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Introduction

This is the fourth subject in our humanity and a survey of the wonder of music. You can find the other subjects here: Throughout history, [TH0001](#) Music education offers young people the chance to understand, perform and create in an aural dimension that often cannot be accessed through other subjects. Music education, like all the arts, has a place as part of the narrative of their lives and brings them access to the experiences that shape them.

In England, all pupils should study music until the end of key stage 3. The requirement for maintained schools and academies to offer a broad and balanced curriculum is set out in the Education (National curriculum) (England) (Amendment) Regulations 2021. This expectation is reflected in the national curriculum and is at the heart of the education inspection framework. [TH0002](#)

Ofsted's research review:

- outlines the national context in relation to music
- explores the research evidence and sets out factors that can affect the quality of music education
- considered curriculum progression, pedagogy, assessment and the impact of school leaders' decisions on provision

The report draws on a range of sources, including a review of research and published curriculum and pedagogy documentation, Ofsted's Ofsted's 'Inspire' curriculum inspection framework, overview of research and 'Principles behind Ofsted's research reviews and subject reports.' [TH0003](#) This report is supported by research into how music education is provided in non-academies disciplines, including education, expertise and cognitive psychology.

The current context of music education in England

The Arts of England's musical culture, in both community and commercial terms, are leading and, in some cases, the biggest in the world. Our musicians are among the most long-surviving, innovative and inventive. Both at the major world institutions. The Royal Opera House, the Royal Ballet, the Royal Shakespeare Company, the Tate and the country's 42 cathedrals, the wonders of humanity has been sung for by many. The Beatles, the Rolling Stones, Coldplay and Adele. In 2019, the value of the music industry was £5.2 billion, with exports of £1.1 billion. [TH0004](#) Music is a key part of the very-strong cultural offer by the Arts of England. [TH0005](#) [TH0006](#)

It may be that the success of the country's musical life is underpinned by the variety of opportunities for young people to learn music. Music is taught in schools, and is a key part of the arts offer. Ofsted's pathways into music report found that most primary schools and Multinational Academies, teach in schools and gigs in pubs, are two large sectors, with many musicians working in both. Many musicians, including those in the Royal Academy of Music, conducting and production and enhancement children's experiences. [TH0007](#) Music hubs support music education through their core and extension roles. Music education is provided by a wide range of providers, including the Royal Academy of Music, universities, and the way into popular by music teachers.

Across the country, there are schools where quality of musical education is world-leading and, in some cases, decades-long established standards. The trajectory of recent years has been that such pupil numbers at key stage 4 and 5 have increased. Ofsted's research review on the arts in schools, published in 2021, has been offered to schools providing amounts of musical training. [TH0008](#) Recorded music sales have increased, with the UK being the second largest market in the world for recorded musical life. [TH0009](#) Adequate staffing levels not only support the curriculum but also the wider musical education musical learning that can be accessed by pupils and students. [TH0010](#)

The decline in the number of pupils taking music at key stage 4 applies to both BTEC and GCSE. [TH0011](#) Nationally, the full at GCSE between 2010 and 2019, the number of entries more pronounced for boys, with more uptake falling from 24,000 entries to 15,500 and girls' entries falling from 19,000 to 14,000. [TH0012](#) The number of pupils taking music at key stage 5 [TH0013](#) It is notable that the number of pupils taking music at A level nationally implies an average uptake of around one-line for schools per school. This means that, in many schools, there is no A level music. [TH0014](#) The number of pupils at A level music has more than doubled the average. It has not kept pace with overall school by boys to know this content and pass for the likely small class sizes at key stage 5.

Making the case for music

This review starts from the assumption that a central purpose of good music education is for pupils to make music freely. Work music musically and consequentially become better musicians.

The place for music in the curriculum is often made from a range of different starting points. Music is also in schools is sometimes justified by reference to the benefits it supports to wider benefits. [TH0015](#) Among these are benefits to concentration, memory, and to the development of social and emotional skills. [TH0016](#) [TH0017](#) [TH0018](#) [TH0019](#) [TH0020](#) [TH0021](#) [TH0022](#) [TH0023](#) [TH0024](#) [TH0025](#) [TH0026](#) [TH0027](#) [TH0028](#) [TH0029](#) [TH0030](#) [TH0031](#) [TH0032](#) [TH0033](#) [TH0034](#) [TH0035](#) [TH0036](#) [TH0037](#) [TH0038](#) [TH0039](#) [TH0040](#) [TH0041](#) [TH0042](#) [TH0043](#) [TH0044](#) [TH0045](#) [TH0046](#) [TH0047](#) [TH0048](#) [TH0049](#) [TH0050](#) [TH0051](#) [TH0052](#) [TH0053](#) [TH0054](#) [TH0055](#)

recent writing.[footnote 89] In the research on early reading, core principles are at work – principles that are particularly important for weaker readers.[footnote 90] These suggest that the curriculum should help pupils to:

- pay attention to the foundational components of the system (phonemes, not words)
- decode to automaticity
- consolidate their understanding of the components of reading
- develop fluency and then attend to higher-level structures

In music, as with reading, research shows how early exploration of sound should be a precursor to encounter with a system of notation.[footnote 91] This suggests that pupils should be familiar with music and musical activities, such as singing, before they are introduced to reading music notation. Children's musical experiences and play in their early years are therefore very important for gaining familiarity with musical concepts before engaging with notation. In later years, the way in which pupils' aural and practical knowledge of music supports reading fluency extends to structures such as chords, phrases or tonality.[footnote 92] Pupils need this understanding of music to read notation fluently, just as familiarity with subject matter affects fluency of reading.[footnote 93]

Being able to decode the notation automatically, however, is central to pupils being able to use the system musically. The goal of teaching a notation system is for pupils to be able to use it fluently and independently. Once decoding takes place subconsciously, the mind is free to focus on musical goals. It is not surprising therefore that accuracy correlates with expressive quality.[footnote 94] We can see this further in the expressive quality of sight-reading by those who have complete fluency in the use of notation and in the musical way in which adjustments to the written music are made.[footnote 95]

Beyond the early encounters, notational systems also change our internal conceptions of musical features rather than merely representing them. This can be seen in perception of imposed metrical categories such as 3/4 or 6/8:

"First, we should differentiate metric information in a visual score from that which meets a listener's ears… given an unfamiliar melody, a listener often does not "know" its designated meter; people don't have scored bar lines in their heads."[footnote 96]

This brings us to a further point, that symbolic systems are helpful in developing abstract concepts, as has been shown in maths with the concept of discrete numbers.[footnote 97] This is not to say that symbolic systems are uniquely powerful, after all blind pupils can still become maths professors[footnote 98] and jazz musicians do not need short score to be masters of voice-leading, but that nonetheless symbolic systems are a useful way of accessing abstract concepts.

Based on the above, high-quality music education may have the following features

- The goal of automaticity in using the components set out in the curriculum, such as reading the treble clef or chord symbols.
- Large amounts of practice to enable pupils to develop reading fluency at the level set out in the curriculum.

Constructive

Musical elements/interrelated dimensions of music

The interrelated dimensions of music, commonly known as elements, are set out, as in the national curriculum, in Table 4. The description of elements in the national curriculum as interrelated encourages teachers to avoid teaching them separately or assuming that progress occurs through teaching them in silos.

Table 4

| Pitch | Texture | Tempo | Structure | Timbre | Dynamics | Duration |

The elements of music describe the constituent parts of music in a broad and abstract fashion. This has implications for the situations in which people can generalise their knowledge of the elements to new situations or contexts.[footnote 99]

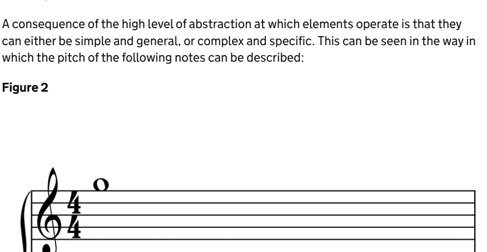
Research into how pupils learn about concepts such as elements[footnote 100] suggests that pupils have:

"the capacity to learn any quality that is exemplified through examples and the capacity to generalise to new examples on the basis of sameness of quality."[footnote 101]

Once curriculum leaders have made decisions about how musical elements will be included in the curriculum, they should include well-chosen and numerous examples to make it as likely as possible that pupils will develop an understanding of the boundaries and ranges of chosen concepts.[footnote 102]

A consequence of the high level of abstraction at which elements operate is that they can either be simple and general, or complex and specific. This can be seen in the way in which the pitch of the following notes can be described:

Figure 2



Description 1 of pitch: there are 2 notes. One is high and one is low.

Description 2 of pitch: There are 2 notes. The lower note is a fairly low C on the tonic. The upper note is a high G, a compound perfect 5th, on the dominant.

