

**PEDAGOGY AND METACOGNITION
IN SECONDARY SCHOOL MUSIC EDUCATION**

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Pedagogy and Metacognition in Secondary School Music Education

In this essay, I will critically examine and reflect on how metacognition can be integrated into the pedagogy of secondary school music education. Research on metacognition and music has historically centred its focus on the more practical aspects of performance and peripatetic teaching settings, such as instrumental lessons (Concina, 2019; Colombo 2016; Benton, 2014). This has led to a deeper understanding of how we might go about *learning how to learn* an instrument; however, there is still much to explore in relation to classroom settings¹. School-based music teaching incorporates practical/performance-based activities as part of a curriculum, however there exists an array of additional learning behaviours that form the broader study of the subject. I hold the position that successful music students need to be metacognitive, and the following discussion will argue that an appropriate pedagogical understanding of metacognition is fundamental if we are to inspire it in our students.

In the mission statement of my school, we commit to equip students with ‘the self-confidence, adaptability, maturity and perspective to sustain their professional development and personal fulfilment throughout their lives’ (Bambrough, 2021, p. 2). I believe that achieving ‘self-confidence’ and ‘adaptability’ is intrinsically metacognitive, and in order to sustain these desirable attributes across our lives, teachers need to instil cognitive awareness. This awareness is realised through both modelling and instruction that motivates self-efficacy by embedding it into all aspects of the curriculum.

To suitably realise metacognition in the context of music pedagogy, an appropriate definition of ‘pedagogy’ is required. Pedagogy, the art and science of teaching (from 16c. French *pédagogie*), takes place in this essay as ‘the function or work of teaching’ (EAP, 2009, p. 42) and ‘the interactive process between teacher and learner’ (Siraj-Blatchford et al., 2002, p. 10). The study of the methods of teaching in pedagogical practice informs our understanding of how learning takes place, and shapes educational techniques. As argued by Cuenca (2010), by critically interrogating our pedagogical acts, teachers can embrace a holistic view of the artistry of pedagogy that goes beyond the purely ‘technocratic’ reduction of teaching to a universal skill set, thus improving student learning outcomes.

¹ It should be mentioned here that in school music education, the ‘classroom’ takes many forms beyond the traditional set up of desks; e.g., halls, studios, theatres, rehearsal spaces, and so on.

In light of the above, it is my view that there exist two different sociological strands of the term pedagogy, which will benefit from differentiation here. Rather than considering the more conservative/archaic idea of the didactic ‘authoritarian’ (from the Greek *pedo-* ‘child’ + *agōgos* ‘leader’), in this essay I am emphasising a more progressive pedagogy that gives autonomy to the student by way of metacognition. As Plutarch put it in *Moralia* (‘Morels’, c. 100): ‘for the mind does not require filling like a bottle, but rather, like wood, it only requires kindling to create in it an impulse to think independently and an ardent desire for the truth’ (Babbitt, 1927, p. 257). That is, teaching and facilitating students through dialectic methods to think about their own thinking and to be subsequently self-regulating fosters:

- Independence and autonomy/liberationism (See Freire’s *Pedagogy of the Oppressed*, 1968)
- A ‘growth mindset’ and learner resilience (Dweck, 2006)
- Improved academic achievement (EEF, 2021; Hattie 2009; Dignath and Buttner, 2008)
- Reflective practitioners (See Schön’s ‘reflection-in-action’, 1983)

It has been well documented that becoming metacognitive leads students to be more prosperous learners (Sternberg, 1998), but how does that relate to the role of the educator? With the above framing of pedagogy in hand, teachers must acquire a sound pedagogical understanding of the concept of metacognition in order to implement it in their own practice. To understand metacognition, it helps to first understand cognition: the word originates in the mid-15th century as *cognitioun* from the Latin *cognoscere* as in ‘co-’ (together/with) and the PIE root ‘*gnō-*’ (to know). Cognition is thus the cognitive process required *to know*, and is an essential part of our ability *to learn* and obtain knowledge accordingly. When the prefix *meta-* (of Greek origin) is added, we are dealing with the idea of something a level above – as in reflexive; about itself – cognition *about* cognition.

