose of memorization came to the conclusion that the retention rate of content presented with musical accompaniment had an advantage over the other forms of presentation.

The effect of music cannot be praised enough, says Mari Tervaniemi from the University of Helsinki. She and a team at the Department of Education there have been researching the connection between music and improved memory performance in children with brain disorders and healthy children for years (Linnavalli et al. 2018, Milovanov et al. 2010, Tervaniemi 2009, Arleo 2000).

This evidence of music as a pedagogical force and much more can be found in our book "Coaching, teaching and learning with music". It deepens our understanding of why music touches us emotionally and opens up our intellectual side as well as our sensual side. As we say today, it brings intellect and emotion together, an excellent basis for "coaching, teaching and learning with music", which should be used more often (Boßmeyer, Brauer, Flynn, 2020: 10 ff).

Learning with music is a great motivator, it worms its way into the brain - into our memory. This is especially true for educational songs. It turns listeners into willing followers of the exciting content, which can be very diverse and today ranges from language learning and mathematics to more abstract management topics, such as innovation, which many people would never associate with music. I have used sung introductions in the form of learning songs to teach students of business administration bulky management content, such as technology, innovation and mobility, in seminar-style lessons in a more exciting way (Boßmeyer 2017:14f.). These topics are also important in continuing professional development and knowledge transfer after retirement (Quast 2005:24ff). As a singing lecturer in the theater on cruise ships, I also surprise the mostly adult audience of all ages at the beginning of my lectures on the destination ports with a learning song as a sung introduction to the lecture. This also increases attention and helps to retain lecture content better (Boßmeyer, Brauer and Flynn 2020:82,167ff).

Music as a learning aid has been tried and tested for thousands of years

The question is often asked as to how long learning with music as a learning aid, or in other words learning with learning songs, has existed.

Music and singing were already forms of learning among primitive and indigenous peoples, whether among the Aborigines (Wang 2018: 1-2, Koch 2013, Chatwin 2012, National Geographics n.d.), Native Americans, Greeks, Romans or Germanic tribes.

Ritual chants, children's songs, the oral transfer of knowledge, work songs and singing as a performance art have carried this through to the present day in Western cultures (Millbower 2000: 12-13).

Music is a universal language that transcends words. This transcendence gives music its power as a teaching tool. Even if we organize our lives linguistically today, music is a source of joy for us, a memory aid for texts and an important part of living together. It touches us emotionally. As a result, knowledge is transported more sustainably and better anchored in our memory. This can be seen, for example, in fairy tales set to music, which can be found frequently throughout Europe. This reveals an ancient cultural technique: the packaging of knowledge in songs. This is how legends and myths have been passed on and preserved over the centuries. Pastoral games and folk songs bear witness to this technique. In our book "Coaching, Teaching and Learning with Music", an entire chapter was dedicated to the results of extensive research into the history of learning with music (Boßmeyer, Brauer, Flynn, 2020:17-43).

Gregorian chants also have to do with learning with music. It's about memorizing, which works much better with music and in this case singing - i.e. the sung word - than with stubborn cramming. Gregorian chants are still alive today. (Klößner 2009: 8, Zeitler 2019. The 1200-year history of Gregorian →chant is like a thread running through the musical and cultural history of the West. As the oldest surviving musical art form in our history and as the sung word of God, it is still a core component of liturgical action today (Agustoni 1992). The special interplay of word and scripture in Gregorian chant has long since broken through the walls of monasteries: in recent years it has even filled the chill-out zones of clubs with sound (Boßmeyer, Brauer, Flynn, 2020:41).

But even today, in my experience, the method of the sung word, i.e. learning with the help of learning songs, is a frequently used and very helpful teaching method! Teachers know this even better. Book titles such as "Learning German more easily with music", "Learning irregular verbs more easily with rap music", "Learning English or French more easily by singing" and even "Learning Latin verbs more easily with rap and hip-hop" have long been available on bookshelves.

Books such as Lenn Millbower's Training with the Beat, Ulrike Quast's "Leichter lernen mit Musik" and articles such as "Singing can facilitate foreign language learning" by Karen M. Ludke, to name just a few of a large number of others (Ludke 2014), also point to possible applications.

The book "Coaching, teaching and learning with music" lists and explains many other examples. (Boßmeyer, Brauer, Flynn, 2020:111ff).

Learning songs for lifelong learning

Occasionally the opinion is expressed that learning with music is only something for children, as these learners hardly show any shyness when singing, but this happens more often with adults. As a singing teacher, I have experienced that adults can also accept learning with music and I still see this today, because the sung introduction as a learning song is at the beginning of the learning unit and then fits logically into the rest of the learning form. In this way, the adult quickly sees the advantage of being presented with content in song and the reservation usually disappears.