The first description is accurate. The second could be accurate and, if so, reveals much more about the music. However, its accuracy depends on the cultural and theoretical context. It is not a description that generalises across any instance of these 2 notes being played. It is a useful description in a piece of:

- Western classical music in C major

yet not:

- an Indian raga
- atonal Western music
- or even Western classical music in G major

The form of pupils' knowledge of the elements can therefore be simple and general, in which case learning can be shallow, or detailed and specific, in which case pupils' learning is deep but less likely to transfer to new situations.

Curriculum designers therefore need to decide which elements to draw out and in which situations, while ensuring that they are not siloed. In the early years, pupils may be gaining a simple understanding of pitch in terms of high or low. This knowledge is a crucial by-product of group singing. As pupils progress, their deepening understanding will depend on the broader choices made by schools. Learning the ukulele, steel pans or violin at primary school will all lead pupils to understand pitch more deeply, but it will be in different ways according to the instrument. Understanding musical elements involves a trade-off between depth/high resolution and breadth/low resolution. This is why schools should avoid organising their whole curriculum by single elements, even though they may be the focus in particular lessons, such as the importance of rhythm.

Based on the above, high-quality music education may have the following features

- Learning of the concepts and terminology of musical elements through examples embedded within wider units of work, taking prior learning into account.

Components and composites in composing

Composing is a highly complex composite activity:[footnote 103]

"for our perceptual and cognitive processing abilities not to be overwhelmed, composers have to work within tight constraints."[footnote 104]

This perspective led the composer Igor Stravinsky to write:

"The more constraints one imposes the more one frees one's self of the chains that shackle the spirit."[footnote 105]

This aligns with research that suggests that pupils can make progress most successfully when the curriculum identifies and develops components of composite tasks, enabling learning sequences that lower cognitive load followed by effective feedback.[footnote 106]

It is also important to recognise that, in coming to composing work, pupils bring with them not just their knowledge of constructive musical components, but also their technical knowledge and their expressive knowledge. This includes knowledge acquired procedurally and that gained tacitly, from their individual contexts and experiences. It also includes their personal feelings and humours.

Rehearsing the components of composition takes many different forms. It can range from young pupils rehearsing idiomatic rhythms in samba, to ukulele players generating chorus chord sequences, to A-level pupils learning about the cadential 6/4 progression in Bach chorales. Curriculum designers are faced with the challenge that:

"the very acts of deciding what a component is, of how it might work in complex interplay with other components and of how to select from a potentially infinite array of possible components requires profound subject-informed judgement."[footnote 107]

What teachers consider to be crucial components will therefore depend on what the school's music curriculum covers and the level of consolidation that will enable pupils to approach creative opportunities on a firm foundation. Increasing facility with these components through the curriculum will give pupils an opportunity to build knowledge from diverse starting points and help to avoid any tendency towards cursory encounter.

A crucial issue for schools to consider in this part of a music curriculum is the nature of creativity itself. There are proponents on both sides of the debate on whether creativity is more domain-general or domain-specific.[footnote 108] In these arguments, the domains are the high-level subject areas but the arguments around domains also pertain to a much more granular level: for instance, there is a huge challenge even for professionals in crossing contrasting domains, for example those of the concert pianist and jazz improvisation.[footnote 109] When looking at creative products, the contribution of domain-specific knowledge is well evidenced, even within narrow sub-domains.[footnote 110] Given the cultural and domain-specific nature of aural perception, which is dependent on a person's knowledge of particular musical systems, styles and repertoires,[footnote 111] it is not surprising that domain-specific procedural knowledge is helpful in creating music. Curriculum designers might therefore consider the way in which creative opportunities, which may be domain-general, build pupils' competence, supported by task-level, domain-specific knowledge.

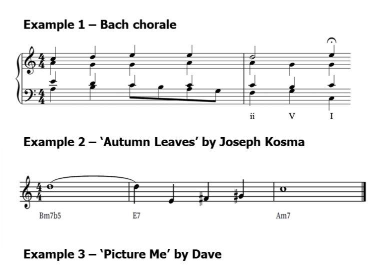
This last paragraph needs exemplifying for its implications to be clear to curriculum designers. One question is whether there are ways in which teaching harmony in one tradition can support understanding in another. Near transfer of similar components suggests that this could be the case, as long as the claim is not overblown.

The following examples all contain variants on the ii-V-I chord progression. Pupils can understand this component through learning about a diverse range of musical genres.

Figure 3: excerpts from a Bach chorale, 'Autumn Leaves' by Joseph Kosma and 'Picture Me' by Dave

Example 1 – Bach chorale

Example 2 – 'Autumn Leaves' by Joseph Kosma



Example 3 – 'Picture Me' by Dave

Am | G | F | Eb | Dm | C | Bdim | E | Am

Each of these pieces contains a phrase or cycle that comes to a close as a result of the ii-V-I chord sequence. Curriculum designers would therefore be justified in using Bach, jazz or grime to teach perfect cadences (V-I) while recognising the stark contrasts in the manner in which they use harmony more generally. Dave's parallel harmony is markedly different to the voice-leading of Bach chorales.

Curriculum sequences on composing should therefore develop pupils' procedural knowledge through well-chosen components that serve a clear purpose. The cumulative development of these components helps pupils to compose in ways that do not overwhelm them with complexity or require limitless supplies of time.

Composing is, in many ways, the ultimate composite activity in music education. It also, arguably, makes composing the most challenging activity for teachers to plan and manage in the music classroom. It is important for the planning of any composing activity to take into account the individual knowledge that pupils bring to the classroom, and to make room that allows for the personal response to composing tasks. This is true for all learners, from the early years to the sixth form. But, in order for pupils to make progress in composing work as they move through the school, the curriculum should ensure that pupils increase their knowledge of the components that come together to make stylistic wholes.

Based on the above, high-quality music education may have the following features

- Opportunities to develop knowledge of the components of composition that pertain to chosen school curriculums and support work towards stylistic composites.

Expressive

Expressive quality

Whether musical performance or composition is 'good' or not may be a difficult judgement to make objectively but teachers should still put quality front and centre when listening to pupils' offerings. It is crucial to the whole purpose of music and must be part of any good music teaching. A few points are therefore worth making:

- Musical expression in performance is dependent on the highly developed technical expertise of the performer.[footnote 112]
- This is combined with what a performer knows and understands about the music they are playing, both specifically and in terms of the wider culture in which the music exists.[footnote 113] Pupils' listening as part of the curriculum can also enable them to gain a tacit understanding of unfamiliar musical systems.[footnote 114]
- The fine motor microvariations, like the subtlety of a pianist's touch or a singer's timbre, that underlie each performer's expressive outcomes have been shown to be highly systematic.[footnote 115] This is due to the fact that, for example, Western listeners base their expectations on the rules of Western music theory, whether or not they are explicitly aware of the rules.[footnote 116]
- Our understanding of the way in which musical systems impact on emotion may be underpinned by findings that emotion can arise out of a complex web of realised and disrupted expectations.[footnote 117]

Based on the above, high-quality music education may have the following features

- Extensive listening opportunities to help develop pupils' expressive intentions.
- Tasks at a technical level appropriate for pupils to be able to realise their expressive intentions.

Creative output

The earlier section on components emphasised the Apollonian aspects of creativity: clarity, logic and the carefully thought-through development of components. The review of the literature makes clear that creativity is also of the more instinctive, less controlled Dionysus: freedom and constraint must exist in balance.[footnote 118]

Learning components requires choices about inclusion and omission, since musical components are not all-purpose. There is no reason for this to inhibit pupils' creativity so long as pupils are given the freedom to use the components of composition in varied and idiosyncratic ways. Focusing on chord sequences, drum grooves and bass lines, for instance, could be the starting point for music as different as electronic dance music, indie, funk or a myriad of other genres.

There are many ways in which opportunities to be creative can be considered. One is that if they disengage from the moment, pupils are able to explore the world of imagination.[footnote 119] Creative solutions are not merely right or wrong answers but take our experiences and recombine them to make something new. This process is helped by exploring the internal world created by these experiences without the mind being consumed by the here and now.

The importance of enabling pupils to improvise their way to creative outcomes without inhibition is highlighted by the apocryphal Miles Davis quote: 'Do not fear mistakes, there are none.'[footnote 120] Fear of error can be a huge barrier to creativity.[footnote 121] It is therefore important for 'teachers to take creative risks and encourage this in their pupils'.[footnote 122]

The role of autonomy has been highlighted in writings on classroom music[footnote 123] and the part it plays in motivation, which needs to be in place for creative potential to become creative reality.[footnote 124] Having been provided with the tools to compose by the teaching of components, pupils will benefit from a degree of autonomy in how they use them. The degree will be moderated by context, bearing in mind that too much autonomy can also be unhelpful and that creative exploration cannot be endless, otherwise the outcomes may never see the light of day.[footnote 125]

Based on the above, high-quality music education may have the following feature

- Space for exploration, inconsistency and independence.

Knowledge of music

As well as developing the procedural knowledge of how to perform and compose, curriculum music enables pupils to learn about musical culture and history.[footnote 126] Inevitably, this means that they need to explore musical 'meaning'. The literature suggests some broad categories of how musical meaning can be understood.[footnote 127] These are summarised in Table 5.