In the 1930s, Vygotsky’s sociocultural theory of ‘private speech’ described the transition from external to internal speech around age 7, emphasising its role in cognitive development. He believed internal speech enhanced social competence by serving as a self-regulation method and tool for developing problem-solving skills. Later in the century, the term ‘metacognition’ was coined by American psychologist Flavell (1976). He postulated the following ‘private speech’:

'I am engaging in metacognition if I notice that I am having more trouble learning A than B; if it strikes me that I should double check C before accepting it as fact'.

(Flavell, 1976, p. 232)

At this stage, I believe it is important to consider when and how we engage with metacognition. It appears that, in the literature, metacognition has not garnered many significant criticisms. However, based on my experience, I would argue that a prescriptive approach (such as looking to employ metacognitive strategies where other more appropriate ones may already exist) should be avoided. This is where one's understanding of metacognition's relationship to pedagogy must be put under the microscope by placing other considerations, such as neurodivergence, SEND, and SEMH needs first. For example, a student that has an anxiety disorder may find that the constant monitoring of their own thoughts exacerbates symptoms.

In a recent paper discussing situations where metacognition may be unhelpful, Norman (2020, p. 1) asks: 'Is the cognitive demand required by the metacognitive strategy disproportionately large compared to its potential usefulness to cognitive achievement?', and argues that disadvantages of metacognition have not yet been given sufficient attention in the literature. Here, I contend that an overemphasis on metacognitive strategies could lead to destructive forms of self-evaluation of one's abilities through negative reflection, impeding on self-esteem and well-being, ultimately having the opposite effect of de-motivating the learner.

I therefore take the view that educators should continually assess how they adopt metacognition in their pedagogical practice by placing the student at the centre. To ensure this in my own practice, I have identified three areas of the Government's DfE's Teachers' Standards (2021, pp. 10-11) related to the fostering of learner independence and reflection:

2.3 'Guide pupils to reflect on the progress they have made and their emerging needs'

2.5 'Encourage pupils to take a responsible and conscientious attitude to their own work and study'

4.2 'Promote a love of learning and children's intellectual curiosity'

In the context of music education, I contextualise the above in terms of the complex cognitive demand that needs to be factored in when teaching the following diverse and multifaceted skillsets:

- **Musicianship** (the mental process of audiation/ability to internalise music with understanding)
e.g. I can hear two different notes in harmony at once, which forms an interval 5 notes apart.
- **Theory** (the maths/physics behind the music that enables us to connect logic with musicianship)
e.g. The interval of a perfect 5th spans 7 semitones, integers $Z=\{0, 7\}$, corresponding to the frequency ratio 3:2.
- **Analysis** (the science of examining/investigating by applying musicianship/theory knowledge)
e.g. In Edvard Grieg's 'Klokkeklang' from Lyric Pieces Book V. Op. 54, the composer opens the piece by utilising open perfect 5th harmonies in parallel motion, based on the tonic and subdominant.
- **Literacy** (the language of linking the above to contextualise/assess/evaluate/appraise)
e.g. Due to their natural presence in the overtone series, the resonance of perfect 5ths can evoke the sound of bells, and Grieg employs this as a compositional strategy to add a programmatic aspect to the music. By titling the piece 'Klokkeklang' (Norwegian for 'Bell Ringing'), the composer makes reference to the phenomenon of bells through the lyrical expressivity of the piano writing and his more personal Norwegian folk inflections.
- **Creativity** (producing original work by combining all of the above parts into a new whole)

These skillsets demonstrate that the thinking strategies required for the study of music are interdisciplinary, and becoming independent/reflexive musicians means to embrace the sciences, arts, and humanities. As Einstein said, 'If I were not a physicist, I would probably be a musician. I often think in music' (Calaprice, 2000, p. 15). By connecting our awareness of the diverse and multifaceted skillsets listed above with the teaching of metacognition, we can create a broader form of learning without disciplinary boundaries. If students understand how they learn, and can apply this understanding to other situations, productive collaborative learning environments can be constructed. In order to reach the top of Bloom's 'Taxonomy of Educational Objectives' model – 'create' (Anderson and Krathwohl, 2001) – and become self-regulating, we require a synthesis of all of the above facets; a combined effect greater than the sum of its parts.