Here I agree with Wilhelm Busch, who stated: "So the decision is that man must learn something. You can learn, thank God, but also throughout your life. I would like to add - and also with music as an effective instrument, i.e. with learning songs

Brain researchers have discovered that the brain grows through learning due to its plasticity, regardless of age. Music plays an important role in this. It helps to activate and connect the brain in different regions of our emotions and motivation. In this way, memory traces grow that can last a lifetime. You can read about this in the chapter "How the brain learns" in our book "Coaching, teaching and learning with music", which also quotes contributions from scientists such as Lutz Jäncke, Stefan Kölsch and Eckart Altenmüller (Jäncke 2009, Kölsch 20214, Altenmüller 2012).

Studies have also shown that new nerve cells always grow in the hippocampus, i.e. memory traces are created, when learning takes place in a stimulating, interesting atmosphere and this is also the case when learning with music.

Regardless of age, music stimulates emotional and motivational processes, breaks down barriers to learning in the form of defenses and fears and creates a stimulating, joyful learning atmosphere.

If lifelong learning is defined from childhood to old age, it begins with early childhood education and then continues through the chosen educational pathways. Further education in adulthood, both at work and afterwards, characterizes lifelong learning until the end of life.

Learning with learning songs works for children and young people, but also for adults of all ages, i.e. for a lifetime for many learning contents! Here are a few examples of learning songs in different life situations to illustrate this.

We learned the ABCs by singing in a choir and remembered them much better that way. Who doesn't remember the body part blues, a fun way for children to get to know their bodies.

As already mentioned, vocabulary, mathematics, physics and topics from biology, history and other subjects are already being packaged in music for better learning.

Even professors rap to paragraphs or medical contexts in order to surprise students and reach them better. In the aforementioned song platform on my website, there are examples of learning songs for different phases of life.

With sung introductions as learning songs, I have surprised students of business administration with my own learning songs in seminar lessons on unwieldy management topics such as technology, innovation, mobility and change management. These topics are also important in continuing professional development and knowledge transfer after retirement.

As already mentioned, as a singing lecturer in the theater on cruise ships, I surprise the mostly adult audience of all ages at the beginning of my lectures on the destination ports with a learning song as a sung introduction to the lecture. You can also hear examples of this on the song platform on my website or in the book I have already mentioned. It simply works for all situations in life, i.e. for lifelong learning. And it also works in different learning environments, such as school lessons, seminars and large lecture events.

Practical use of learning songs

In terms of content, songs are pretty much all-rounders. Whether sung or listened to, songs enrich lessons in schools as well as in further and continuing education. They convey regional, social and socially relevant content and stimulate discussion. Songs bring us closer to the culture of other countries and promote acceptance and tolerance for the foreign or open up new experiences (Quast 2005: 157).

The right choice of music for the learning song is very important here, as the music should generate positive emotions in the target groups in order to open the mind so that the learning

texts from the learning songs can be remembered automatically. Suitable music styles can be selected according to the preferences of the target groups (Boßmeyer 2023, Boßmeyer, Brauer, Flynn 2020, 107-110).

Musical styles used include ballads, swing, tango, rumba, rock'n'roll and rap. For very young children's ears, lighter sounds are preferable to those that are too strong (Millbower 2000:154-159; Quast 2005:158-189, Kreutz 2015:143ff). However, you have to move with the times, as rap and hip-hop are already very popular with children in some cases.

Since the lyrics make up the meaning and depth of a song, every song can tell a story. They can be so captivating, reports Millbower, that his listeners have often left the seminar room at the end of a training session with a song on their lips. If they sing along to the lyrics, he knows, their retention rate increases significantly (Millbower 2000: 124-126).

A suitable learning environment in schools and at seminars is also important for learning with music. It should be pleasant and inviting. Pleasant songs, whose lyrics and melody may even be familiar to everyone, also create an atmosphere in which the participants feel comfortable and are ready to learn (Millbower 2000: 124).

But now to my step-by-step approach to learning with learning songs.

Step 1: The song prepared for the respective situation can be used as a sung introduction in all situations. The lyrics outline the topics. Each song is the musical summary of its topic. All essential keywords are already included in the lyrics. My song is presented as a lead by singing it or playing it from a CD. The listeners are asked to memorize or write down the messages about the content of the song that they can identify.

Step 2: The listeners are asked about these messages and the answers are visibly recorded on a whiteboard, for example.

Step 3: Now the entire song text is presented again in detail, the words sung are compared with the key words noted down, thus supplementing the content statements already found. They are remembered, interpreted and deepened in discussions with the audience. Anyone who still has the song in their head or hears it again later can also recall this in-depth knowledge. In this way, learning becomes sustainable and functions as an orientation for action. The entire soundtrack or parts of it, such as the verses, the or the bridge, is used situationally to further revitalize the emotion. The more the listener is involved, the easier it is to get them to sing along.