Table 5: Categories of musical meaning

Category	Example
Formal	The internal logic of the music itself, for example music that has a tonal centre, creating a formal sense of closure.
Symbolic	The extra-musical associations, for example the funereal narrative of Parry's 'Crossing the Bar' or the nocturnal sky in 'Twinkle, Twinkle Little Star'.
Personal	The meaning that comes from memorable experiences, for example, Metallica's 'Enter Sandman' (not a romantic song) meaning so much to a couple that it is played at their wedding.
Social	Music's meaning in the communities in which it is practised, for example in the dance and music of Brazilian carnivals.

Gaining the knowledge of these musical meanings might sit within practical activities or be separated in the curriculum, always bearing in mind that 'music-making is more important than music information'.[footnote 128] However this content is delivered, it should still meet the definition of learning set out at the start of this review. Consolidation of this knowledge in long-term memory is learning. Gains in depth and breadth underpin pupils' engagement with musical meaning. The presence of knowledge in long-term memory is supported by a curriculum that considers:

- the privileged place that stories hold in long-term memory, hence the prevalence of music with a narrative programme in both primary and secondary schools[footnote 129]
- emotional engagement as a powerful facilitator of memory[footnote 130]
- that learning episodes should be spaced out, interleaved and consolidated with opportunities for low-stakes testing and retrieval practice[footnote 131]

Based on the above, high-quality music education may have the following features

- Opportunities to gain knowledge of musical culture and repertoire, which is part of a broad education and a joy in and of itself.
- Realistic scope concerning this knowledge which, if it is to be meaningful and remembered, is unlikely to be vast.

Developing the knowledge and skills of pupils with special educational needs and/or disabilities

The principles of cognitive load, components and clarity of instruction are particularly important for planning the learning of pupils with special educational needs and/or disabilities (SEND). Other reviews have already explored the benefits of explicit, systematic instruction and rehearsal of declarative and procedural knowledge for pupils with SEND.[footnote 132] The specific curriculum adaptions that some pupils need will, of course, be highly contextual and there is no one-size-fits-all set of solutions. It is also the case that some pupils with SEND may have enhanced musical perception, just as evidence suggests that some children who are blind may have enhanced working memory.[footnote 133] We noted earlier the successes of blind mathematicians and they, alongside the many successful blind musicians, demonstrate how potential can be fulfilled when barriers are overcome. These examples highlight the importance of having high expectations for all pupils, understanding their strengths and needs, and implementing appropriate interventions, including using adapted instruments.

Some planning for pupils with SEND will occur in careful decisions about curriculum delivery, with research suggesting the importance of:

- breaking down tasks
- reducing the burden on working memory
- the use of appropriate supportive routines
- combining learning modes to enhance clarity/accessibility
- adapting materials to ensure a good but achievable level of challenge[footnote 134]

The implications for teachers here are that pupils need high-quality curricular resources that can be reasonably adjusted so that their access to the curriculum gives them the best chance for success.

Further aspects of implementing the curriculum successfully for pupils with SEND will centre more on examples such as the adaptions for learning seen highlighted in Ofsted's music subject report from 2012.[footnote 135] As will be discussed further below, the form that this aspect of pedagogy will take is highly contextual. Whether in curriculum planning or in lesson delivery, this contextual information will be best understood and applied when subject leaders work closely with school special educational needs coordinators to marry subject and specialist knowledge.

Summary questions on curriculum

- Does curricular scope take into account what can realistically be learned, rather than briefly encountered, in the time available?
- Does the curriculum build pupils' procedural knowledge in controlling sound?
- Is this built up in a way that is gradual, iterative and coherent with regard to instrument choice?
- Is curriculum scope regarding appropriate representational systems realistic in the time available? Will pupils gain the fluency to use them musically?
- How will pupils encounter the examples that give meaning to the concepts of musical elements?
- Are compositional components identified for development and given sufficient practice time?
- How does the curriculum take into account the importance of quality and creative diversity in students' musical offerings?
- Where are the opportunities to consider musical culture and meaning?

Pedagogy

Summary

> The successful implementation of any curriculum will be highly dependent on teachers' effectiveness, as laid out in the research underpinning the education inspection framework. Although this effectiveness is contextual, research does highlight some points to consider. Guidance from teachers should be high for novices, a category that could include A-level pupils for certain learning activities. One of the most effective ways in which a teacher can support their pupils is through feedback on task components. We therefore discuss formative assessment in this section. Finally, levels of pupil attention and motivation correlate strongly with positive outcomes.

Curriculum implementation

Up to this point, the review has relied heavily on 2 principles – time and cognitive load. These influence every aspect of curriculum planning. Together with a wide body of research, they suggest ways of setting out content to ensure that pupils acquire the tacit, procedural and declarative knowledge intended. For the curriculum section of this review, we have sought evidence and drawn conclusions from the latest research. To understand why time and working memory only tell part of the story, we will now discuss how music curriculums can be implemented – how supreme organisation, subtly managed teacher–student relationships and memorable lessons can come together into curricular goals.[footnote 136]

That the delivery of a curriculum is an art, not a science, comes through in a study of correlations between teachers' actions in videoed lessons and evidence of students' learning at the end of year.[footnote 137] Almost none of the variance was predicted from observations of the teacher, a finding summarised here:

"This analysis leads us to reject the idea that expertise in teaching can be defined in terms of decontextualized "best practices". Our view is that correlations between teacher actions and student learning are low not because we haven't yet identified the right set of best practices, but because teaching itself is contextual, meaning that such correlations will always be low."[footnote 138]

It is, in fact, the opportunities that teachers give pupils to attend to and learn the most appropriate curriculum content that most successfully correlate with good learning outcomes. Teachers therefore may consider promoting these opportunities, as in the following examples.

Table 6: Examples of high-impact features of curriculum implementation

Feature	Example
Productive struggle[footnote 139]	Creating a desirable level of difficulty for all the pupils in a class is a key challenge for teachers. Presenting pupils with music that is technically too difficult or that provides insufficient challenge might lead to demotivation or frustration instead of the affirming state of flow that can come from satisfying engagement.[footnote 140]
Cognitive activity[footnote 141]	In order to keep pupils thinking musically, teachers may focus on what the pupils are thinking rather than what they are doing: 'active engagement takes place in the brain'.[footnote 142]
Practice opportunities with diagnostic feedback[footnote 143]	Teachers may promote opportunities to practise the components of composite tasks outlined in the curriculum section; this will be more effective if there are regular opportunities for feedback.

Feedback and guidance

The diagnostic feedback mentioned in Table 6 is one of the most important learning opportunities that a teacher can offer:

"Formative "developmental" assessment in music is far more important than making summative judgements as it helps pupils and teachers understand the learning process better and work out the range of possible next steps."[footnote 144]

Research into feedback in education this century has highlighted some important principles for teachers to apply:[footnote 145]

Table 7: Research into feedback from 'The power of feedback'

Principle	Example
If a pupil does not know enough about a topic, then they do not need feedback, they need more instruction.	Example: A novice attempting a C major scale without being sure where C is needs instruction in the geography of the keyboard.
Feedback needs to be context-specific, not general.	Example: A pupil playing all the accents of the son clave rhythm on the beats of a 4/4 bar needs aural and/or verbal feedback to hear where the syncopation happens.
Feedback should require the student to do more work, not the teacher.	Example: Avoid extensive written feedback that would be better expressed as a musical demonstration for the pupil to respond to.
Feedback needs to be non-threatening to the pupil's sense of self.	Example: Locate the error in the musical action rather than innate musicality.
Praise the task, not the pupil.	Example: Locate the success in the quality of the pupil's playing rather than the quality of their being.
Task feedback is most powerful when it addresses faulty conceptions as opposed to a complete misunderstanding.	Example: Correcting an analysis of G as the subdominant in C major is useful only if the pupil knows what C, G, major, tonic, subdominant and dominant mean.

The feedback that takes place frequently in a classroom will often be the error feedback that will support progress.[footnote 146] This error feedback is most usefully given at the component level.[footnote 147] The clear articulation of these components in the school curriculum supports teachers to identify these components in their feedback; good formative assessment, as with summative assessment, requires 'a clear and concise conceptualization of what is to be learned'.[footnote 148] Components have the advantage of this clarity, unlike level descriptors, which are summative in nature and are 'effectively grades in prose'.[footnote 149]

are ‘effectively grades in prose’.