In terms of self-regulation, the educational psychologist Zimmerman notes that: '[metacognitive] learners are proactive in their efforts to learn because they are aware of their strengths and limitations and because they are guided by personally set goals and task-related strategies' (2002, pp. 65-66). Nelson and Narens created a two-level model for metacognitive regulation: the 'object

level’ and the ‘meta level’ (1990, pp. 125-173). The object level refers to the decoding required to understand something, whereas the meta level is the ‘level above’ where critical reflection occurs.

As a composer practicing metacognition myself, I have learned that understanding and regulating my thought processes by intentionally designing and executing my own strategies and evaluating them in real time, ensures continual improvement. In composition teaching, I observe that when students sit down to write music without a clear thought process they quickly come up against a wall. Those who begin by independently considering what metacognitive tools they require avoid reaching the impasse, and are able to self-assess and reflect on their compositional choices more effectively. The EEF Report on Metacognition and self-regulated learning (2021) points out that, although scaffolding and modelling is essential in the initial steps of teaching metacognition, over-reliance on scaffolding can obstruct reflection and independent thinking. This echoes Bjork and Bjork, who point out that we need to apply ‘desirable difficulties to enhance learning’ (2011, p. 56) if we are to truly nurture autonomous thinking.

Taking the above discussion as the foundation, below I consider subject-specific approaches from my own practice, which consist of two parts:

1. Metacognitive Knowledge: considering and being aware of one’s own knowledge, what our brains are naturally good at and less good at, and what types of thinking cause us difficulty. E.g., *I notice that I find it difficult to identify different chords in music*. This knowledge leads to the implementation of strategies, e.g. *if I break down the chords into intervals, I now have a procedure for identifying them*.

2. Metacognitive Regulation: the process of managing one’s cognition in order to control discrete learning methods and facilitate bespoke approaches. In sophisticated learners, these approaches can be modified and adapted to different learning problems. E.g., *I now know that in order to identify and understand larger structures, I need to first separate the parts*.

These approaches can then be applied to more advanced concepts, such as the connotations of the identified chords, e.g. *I notice that I unconsciously think that minor chords connote sadness*. This assumption, in a metacognitive learner, should suggest that they might want to *think* about *why* they *think* minor chords connote ‘sadness’. By doing this, they might then begin to make value judgements in order to create their *own* thought ideas – ‘create’ in Bloom’s Taxonomy. The *meta*

level allows the learner to comprehend and monitor their thought processes. The learner achieves this by knowingly reflecting on their comprehension by employing the appropriate thinking strategies and adapting them to different learning tasks, such as composition.

To return to chord identification, straightforward strategies such as ‘breaking it down’ can be easy fixes – what we might consider the mechanics behind the music. However, as a music educator I am interested in how we can employ metacognition in order to deepen students’ poetic awareness. Based on the above discussion, I will now analyse two core educational strategies that I have used to explore metacognition across different key stages in my own teaching practice.

Strategy I: TRUE or FALSE (The Socratic Method)

Key Stage 3

This is an activity I often use as a lesson starter, as it begins with low-stakes questioning that naturally leads to dialogic teaching and elaborative interrogation through the Socratic Method. The below example comes from an aural training-based musicianship lesson activity, through the lens of chord identification.

1. As students arrive, they are given a card with ‘TRUE’ on one side, and ‘FALSE’ on the other.
2. The teacher, at the piano, poses the question: *‘This is a minor chord, true or false?’*
3. The teacher plays a minor chord and students hold up their cards to answer true or false².
4. After addressing the correct answer and any misconceptions, the teacher then asks: *‘How did you determine this to be true?’*

This is the point at which the teacher brings in discussion that prompts metacognition. Students who have not begun learning about metacognition will typically answer with such answers as ‘because I just do’ or ‘because it sounds sad’, and so on, leading to further prompting, e.g....