Step 4: Now the presenter, together with the audience, organizes all the individual messages presented and recorded from steps 1 to 3 into a systematic structure. In this way, he derives a logical structure for the further deepening of the subject matter. During a training unit, the content to be taught can be deepened at any point. This works well in school lessons and seminars with a manageable group size if a personal approach is possible. Situationally inserted text sequences and repetitions or, above all, tasks in which the group can create its own text examples or refrains, enliven the lesson and make for some laughs. This further enhances the effect of learning with music. Although in-depth follow-up work, e.g. as group work, is only possible to a limited extent in large auditoriums, the effect of the content set to music can also be proven there thanks to the positive feedback from the audience.

Step 5: Now the presenter expands on the material along the jointly developed structure. He should repeatedly sing or play content from the song as anchor points.

In various learning environments, I was able to experience the effect of sung introductions and the subsequent discussion of the lecture topic myself. For example, presenting sung content in front of large audio theaters on cruise ships as an introduction to the lecture to the surprise of the audience, who only expect a classic destination lecture. On a single cruise, there are sometimes nine or more destination presentations with sung introductions

The audience confirms that the sung introductions ensure expectant attention to the presentations and that they retain the presented content much better in this mixture of text and sound.

The assessments of listeners can be read in the chapter "The test of the example" in the book already cited (Boßmeyer, Brauer, Flynn, 2020, 127-157).

Teachers occasionally express the reservation that there are problems with singing ability. In fact, some lecturers cannot sing well or do not have the confidence to do so. Not everyone succeeds in writing learning songs themselves. Karaoke versions, for example, which can then be used as a soundtrack, or ready-made learning songs that are suitable for playing in class, can help them.

At schools, it is also possible to get help from colleagues who are experienced in music. This may even enable them to develop an entire portfolio of learning songs and cooperate with other schools. On the other hand, there is rap, i.e. chanting. Almost everything is performed on one note or with just a few notes. Even the most unmusical can do it.

An example of this is the rap on lightweight construction that I wrote and sang for a lecturer who is reading the subject at university. You can listen to it on my song platform on the website. Christian Vincetius dealt with rap as a musical style in vocabulary work in his dissertation (Vincetius 2008).

Summary and outlook

To summarize, we can say that the power of music, especially in the form of educational songs, is suitable for knowledge transfer. This is not least due to the fact that music appeals to more than just the intellect, but also and often primarily to our emotions. To put it bluntly: it is not cerebral, but rather soulful. It opens up and takes its listeners into regions that are difficult or impossible for the mind alone to access.

Furthermore, it can be stated that the use of educational songs works not only for children but also for adults of all ages. Due to the independence in terms of topics and age of the learners as well as the possibility of using a variety of musical styles, the learning song method is also predestined for knowledge transfer in lifelong learning.

The potential for learning with music is huge but far from exhausted. Our book "Coaching, teaching and learning with music" and the podcast series of the same name with six episodes on my website (<https://www.learnwithmusic.net>) are intended to take up the cudgels for this exciting form of learning support and thus boost its use in the education sector.

As an outlook to my technical contribution, I would like to talk about the increasing use of AI bots to improve the organization of knowledge and its transfer. My questions to ChatGPT about learning with music were mostly answered well

Here is a sample question with an answer:

Question: "Why are learning songs also important for adult learning"?

Answer: Overall, educational songs can be an effective way to make learning more effective, fun and engaging for adults. They can help to improve retention, reduce stress, boost motivation and engagement and increase attention.

My previous experience with AI tools was focused on questions of how to better organize the knowledge stored in technology databases in innovation management.

To this end, I was invited by Prof. Günter Schuh and Andre Bräkling to write a joint publication entitled "Data-Driven Technology Management Supported by Artificial Intelligence Solutions" (Schuh, Boßmeyer, Bräkling, 2021).

With the release of Chat GPT, it has become generally clear that knowledge, e.g. that on the Internet, can be much better organized and made accessible with AI bots. My questions to ChatGPT in the technology area have been well answered so far.

Many experts are also looking at the dramatically improving capabilities of AI bots in relation to educational applications. My focus will be on how AI bots can support the learning song method.

For example, when writing learning songs. I conducted an experiment with ChatCPT and set it the task of writing a learning song about the Pythagorean theorem. The result, compared to my own learning song, was not yet convincing, but this will improve significantly in the future. The ability of AI tools to incorporate texts into given melodies will not be long in coming either.

It will also be very interesting to see how the power of AI tools to adapt spoken videos with synchronized lip movements to any language develops further and how these capabilities could be used productively in the learning song method in the future.

These are all exciting developments that can help to raise the potential for the use of the learning sound method further and faster. So let's get to work!

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