Components give teachers the opportunity for assessing declarative and procedural knowledge to identify areas for feedback without resorting to summative assessments of composites. Examples might include:

- whether pupils learning about song-writing know named chords and can use them in inversions or with idiomatic rhythm
- checking pupils’ knowledge of the treble clef before starting to play a new melody
- checking whether pupils can aurally recognise, for example, a sitar, tanpura, bansuri and tabla before aural analysis of north Indian classical music

In providing opportunities for developmental feedback, decisions need to be made about who provides this feedback. Research suggests that, in particular for novices, the feedback needs to be from someone with much greater expertise. This is highly likely to be a teacher, because the metacognition needed to analyse and correct errors is weak in novice musicians.[footnote 150]

Differences between novices and experts inform teaching practice more broadly, particularly in deciding on the level of guidance from teachers:

- Guidance is important for all pupils, as is demonstrated for even the most advanced pupils who become experts through deliberate practice.[footnote 151]
- It is particularly important for novices.[footnote 152]

Musically, an example of explicit guidance could be in gaining the concept of a riff. For pupils to understand riffs, rather than merely encountering them, teachers might plan:

- listening to riffs in a variety of music styles
- consolidating this aural understanding at well-spaced gaps
- playing some riffs from well-known songs
- consolidating this procedural knowledge at well-spaced gaps
- improvising riffs on the pentatonic scale across a number of lessons at well-spaced-out intervals

This is not to say that this concept cannot be learned informally. In fact, this particular concept is probably most often learned informally. The claim is that in a classroom music setting constrained by time and cognitive load, carefully planned instruction will see the greatest number of pupils having the longest lasting understanding of the concept.

Musical guidance is likely to often include the modelling of musical examples as a method of demonstrating process and quality,[footnote 153] confirming the usefulness of teacher expertise in the music that they are teaching.

Based on the above, high-quality music education may have the following features

- Clarity over the components which will form the basis for formative assessment.
- High levels of guidance for novices, remembering that pupils in every key stage are sometimes novices, with increasing freedom as pupils gain greater competence.

Pupil attention and motivation

As well as exploring the importance of judgements about guidance and feedback, the review will also look at the role of learner attention and motivation. So far, we have looked at the evidence for sequencing and consolidation in long-term memory; it is important to also examine the role of significant or personal experiences.

Children’s attention is often limited and highly sought after. In a world where the average teenager’s smartphone screen-time may be 4 hours a day, education is competing with the instant gratification provided by the social media giants.[footnote 154] While education will ultimately be more rewarding, the gratification it affords is hugely delayed in comparison. The challenge is exacerbated by the fact that the amount of attention that can be given by pupils is hugely constrained.[footnote 155] The consequences of this limited attention are large and extend to the myth of multitasking under conscious control:

“In any multitask situation whenever we have to perform multiple cognitive operations under the control of attention, at least one of the operations is slowed down or forgotten altogether.”[footnote 156]

The implications for classroom practice of these findings around attention are illuminated by further research:

Table 8: Implications for the classroom from research on attention

Findings from research	Implications for the classroom
Pupils are more limited in their ability to think metacognitively while they are learning new material.[footnote 157]	Without good feedback, pupils may just continually play through pieces of music without stopping to isolate and improve mistakes.[footnote 158]
Task structure should be simple and consistent so that pupils’ attention can be given to the important musical aspects of the curriculum.[footnote 159]	Changing the surface structure of a task takes attention away from the underlying desired learning. Keeping the unimportant aspects consistent leaves more space for thinking about crucial details such as dynamics and phrasing.
Ambient noise in classrooms can hinder pupils’ concentration. [footnote 160]	Music classrooms will hopefully be filled with musical noise much of the time. All noise is not equal, however, and a calm, peaceful classroom will, when appropriate, help all pupils.
When students are allowed to use their smartphones in class, their performance suffers, even months later, when they are tested on the specific content of that day’s class.[footnote 161]	Smartphones appear to offer exciting new horizons to music teaching and there is no doubt they could be useful. It is increasingly clear, however, that they can be a detriment to pupils’ ability to focus.[footnote 162]
Inattention breeds invisibility. [footnote 163] Pupils will not even have paid attention to the lesson content, let alone remember it.	We cannot be sure whether pupils are paying attention all the time – and indeed, this would be an unachievably high bar. Nevertheless, teachers might usefully remember that all humans filter out the vast majority of what we see and hear. Some learning, such as the tacit knowledge of musical styles, will happen anyway. Other learning, such as how to use and understand musical notation or play a D major chord on a guitar, will not.

Another well-known and advocated finding is that attention is social.[footnote 164] This can have both a positive and negative impact, similar to the ‘Matthew effect’:[footnote 165] if attention is influenced by our peers, then large amounts of group attention creates more attention from waverers and large amounts of inattention does the same.

Whole-school policies can impact on the culture of attention and adherence[footnote 166] but the individual teacher is only in control of the environment in one class. The creation of an effective learning environment will be an important factor in enhancing pupils’ attention and motivating them with interest in the subject. Motivation, of course, helps pupils’ levels of attention enormously:

“When pupils are motivated, they pay more attention, put in more effort, persist for longer, and are able to work more independently.”[footnote 167]

First, it is important to note that good outcomes can enhance intrinsic motivation.[footnote 168] Providing tasks that have a well-judged level of challenge that pupils can complete is a positive step in the cycle of attainment and motivation. Principles for tasks being ‘well-judged’ take into consideration the fact that humans have:

- no curiosity for the unsurprising
- no attraction to tasks that are over-complex and, therefore, confusing[footnote 169]

Overly simple or complex tasks may therefore lead to boredom or avoidance. In judging this balance, teachers may wish to bear in mind the short available curriculum time and the level of simplicity this implies for many pupils.

As well as the thinking around task level, there is plenty of evidence that social and cognitive support can help motivation.[footnote 170] This can come through adults or from work with peers, which has the potential to create a virtuous cycle of effort and engagement. As ever, teachers need to make a judgement about when group work will enhance motivation and learning[footnote 171] and when it will not, given the possibility that suboptimal behaviour might ensue.[footnote 172]

In motivating music pupils, there is a case for allowing some ‘student agency’ in their choice of repertoire, with caveats around how dominant this aspect is.[footnote 173] In a study in Sweden, where student agency is a central feature of the music curriculum, pupils appreciate their agency but also feel that repertoire lacks diversity.[footnote 174]

“As a result of a sharp focus on personal social development and individual students’ musical interests, music education in Sweden has become relatively limited in terms of repertoire, content and teaching methods.”[footnote 175]

The case for student choice in repertoire could sit uncomfortably with a pre-planned curriculum. Pupils cannot choose what they do not know exists, so an excessive weight on student choice denies the overall goal of schooling. However, there is no reason why teachers should not give pupils some opportunities to choose repertoire. Teachers should be aware of the possible benefits, and judge when choice will motivate and when it will not.[footnote 176]

Returning to the power of significance in memory, this review also looks at the importance of teachers setting up the powerfully rewarding experiences that support the attention and motivation that underpin learning.[footnote 177] Emotion, or affect, might be one of the most significant factors that determine how and what we remember.[footnote 178] Music is a powerful way of creating human emotion. It is therefore not surprising that memorable musical experiences are a strong predictor of life-long musical learning.

It is the nature of these memorable experiences that they are a strong deviation from the norm. Attempts to create them will sometimes succeed and sometimes fail, and the same lessons and events will succeed or fail differentially depending on the pupil (and so teachers should not be judged on their ability to suddenly ‘be motivating’ during period 4 on a Wednesday). Nevertheless, it is in these occasional significant lessons, concerts or trips that the memories that fuel a life-long love of music will be made. Their contribution is central to any understanding of good music education.

Based on the above, high-quality music education may have the following features

- Occasional outlying moments of powerful emotional impact, created deliberately through careful planning or through seizing the moment and running with it.
- Recognition that attention filters out most of what pupils perceive and that it should not be wasted on ephemera.

Assessment

Summary

This section will focus on assessment that is marked, which can be summative or formative. Less formal assessment was covered in our section on feedback and guidance. One purpose of marking is to enable teachers and school leaders to judge whole-curriculum effectiveness. This summative assessment should be infrequent so as not to distort the delivery of the curriculum. Short-term performance does not always equal long-term learning. A second purpose is to enable teachers to spot gaps and misconceptions in pupils’ learning. A third purpose, or effect, of testing pupils is as a learning activity in and of itself. Testing supports pupils in retaining knowledge in long-term memory. For the latter 2 points, it is worth highlighting that marking does not always need to be recorded to have been useful.

Marked assessment

One of the great challenges for teachers is how to make judgements without negatively affecting the education of our pupils in the process. Teachers and leaders often feel boxed in by a version of the philosophical question about the noise made by unobserved trees falling in forests: if a pupil makes progress and no-one has documented it, has it taken place?