5. Teacher interrogates with: *‘What if I were to say you are wrong?’*
... Which often leads to students beginning to think about how/why they reached their conclusion.

² At this stage, the teacher receives immediate Assessment for Learning (AFL) information.

6. Teacher models metacognition: *In order that I know it is a minor chord for certain, I will take steps to prove the answer is right. To do this, I need to consider how my brain understands how the chord is formed, e.g. when I hear the chord, I can identify that it is a 3-note triad and the middle note is 1 semitone lower than it would be in a major chord. The word 'minor', in music, as elsewhere, means to be smaller, and therefore the chord can be labelled as a 'minor chord'.*

7. At this stage, the teacher explains that by checking your own learning, you can avoid making impulsive mistakes and common misconceptions. The teacher then asks the students: *'Why do you think I asked this question?'*, to prompt further discussion on how we make assumptions. For example, a student might confuse *minor* chords with *diminished* chords due to them both being able to be described as 'sad'. This description, however, is a conditioned response; by associating a feeling with a sound, students can make snap judgements and by not understanding how they came to their answer, will struggle to apply their thinking to more complex questions.

8. The minor chord identification question was a straightforward one, and a simple way of opening up the dialogic environment about our value judgements. The next stage is to then challenge students with a further true/false question that has an element of subjectivity...

9. The teacher poses: *'The piece of music I am now going to play has a sad character, true or false?'*

At this stage, students might take longer to think about both their own thinking, and the question itself. They might work out that further (Socratic) questioning is going to take place, and will therefore be encouraged to begin regulating their thinking by asking their own questions. The teacher initiates this by inviting the students to think first.

10. 'Think/Pair/Share': after students have thought about the question independently, they are put in pairs, and told to have a discussion around the question. The important point here is that, unlike in the 'minor chord' question, there is no right or wrong (true/false) answer to the 'sad character' question. Students will then discuss the *whys* and *hows* of the music by critically engaging with their own judgements.

11. Each pair is then invited to share their reasoning and thought processes back to the class, which initiates further class-wide debate. At this stage, the teacher discusses how thinking in this

(metacognitive) way leads us to become more investigative learners, encouraging the implementation of our own bespoke strategies that can be applied to different tasks.

I believe the above strategy can unlock the thinking tools required to appraise more complex musical forms, and to be able to critically evaluate what it is we think music might be trying to do (its *function*), and trying to say (its *meaning*). I notice that this is one of the most challenging aspects for learners. Strategies that allow us to synthesise musicianship, theory, analysis, and literacy support us in becoming autonomous/liberated, and this creates a framework for learners to access the more advanced dimensions of the art. However, in my experience, there are times where the true/false strategy can instigate over-competitiveness, and leave reticent students left out. In these cases, I find more emphasis on the think/pair/share element can be beneficial.

Strategy II: 'COMPOSITION WITH COGNITION'

Key Stages 4-5

This strategy is geared towards students self-governing their planning by thinking ahead, and then reflecting afterwards. When students sit down to compose, they typically go straight to the 'thinking fast' part of their brains, and instantaneously start writing notes, but doing so without *conscious* thinking. Much like with the Stanford marshmallow experiment (Mischel and Ebbeson, 1970), students want the immediate reward of notes and rhythms, without considering the longer-term value of first creating a set of intentions with awareness (delayed gratification).

The aim of this activity is instead to initiate independent forward planning, target setting, and monitoring/evaluation. Therefore, instead of going straight to the act of composition itself, the students are given a guided two-sided resource to complete, encouraging directed independent thinking. The resource can be found in the appendix for reference. I have found that the physical resource helps focus attention and creates ownership, and is also effective for differentiated instruction. One of the current downsides to this strategy is that it is 'pen-and-paper' based, and I wish to design an accessible electronic version for students that require digital aid.