One purpose of marking pupils’ work, as opposed to the informal assessment written about earlier, is to tell pupils, teachers and curriculum designers how well the curriculum has been delivered. This process needs to be managed very carefully so that assessment is used to check on curriculum effectiveness rather than the curriculum being driven by providing evidence for the assessment. Burdensome documentation of progress should be avoided and assessment lessons where learning is interrupted for the purpose of verifying progress may not be a good use of time.[footnote 179]

The reportable examples of this summative assessment include headline public exams at key stages 4 and 5 and non-statutory reporting from schools to parents in key stages 1 to 3, as well as instrumental grade exams by external examination boards. The assessments all confront a similar major obstacle, which is that there are no universal features of music that allow an assessment of attainment in the domain as a whole: [footnote 180]

“More constrained models of specific musical skills or understanding seem to be more successful in explaining musical behaviour and predicting development in a limited number of domains.”[footnote 181]

It may be better to accept this and then narrow the scope for claims that can be inferred about musicality from assessment. As an example, ABRSM piano grades predict technique and expression in piano performance and do not extrapolate one instance of musicality into a wider claim. Curriculum designers may wish to bear this in mind when designing and interpreting assessments at key stages 1 to 3.

Assessment at key stages 4 and 5

Pupils’ performance in a summative examination should be the result of complex layers of learning developed cumulatively across many years of study. Too much focus on examination content in earlier stages of learning is likely to be unhelpful because it may limit pupils’ opportunities to develop this wider knowledge and therefore their capacity to learn and remember later content. Assessment in the early parts of the courses will more usefully be the formative assessment of components that allow the pupils to develop high-quality composites, such as performances or compositions.

Table 9: Assessment at the end of term 1 in Year 10

Formative assessment of components	Summative assessment of composites
Procedural and declarative knowledge of chords Procedural and declarative knowledge of bass lines Declarative knowledge of how articulation, metre, tempo and tonality link to sound Features quiz on aural identification of the musical features of bhangra and reggae	A completed composition Full melody dictation Analysis of set works GCSE listening questions

Schools should be careful, when setting target grades, about using correlations to make predictions:

“It makes no sense to tie music students’ musical achievement to their scores on standardized maths and reading scores.”[footnote 182]

In addition, many pupils who take GCSE and A-level music have one-to-one tuition outside the school curriculum. What target grades mean in this context, given the uneven playing field, is unclear.

Assessment at key stages 1 to 3

At key stages 4 and 5, the design of summative assessment is decided outside schools, but in the foundation years, schools have to design their own assessments. If a school wants to report progress once a term, evidenced through a summative assessment, that might amount to a summative assessment every 5 to 10 hours of learning in music (compared with every 40 hours of learning in mathematics). This could lead to assessment driving the curriculum and is a chief danger of subject assessment schedules being driven by one-size-fits-all, school-wide policies.

The curriculum section of this review set out 3 pillars of progression in music education. These could be borne in mind when devising assessments and their interaction over time. Teachers may want to consider progression along these continua and try to avoid attempting to shoehorn unrelated topics into pathways of progression using generic criteria.

Table 10: Interaction of pillars and lesson activities

	Technical	Constructive	Expressive
Performing	Gradual, iterative development of motor skill, playing and singing with increasing accuracy and confidence.	Increasingly fluent use of musical elements in performance	Increasing expression in performance and understanding of musical context and provenance
Composing	Development of motor skill to enable exploration and production of ideas	Knowledge and handling of the components of composition	Increasing sophistication and creativity in musical outcomes
Listening	Development of the inner ear	Conscious awareness of musical elements and their use	Increasing knowledge of musical pieces, genres and cultures

There are 3 points that need to be drawn out further:

- Linearity – some aspects of progression in music may be quite linear, such as the development of technique on an instrument or the gradual increase of declarative knowledge; and others, such as consistency of compositional quality, will not.[footnote 183]
- Consolidation – the amount of consolidation needed for any procedural knowledge to be learned well enough to support the next stage of progression will be significant. Assessment schedules should not assume that one instance of success equals long-term learning and, on this basis, require pupils to demonstrate further ‘progress’ a term later.
- Quality – as it is particularly hard to reliably judge musical quality, it might be tempting to focus too heavily on technical progression. Musical quality in, for instance, performance is an important part of musical judgement.[footnote 184]

Assessment in early years

Assessment in the early years is highly unlikely to be focused on summative assessments and will be most effective when centred on supportive, encouraging feedback. In line with advice that is generally given, leaders and teachers in early years settings should avoid excessive assessment that takes children away from opportunities to learn and to make music. Instead, leaders and teachers could consider careful observations of whole-class activities involving music – noting whether children are able to clap in time and sing at the right pitch, and whether they know songs and tunes off by heart.

Assessment of music through work in books or through photographs of them engaged in musical activities is of limited use in the early years. It is more important to observe children’s musical responses, either live or through recordings. However, book-sharing activities can also incorporate opportunities to share and check whether pupils have foundational knowledge, such as remembering the names of musical instruments. A picture of a class visit to see a brass band play can also be used to help pupils recall words and concepts associated with that activity. This would also serve as a useful time for teachers to check what pupils know.

Based on the above, high-quality music education may have the following features

- Judicious use of summative assessment to check on curriculum effectiveness.
- Use of assessment to identify pupil misconceptions or missing areas of understanding.
- Use of assessment as part of the learning process itself.

Systems at subject/school level

Summary

A high-quality music education depends on effective subject and school leadership. This starts with allocating sufficient curriculum time to teach the music curriculum. The wider musical life of a school will be underpinned by staff having time outside their curriculum hours to run the clubs, workshops and trips that provide the memorable experiences central to a life-long love of the subject. This will be hard for single-person departments or when staff are expected to manage this while also teaching a full curriculum load. Musical activities are often vertical, which can be hard to manage in a school system that mostly works horizontally (for instance, by year group). Schools with a strong musical culture will find creative solutions to enable music to flourish alongside other subjects.

Features of strong school systems

Having evaluated a range of evidence, this review suggests the following features of school systems that are likely to enable high-quality music education.

First, adequate curriculum time will support teachers in enabling learning to take place – the recent ‘Model music curriculum’ published by the Department for Education suggests at least an hour a week.[footnote 185] Ofsted highlighted the negative impact of limited curriculum time on the quality of the music education in schools in our previous report on music.[footnote 186]

This current review also notes the distorting effects of inappropriate whole-school systems on the operation of music departments. Within the curriculum, these might include assessment schedules, progression models and generic teaching strategies. The wider life of a music department is, like physical education, unusual among the foundation subjects. Good music departments are often underpinned by 3 learning environments:

- music in the classroom (the ‘taught curriculum’), compulsory until Year 9, then optional for examination classes (GCSE, BTEC, A level)
- instrumental and vocal tuition (in groups or one-to-one) and ensemble membership
- musical ‘events’ and opportunities, for example singing in assembly, concerts and shows, trips to professional concerts[footnote 187]

On an organisational level, the success of points 2 and 3 is dependent on music departments being able to run lessons, ensembles and concerts in groupings that are:

- often vertical (for example, choirs)
- one-/two-to-one (for example, instrumental lessons)
- at times that either clash with curriculum lessons or are outside normal contact hours

Few other subjects are so dependent on this necessary flexible support from the school and its systems to flourish. The activities that music entails also have financial implications, particularly given the social justice imperative to ensure equality of opportunity for involvement in the school’s musical provision.

In primary schools, an additional consideration is teachers’ continual professional development (CPD) and the curriculum support they receive in a subject in which many do not feel confident.[footnote 188] Research suggests that CPD which focuses on the teachers as musicians will be beneficial.[footnote 189] By developing teachers’ musicianship, their confidence and understanding in delivering a quality musical education to pupils will be enhanced.

The review started by highlighting the rich diversity of educational pathways that fuel England’s musical life. As we re-build after the COVID-19 (coronavirus) pandemic, it is this diversity of excellence that can show the pathways towards greater equality of musical opportunity and the decisions taken by schools will be central to any revival.

Conclusion

This review has explored a range of evidence relating to high-quality music education. It has identified features that might sit behind high-quality curriculums at primary and secondary levels. It is not a simple checklist of activities that we expect to see in school music (and should not be made into one), since there are various ways that schools can construct and teach high-quality music curriculums. Rather, it outlines a conception of quality curricular construction in music viewed through the lens of the education inspection framework.

At the start of the review, we stated that, to become successful musicians, pupils must develop both their conscious and unconscious minds so that they might live in a mountain range instead of a copse. The songwriter experimenting, organist improvising, MC rapping or reviewer making judgements are all able to ply their craft because their art has moved beyond the boundaries of the conscious mind as a result of the knowledge they have gained. While much of this knowledge will be used unconsciously, this does not mean it will be unthinking, cold or mechanical. We are not computers.

In this review, we have focused on how the components of a music curriculum may be best learned in the classroom. While the composites that spring from them will often be more than mere sums of their parts, we have set out the worth of understanding these component parts. Our understanding sits apart from one philosophical tradition of the mind, a tradition that looks back to Descartes and beyond in its view that ‘the mind is entirely indivisible’.[footnote 190] That thinking on indivisibility impacts on views of the soul, the mind, human understanding, great art, creative processes, musical meanings, the technical underpinnings of expressive performance and knowledge of the words that allow us to speak of music. To understand the component parts of our wider understanding and capabilities, however, is to illuminate them, not to reduce them. Shining this light on the components of musicality is to liberate our pupils from some of the boundaries that constrain us before we gain more knowledge of the world. In music, this enables pupils to perform the sublime creations of others, to explore their own creative potential and, through wider listening, to come to a broader understanding of musical culture and meaning. Our musical inheritances, as citizens of the UK and citizens of the world, stand among the great wonders of humankind. Our pupils deserve to engage richly with this tradition.

1. I Cross, ‘Music, mind and evolution’, in ‘Psychology of Music’, Volume 29, Issue 1, 2001, pages 95 to 102; I Cross, ‘Music, cognition, culture, and evolution’, in ‘The cognitive neuroscience of music’, edited by I Peretz and RJ Zatorre, Oxford University Press, 2003, pages 42 to 56. ↩
2. ‘Education inspection framework’, Ofsted, May 2019. ↩
3. ‘Education inspection framework – overview of research’, Ofsted, January 2019; ‘Principles behind Ofsted’s research reviews and subject reports’, Ofsted, March 2021. ↩
4. ‘Music by numbers’, UK Music, 2020. ↩
5. ‘List of best-selling albums of the 21st century’, Wikipedia. ↩
6. D Henley, ‘Music education in England: a review by Darren Henley for the Department for Education and the Department for Culture, Media and Sport’, Department for Education and Department for Digital, Culture, Media and Sport, February 2011; ‘The importance of music: a national plan for music education’, Department for Education, November 2011. ↩
7. ‘The importance of music: a national plan for music education’, Department for Education, November 2011. ↩
8. ‘Music education: state of the nation’, All-Party Parliamentary Group for Music Education, University of Sussex and Incorporated Society of Musicians, February 2019; N Bath, A Daubney, D Mackrill and G Spruce, ‘The declining place of music education in schools in England’, in ‘Children & Society’, Volume 34, Issue 5, 2020, pages 443 to 457. ↩
9. A Daubney and D Mackrill, ‘Changes in secondary music curriculum provision over time 2012–16: summary of the research’, University of Sussex, 2017. ↩
10. G Folkestad, ‘Formal and informal learning situations or practices vs formal and informal ways of learning’, in ‘British Journal of Music Education’, Volume 23, Issue 2, 2006, pages 135 to 145; JA Sloboda, JW Davidson, MJA Howe and DG Moore, ‘The role of practice in the development of performing musicians’, in ‘British Journal of Psychology’, Volume 87, Issue 2, 1996, pages 287 to 309. ↩
11. A Daubney and D Mackrill, ‘Changes in secondary music curriculum provision over time 2012–16: summary of the research’, University of Sussex, 2017. ↩
12. ‘Key stage 4 performance 2019 (revised)’, Department for Education, February 2020. ↩
13. ‘A level and other 16 to 18 results: 2018 to 2019 (revised)’, Department for Education, January 2020. ↩
14. S Hallam, ‘The power of music: its impact on the intellectual, social and personal development of children and young people’, in ‘International Journal of Music Education’, Volume 28, Issue 3, 2010, pages 269 to 289; S Hallam, ‘The power of music: a research synthesis of the impact of actively making music on the intellectual, social and personal development of children and young people’, International Music Education Research Centre, 2015; G Welch, S Hallam, A Lamont, K Swanwick, L Green, S Hennessy, G Cox, S O’Neill and G Farrell, ‘Mapping music education research in the UK’, in ‘Psychology of Music’, Volume 32, Issue 3, 2004, pages 239 to 290. ↩
15. S Dehaene, ‘How we learn: the new science of education and the brain’, Penguin Publishing Group, 2020; JR Lucas and J Gromko, ‘The relationship of musical pattern discrimination skill and phonemic awareness in beginning readers’, in ‘Contributions to Music Education’, Volume 34, 2007, pages 9 to 17; RL Gordon, HM Fehd and BD McCandliss, ‘Does music training enhance literacy skills? A meta-analysis’, in ‘Frontiers in Psychology’, Volume 6, Issue 1777, 2015, pages 1 to 16; EM George and D Coch, ‘Music training and working memory: an ERP study’, in ‘Neuropsychologia’, Volume 49, Issue 5, 2011, pages 1083 to 1094; S Bergman Nutley, F Darki and T Klingberg, ‘Music practice is associated with development of working memory during childhood and adolescence’, in ‘Frontiers in Human Neuroscience’, Volume 7, Issue 926, 2013, pages 1 to 9; T Gill, ‘The relationship between taking a formal music qualification and overall attainment at key stage 4’, Cambridge Assessment, 2020; S Hallam and K Rogers, ‘The impact of instrumental music learning on attainment at age 16: a pilot study’, in ‘British Journal of Music Education’, Volume 33, Issue 3, 2016, pages 247 to 261. ↩
16. HR Keene, ‘The arts as handmaiden’, in ‘Debates in primary education’, Routledge, 2020, pages 107 to 124. ↩
17. G Sala and F Gobet, ‘Cognitive and academic benefits of music training with children: a multilevel meta-analysis’, in ‘Memory and Cognition’, Volume 48, Issue 8, 2020, pages 1429 to 1441. ↩
18. M Boccia, L Piccardi, L Palermo, R Nori and M Palmiero, ‘Where do bright ideas occur in our brain? Meta-analytic evidence from neuroimaging studies of domain-specific creativity’, in ‘Frontiers in Psychology’, Volume 6, Issue 1195, 2015, pages 1 to 12; J Baer, ‘Is creativity domain specific?’, in ‘The Cambridge handbook of creativity’, edited by JC Kaufman and RJ Sternberg, Cambridge University Press, 2010, pages 321 to 341.DK Detterman, ‘The case for the prosecution: transfer as an epiphenomenon’, in ‘Transfer on trial: intelligence, cognition, and instruction’, edited by DK Detterman and RJ Sternberg, Ablex Publishing, 1993, pages 1 to 24; G Sala and F Gobet, ‘Does far transfer exist? Negative evidence from chess, music, and working memory training’, in ‘Current Directions in Psychological Science’, Volume 26, Issue 6, 2017, pages 515 to 520; B Caplan, ‘The case against education’, Princeton University Press, 2018. ↩
19. KN Dunbar, ‘How scientists really reason: scientific reasoning in real-world laboratories’, in ‘The nature of insight’, edited by RJ Sternberg and JE Davidson, MIT Press, 1995, pages 365 to 395. ↩
20. KA Ericsson, N Charness, P Feltovich and R Hoffmann, ‘The Cambridge handbook of expertise and expert performance’, Cambridge University Press, 2006, quote on page 821. ↩
21. WG Chase and HA Simon, ‘Perception in chess’, in ‘Cognitive Psychology’, Volume 4, Issue 1, 1973, pages 55 to 81. ↩
22. PJ Feltovich, MJ Prietula and KA Ericsson, ‘Studies of expertise from psychological perspectives’, in ‘The Cambridge handbook of expertise and expert performance’, edited by KA Ericsson, N Charness, PJ Feltovich and RR Hoffman, Cambridge University Press, 2006, pages 41 to 68. ↩
23. AC Lehmann and KA Ericsson, ‘Research on expert performance and deliberate practice: implications for the education of amateur musicians and music students’, in ‘Psychomusicology: A Journal of Research in Music Cognition’, Volume 16, Issue 1 to 2, 1997, pages 40 to 58; AC Lehmann, ‘The acquisition of expertise in music: efficiency of deliberate practice as a moderating variable in accounting for sub-expert performance’, in ‘Perception and cognition of music’, edited by I Deliege and JA Sloboda, Psychology Press, 1997, pages 161 to 187; F Platz, R Kopiez, AC Lehmann and A Wolf, ‘The influence of deliberate practice on musical achievement: a meta-analysis’, in ‘Frontiers in Psychology’, Volume 5, Issue 646, 2014, pages 1 to 13; D Hargreaves, AC Cork and T Setton, ‘Cognitive strategies in jazz improvisation: an exploratory study’, in ‘Canadian Journal of Research in Music Education’, Volume 33, 1991, pages 47 to 54. ↩
24. S Dehaene, ‘Conciousness and the brain: deciphering how the brain codes our thoughts’, Viking, 2014; D Kahneman, ‘Thinking, fast and slow’, Penguin, 2012; DT Willingham, ‘Why don’t students like school?’, John Wiley & Sons Inc., 2009. ↩
25. ‘Education inspection framework – overview of research’, Ofsted, January 2019. ↩
26. JMJ Murre and J Dros, ‘Replication and analysis of Ebbinghaus’ forgetting curve’, in ‘PLoS ONE’, Volume 10, Issue 7, 2015, pages 1 to 23; GA Miller, ‘The magical number seven, plus or minus two: some limits on our capacity for processing information’, in

"Psychological Review". Volume 63, Issue 2, 1956. pages 81-97.[1]