Having detailed these strategies, I will now finish by outlining some conclusions and personal reflections. From a pedagogical standpoint, it is vital that we teach learners that knowing how to apply active thinking when it lies outside of one's intuitive grasp requires conscious activity. We must be clear about expectations, and that metacognition is complex; to become sophisticated in

it requires continued effort. For metacognition to be effective, it needs to be embedded into the curriculum in a meaningful way, and not just adopted merely to pay lip service to the idea.

I believe metacognition is a valuable pedagogical tool, but we must avoid imposing it as a dogmatic or prescriptive approach. It is difficult to accurately measure and assess internal thought processes ‘inside the black box’ (Black and Wiliam, 1998), and more empirical evidence is necessary in the research to better understand this. We must be pragmatic, and adopt different pedagogical approaches where necessary, particularly with regards to neurodivergence, SEND, and SEMH needs. The key is to be agile; to critically evaluate one’s practice in real time, and to *be* metacognitive about how we *teach* and *use* metacognition.

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APPENDIX: Two-sided resource for 'COMPOSING WITH COGNITION' Strategy

COMPOSITION WITH COGNITION (PART I: FORWARD PLANNING)

This worksheet is aimed at helping you to **plan** your musical composition by actively **thinking critically** about **how** you might go about writing a piece of music. You can do this by **forward planning**, and considering what **cognitive skills** you personally need for the writing process.

This first side is geared towards the **planning stage**, and the other side of this sheet is for **monitoring** and **evaluation**. You should therefore **continually revisit** this resource during the practical part of the compositional process, and **reflect** on how your ideas relate to the realisation of the music.

I. QUESTIONS

- 1) List at **least 3 areas** of composition that you find difficult (e.g. harmony, counterpoint).
*How will you put your **own strategies** in place to combat this?*

Areas of Composition	Strategies

- 2) What **steps** have you taken **in the past** to solve **similar difficulties**?

- 3) What **personal/individual** interests do you have that you feel will be **exciting to explore** in the piece? What makes you wonder? E.g., inspirations, stimuli, expressions, etc.

- 4) How will you **challenge yourself** in this composition, and what will be **important**?

- 5) What **questions** do you have for *yourself* at this stage?

II. CREATE THREE KEY PERSONAL TARGETS FOR THE OVERALL PROCESS

What do you want to achieve and why?

- 1) _____
2) _____
3) _____

III. ADDITIONAL TASK

complete a **concept map** combining all of your above findings on a separate sheet of paper.

COMPOSITION WITH COGNITION (PART II: MONITORING/EVALUATION)

This side of the worksheet is aimed at helping you **monitor** and **evaluate** your composing process. Once you have completed the first page and begun working on the piece, you can visit this sheet to begin your **reflections**.

I. QUESTIONS

Below is a selection of questions. You should **attempt to answer them all**, but may choose a selection of areas that are/have been particularly **relevant to your learning**. Complete this section in **as much detail as possible** on separate lined paper and attach it to this resource.

Monitoring

- 1) Am I taking **advantage** of different learning supports that are available to me?
- 2) How has my **motivation/focus** level been; how **difficult** have I been finding this project?
- 3) Are my **personal/individual** musical interests being **communicated** to others?
- 4) Am I spotting any **patterns** in my way of **thinking/approach** to composing?
- 5) Have I had a **growth mindset** during this project?
- 6) Are there any **difficult areas** that I am still **struggling with**? If so, **why**?

Evaluation

- 1) What did I find were the **most difficult** parts of the task?
- 2) What would I do **differently** next time?
- 3) Did I **challenge** myself?
- 4) Which of my **strategies** can be used again in **different contexts** beyond composition?
- 5) What have I **learned** about my **strengths** and areas in need of **improvement**?
- 6) Have I **progressed** as a learner, and what can/should I do **next**?

II. REFLECTION ON THE 3 KEY PERSONAL TARGETS YOU SET

Have you achieved them, and if not, why?

- 1) _____

- 2) _____

- 3) _____

III. ADDITIONAL TASK

Do some independent research into **'metacognition'** – what is it, and how might it help you?