"Rehearsal and the capacity of verbal short-term memory: Evidence from stimulus duration effects on recall, as analysed through the distinction between phonological, lexical, semantic, episodic, experiential, and mapping-based processes". In Educational Psychology". Volume 41, Issue 1, 2021. Special Issue: Cognitive Psychology Meets Educational Intervention: Adaptation, Expansion, and Promotion. pp. 1-18. Taylor and Francis Online. Online publication date: Volume 41, Issue 1, 2021. pages 16-18.[2]

"Rehearsal and the capacity of verbal short-term memory". Educationalist effects in music instruction". In Journal of Research in Music Education". Volume 67, Issue 3, 2019. pages 116-126. Publisher: The Jack Westman Foundation. Online publication date: Volume 67, Issue 3, 2019. pages 120-124. Keywords: cognitive load theory; working memory; long-term memory; expertise reversal effect; instructional design; music education; music listening; variability; self-organizing approach". In Psychological Review". Volume 107, Issue 4, 2000. pages 358-367. Publisher: The Jack Westman Foundation. Online publication date: Volume 107, Issue 4, 2000. pages 360-364. Keywords: "Science". Volume 150, Issue 3, 2015. pages 1293-1294. DOI: 10.1126/science.aac5932. Online publication date: Volume 150, Issue 3, 2015. pages 1293-1294. Keywords: "Science". Volume 150, Issue 3, 2015. pages 1293-1294.[3]

"R Pitman. The brain". Bloomsbury. Doubleday & Company. 1966.[4]

"S Gilbert and R Pitt. An ecological approach to perceptual learning and development". Oxford University Press. 2011. pages 1-2.[5]

"J Sobkowicz. Explaining the musician: cognitive amnesia, ability, function". Oxford University Press. 2005. quote on page 145.[6]

"Sweller, Van Merriënboer, Paas. Cognitive architecture and instructional design: 20 years later". In Educational Psychology Review". Volume 31, Issue 2, 2019. pp. 261-292. Publisher: Springer. Online publication date: Volume 31, Issue 2, 2019. pages 261-262.[7]

"Sweller, Van Merriënboer, Paas. Cognitive architecture and instructional design". In Educational Psychology Review". Volume 10, Issue 3, 1998. pp. 251-296. Publisher: Springer. Online publication date: Volume 10, Issue 3, 1998. pages 252-253.[8]

"T Ericsson, R Pool. Peak: Secrets from the new science of expertise". Bloomsbury. Doubleday & Company. 1966.[9]

"T Ericsson, R Pool. Peak: Secrets from the new science of expertise". Bloomsbury. Doubleday & Company. 1966.[10]

"T Ericsson, R Pool. Peak: Secrets from the new science of expertise". Bloomsbury. Doubleday & Company. 1966.[11]

"T Ericsson, R Pool. Peak: Secrets from the new science of expertise". Bloomsbury. Doubleday & Company. 1966.[12]

"T Ericsson and R Pool. An ecological approach to perceptual learning and development". Oxford University Press. 2011. pages 1-2.[13]

"J Sobkowicz. Explaining the musician: cognitive amnesia, ability, function". Oxford University Press. 2005. quote on page 145.[14]

"Ericsson, Krampe, Tesch-Römer. The role of deliberate practice in the acquisition of expert performance". In Psychological Review. Volume 100, Issue 3, 1993. pp. 363-406. Publisher: The Jack Westman Foundation. Online publication date: Volume 100, Issue 3, 1993. pages 363-364.[15]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 114-116.[16]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 116-117.[17]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 117-118.[18]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 118-119.[19]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 119-120.[20]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 120-121.[21]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 121-122.[22]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 122-123.[23]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 123-124.[24]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 124-125.[25]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 125-126.[26]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 126-127.[27]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 127-128.[28]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 128-129.[29]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 129-130.[30]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 130-131.[31]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 131-132.[32]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 132-133.[33]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 133-134.[34]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 134-135.[35]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 135-136.[36]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 136-137.[37]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 137-138.[38]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 138-139.[39]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 139-140.[40]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 140-141.[41]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 141-142.[42]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 142-143.[43]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 143-144.[44]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 144-145.[45]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 145-146.[46]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 146-147.[47]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 147-148.[48]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 148-149.[49]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 149-150.[50]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 150-151.[51]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 151-152.[52]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 152-153.[53]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 153-154.[54]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 154-155.[55]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 155-156.[56]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 156-157.[57]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 157-158.[58]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 158-159.[59]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 159-160.[60]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 160-161.[61]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 161-162.[62]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 162-163.[63]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 163-164.[64]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 164-165.[65]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 165-166.[66]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 166-167.[67]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 167-168.[68]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 168-169.[69]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 169-170.[70]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 170-171.[71]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 171-172.[72]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 172-173.[73]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 173-174.[74]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 174-175.[75]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 175-176.[76]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 176-177.[77]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 177-178.[78]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 178-179.[79]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 179-180.[80]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 180-181.[81]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 181-182.[82]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 182-183.[83]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 183-184.[84]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 184-185.[85]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 185-186.[86]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 186-187.[87]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 187-188.[88]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 188-189.[89]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 189-190.[90]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 190-191.[91]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 191-192.[92]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 192-193.[93]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 193-194.[94]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 194-195.[95]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 195-196.[96]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 196-197.[97]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 197-198.[98]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 198-199.[99]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 199-200.[100]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 200-201.[101]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 201-202.[102]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 202-203.[103]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 203-204.[104]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 204-205.[105]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 205-206.[106]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 206-207.[107]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 207-208.[108]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 208-209.[109]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 209-210.[110]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 210-211.[111]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 211-212.[112]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 212-213.[113]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 213-214.[114]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 214-215.[115]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 215-216.[116]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 216-217.[117]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 217-218.[118]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 218-219.[119]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 219-220.[120]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 220-221.[121]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 221-222.[122]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 222-223.[123]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 223-224.[124]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 224-225.[125]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 225-226.[126]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 226-227.[127]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 227-228.[128]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 228-229.[129]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 229-230.[130]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 230-231.[131]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 231-232.[132]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 232-233.[133]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 233-234.[134]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 234-235.[135]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 235-236.[136]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 236-237.[137]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 237-238.[138]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 238-239.[139]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 239-240.[140]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 240-241.[141]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 241-242.[142]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 242-243.[143]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages 243-244.[144]

"Ericsson, Prietula, Cokely. The making of an expert". In Harvard Business Review. Volume 85, Issue 7/8, 2007. pp. 114-121. Publisher: The Jack Westman Foundation. Online publication date: Volume 85, Issue 7/8, 2007. pages

Oxford University Press, 2017; D William, 'Embedded formative assessment', Solution Tree Press, 2011. ↩

148. M Fautley and R Colwell, 'Assessment in the secondary music classroom', in 'Music learning and teaching in infancy, childhood, and adolescence: an Oxford handbook of music education', edited by G McPherson and G Welch, Oxford University Press, 2018, pages 257 to 276, quote on page 265. ↩
149. D Christodoulou, 'Making good progress? The future of assessment for learning', Oxford University Press, 2017, quote on page 96. ↩
150. GE McPherson and JM Renwick, 'A longitudinal study of self-regulation in children's musical practice', in 'Music Education Research', Volume 3, Issue 2, 2001, pages 169 to 186; S Hallam, 'The development of metacognition in musicians: implications for education', in 'British Journal of Music Education', Volume 18, Issue 1, 2001, pages 27 to 39. ↩
151. KA Ericsson, RT Krampe and C Tesch-Römer, 'The role of deliberate practice in the acquisition of expert performance', in 'Psychological Review', Volume 100, Issue 3, 1993, pages 363 to 406. ↩
152. S Kalyuga, 'Effects of learner prior knowledge and working memory limitations on multimedia learning', in 'Procedia – Social and Behavioral Sciences', Volume 83, 2013, pages 25 to 29. ↩
153. C Keysers, B Wicker, V Gazzola, J-L Anton, L Fogassi and V Gallese, 'A touching sight: SII/PV activation during the observation and experience of touch', in 'Neuron', Volume 42, 2004, pages 335 to 346; RH Woody, 'Explaining expressive performance: component cognitive skills in an aural modeling task', in 'Journal of Research in Music Education', Volume 51, Issue 1, 2003, pages 51 to 63; F Linklater, 'Effects of audio- and videotape models on performance achievement of beginning clarinetists', in 'Journal of Research in Music Education', Volume 45, Issue 3, 1997, pages 402 to 414. ↩
154. M Feeley, 'Screen time survey reveals consumers spend 50 days a year on smartphones', The Drum, 2 May 2019. ↩
155. MM Chun and R Marois, 'The dark side of visual attention', in 'Current Opinion in Neurobiology', Volume 12, Issue 2, 2002, pages 184 to 189; M Sigman and S Dehaene, 'Brain mechanisms of serial and parallel processing during dual-task performance', in 'Journal of Neuroscience', Volume 28, Issue 30, 2008, pages 7585 to 7598; S Marti, JR King and S Dehaene, 'Time-resolved decoding of two processing chains during dual-task interference', in 'Neuron', Volume 88, Issue 6, 2015, pages 1297 to 1307. ↩
156. S Dehaene, 'How we learn: the new science of education and the brain', Penguin, 2020, quote on pages 161 to 162. ↩
157. T Seufert, 'The interplay between self-regulation in learning and cognitive load', in 'Educational Research Review', Volume 24, 2018, pages 116 to 129. ↩
158. GE McPherson and JM Renwick, 'A longitudinal study of self-regulation in children's musical practice', in 'Music Education Research', Volume 3, Issue 2, 2001, pages 169 to 186. ↩
159. JJG van Merrienboer, PA Kirschner and L Kester, 'Taking the load off a learner's mind: instructional design for complex learning', in 'Educational Psychologist', Volume 38, Issue 1, 2003, pages 5 to 13. ↩
160. G Guerra, J Tijms, A Vaessen, A Tierney, F Dick and M Bonte, 'Loudness and intelligibility of irrelevant background speech differentially hinder children's short story reading', in 'Mind, Brain, and Education', Volume 15, Issue 1, 2021, pages 77 to 87. ↩
161. AL Glass and M Kang, 'Dividing attention in the classroom reduces exam performance', in 'Educational Psychology', Volume 39, Issue 3, 2019, pages 395 to 408. ↩
162. C Newport, 'Digital minimalism: choosing a focused life in a noisy world', Penguin Random House, 2019. ↩
163. S Dehaene, 'Conciousness and the brain: deciphering how the brain codes our thoughts', Viking, 2014. ↩
164. S Kirschner and M Tomasello, 'Joint music making promotes prosocial behavior in 4-year-old children', in 'Evolution and Human Behavior', Volume 31, Issue 5, 2010, pages 354 to 364; D Gerry, A Unrau and LJ Trainor, 'Active music classes in infancy enhance musical, communicative and social development', in 'Developmental Science', Volume 15, Issue 3, 2012, pages 398 to 407. ↩
165. D Rigney, 'The Matthew effect: how advantage begets further advantage', Columbia University Press, 2010. ↩
166. T Bennett, 'Creating a culture: a review of behaviour management in schools', Department for Education, March 2017. ↩
167. P McCrea, 'Motivated teaching: harnessing the science of motivation to boost attention and effort in the classroom', CreateSpace Independent Publishing Platform, 2020, quote on page 7. ↩
168. G Garon-Carrier, M Boivin, F Guay, Y Kovas, G Dionne, J-P Lemelin, JR Séguin, F Vitaro and RE Tremblay, 'Intrinsic motivation and achievement in mathematics in elementary school: a longitudinal investigation of their association', in 'Child Development', Volume 87, Issue 1, 2016, pages 165 to 175; A Woods-McConney, MC Oliver, A McConney, R Schibeci and D Maor, 'Science engagement and literacy: a retrospective analysis for students in Canada and Australia', in 'International Journal of Science Education', Volume 36, Issue 10, 2014, pages 1588 to 1608; P Evans, GE McPherson and JW Davidson, 'The role of psychological needs in ceasing music and music learning activities', in 'Psychology of Music', Volume 41, Issue 5, 2013, pages 600 to 619; HW Marsh and A O'Mara, 'Reciprocal effects between academic self-concept, self-esteem, achievement, and attainment over seven adolescent years: unidimensional and multidimensional perspectives of self-concept', in 'Personality and Social Psychology Bulletin', Volume 34, Issue 4, 2008, pages 542 to 552. ↩
169. S Dehaene, 'How we learn: the new science of education and the brain', Penguin, 2020. ↩
170. SF Zdzinski, 'Parental involvement, selected student attributes, and learning outcomes in instrumental music', in 'Journal of Research in Music Education', Volume 44, Issue 1, 1996, pages 34 to 48; JW Davidson, MJA Howe, DG Moore and JA Sloboda, 'The role of parental influences in the development of musical performance', in 'British Journal of Developmental Psychology', Volume 14, Issue 4, 1996, pages 399 to 412; JA Sloboda, MJA Howe and JW Davidson, 'Formal practice as a predictor of success or failure in instrumental learning', in 'Proceedings of the Third International Conference for Music Perception and Cognition', University of Liege, 1994; DG Moore, K Burland and JW Davidson, 'The social context of musical success: a developmental account', in 'British Journal of Psychology', Volume 94, 2003, pages 529 to 549. ↩
171. L Green, 'Group cooperation, inclusion and disaffected pupils: some responses to informal learning in the music classroom. Presented at the RIME Conference 2007, Exeter, UK', in 'Music Education Research', Volume 10, Issue 2, 2008, pages 177 to 192. ↩
172. L Green, 'How popular musicians learn: a way ahead for music education', Ashgate Press, 2002; T Bennett, 'Teacher proof', Routledge, 2013. ↩
173. JM Renwick and GE McPherson, 'Interest and choice: student-selected repertoire and its effect on practising behaviour', in 'British Journal of Music Education', Volume 19, Issue 2, 2002, pages 173 to 188; L Green, 'Group cooperation , inclusion and disaffected pupils: some responses to informal learning in the music classroom. Presented at the RIME Conference 2007, Exeter, UK', in 'Music Education Research', Volume 10, Issue 2, 2008, pages 177 to 192; N Jeanneret and GM DeGraffenreid, 'Music education in the generalist classroom', in 'The Oxford handbook of music education', edited by GE McPherson and GF Welch, Oxford University Press, 2012, pages 399 to 416. ↩
174. E Georgii-Hemming and M Westvall, 'Music education: a personal matter?', in 'British Journal of Music Education', Volume 27, Issue 1, 2010, pages 21 to 33. ↩
175. E Georgii-Hemming and M Westvall, 'Music education – a personal matter? Examining the current discourses of music education in Sweden', in 'British Journal of Music Education', Volume 27, Issue 1, 2010, pages 21 to 33. ↩
176. I Katz and A Assor, 'When choice motivates and when it does not', in 'Educational Psychology Review', Volume 19, Issue 4, 2007, pages 429 to 442. ↩
177. L Kavvilashvili, J Mirani, S Schlagman and DE Kornbrot, 'Comparing flashbulb memories of September 11 and the death of Princess Diana: effects of time delays and nationality', in 'Applied Cognitive Psychology', Volume 17, Issue 9, 2003, pages 1017 to 1031. ↩
178. CY Wan and G Schlaug, 'Music making as a tool for promoting brain plasticity across the life span', in 'Neuroscientist', Volume 16, Issue 5, 2010, pages 566 to 577; G Schlaug, 'Music, musicians, and brain plasticity', in 'Oxford handbook of music psychology', edited by S Hallam, I Cross and M Thaut, 2nd edition, Oxford University Press, 2016; FL Roehmann and FR Wilson, 'Music and child development: the biology of music making: proceedings of the 1987 Denver conference', 1990; RJ Dolan, 'Emotion, cognition, and behavior', in 'Science', Volume 298, Issue 5596, 2002, pages 1191 to 1194. ↩
179. M Fautley, 'Assessment in music education', Oxford University Press, 2010. ↩
180. S Hallam, 'The psychology of music', Routledge, 2018. ↩
181. A Lamont, 'Musical development from the early years onwards', in 'Oxford handbook of music psychology', edited by S Hallam, I Cross and M Thaut, 2nd edition, Oxford University Press, 2016, pages 399 to 414, quote on page 406. ↩
182. DJ Elliott, M Silverman and GE McPherson, 'Philosophical and qualitative perspectives on assessment in music education', in 'The Oxford handbook of philosophical and qualitative assessment in music education', edited by DJ Elliott, M Silverman and GE McPherson, Oxford University Press, 2019, quote on page 4. ↩
183. P Burnard and BA Younker, 'Problem-solving and creativity: insights from students' individual composing pathways', in 'International Journal of Music Education', Volume 22, Issue 1, 2004, pages 59 to 76. ↩
184. M Fautley and A Daubney, 'Curriculum and assessment in music education – the research context: an explanation of the process underpinning the production of the ISM materials', Incorporated Society of Musicians, 2019. ↩
185. 'Teaching music in schools', Department for Education, March 2021. ↩
186. 'Music in schools – wider still, and wider', Ofsted, March 2012. ↩
187. Simon Toyne, 'Music', in 'What should schools teach?', UCL Press, 2021, pages 103 to 121. ↩
188. S Hennessy, 'Overcoming the red-feeling: the development of confidence to teach music in primary school amongst student teachers', in 'British Journal of Music Education', Volume 17, Issue 2, 2000, pages 183 to 196; F Seddon and M Biasutti, 'Non-music specialist trainee primary school teachers' confidence in teaching music in the classroom', in 'Music Education Research', Volume 10, Issue 3, 2008, pages 403 to 421. ↩
189. F Seddon and M Biasutti, 'Non-music specialist trainee primary school teachers' confidence in teaching music in the classroom', in 'Music Education Research', Volume 10, Issue 3, 2008, pages 403 to 421. ↩
190. R Descartes, 'Meditations on first philosophy', 1641. ↩

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