

Research Brief

- 1) **What research underpins the “learning characteristics” outlined in the school vision? Why are these important?**
 - a. **Effective Communicator**
 - b. **Critical Thinker**
 - c. **Knowledgeable Learners**
 - d. **Self-aware and empathetic**
 - e. **Confident learner**
 - f. **Creative Learner**
- 2) **What guidance can research offer on what these learning characteristics actually look like?**

1) Effective Communicator

In a review of the highest impact interventions for Early Years teaching, communication and language approaches were rated as having the highest impact for the lowest cost (+6months’ progress) based on a secure platform of evidence (EEF, 2018). Although in Early Years education communication and language approaches focus on spoken language and verbal interaction, as students advance effective written communication is added to the portfolio of fundamental skills. The importance of effective communication continues throughout students’ lives: The Brookings Institution has shown that “communication” (along with creativity, problem solving and critical thinking) is mentioned in government education documents from more than 50 countries (Horton et al, 2017).

Communication is not only of value in its own right, but is a gateway skill to most other aspects of education. There is a detectable attainment gap in communication (measured in vocabulary size and comprehension) from as early as 22 months (Sharples et al, 2010). Research shows that in 2018 120,000 disadvantaged students left primary school below the expected standard for reading and, based on previous cohorts, only 10% will achieve passes in English and Mathematics GCSEs, 2% will achieve the EBacc and 0 will attend Russell Group universities (Quigley, 2020).

However research suggests that there are simple steps which can close this gap whilst supporting the development of all children. One of the most powerful is explicit teaching of vocabulary. As children learn most of their vocabulary incidentally through talk and independent reading they need a strong baseline vocabulary to maximise growth – explicitly teaching as few as 400 new words can allow them to make connections to thousands more (EEF, 2019).

The EEF has identified many of the key components of effective communication including:

- 1) Speaking and listening skills
- 2) Vocabulary acquisition that supports effective reading and writing.
- 3) Development of fluent reading capabilities.
- 4) Transcription, sentence structure and writing composition techniques

2) Critical Thinker

Critical thinking is the ability to analyse and evaluate information and arguments. It is a fundamental step to developing expert thinking in nearly all disciplines (Higgins et al, 2016). Sharples et al (2017) demonstrated how fundamental the skill is to the fields of both education and healthcare, for example. Furthermore it is a valuable life skills for students to use beyond the classroom as they emerge into a world of social media, fake news and the need to be informed choosers of everything from consumer products to medical options. However caution should be used when attempting to build a general skillset of “critical thinking” as skills such as analysis, synthesis and evaluation have different meanings within different disciplines. Although widely valued as a “soft skill”, evidence suggests that programmes designed to teach “general critical thinking skills” have had limited impact (Willingham, 2020) and that the skills are better delivered within specific disciplines. One issue is that students are generally bad at applying critical thinking techniques to new situations unless explicitly taught. Even within a discipline students can struggle when faced with a problem that slightly differs from previous examples, although research suggests that learning to label the steps of problem-solving makes students considerably more flexible in their skills (Catrambone, 1998).

There is evidence that, alongside literacy the critical thinking gap is one of the most significant that exists between disadvantaged students and their peers (Sharples et al, 2017). However research does not suggest that any students are “too young” to teach critical thinking or should be excluded from learning this skill because they are “less capable” (Willingham, 2020). Starting to learn to think critically at primary level as a core goal for all students will create a platform of skills that students will need to build on for their whole lives, regardless of their future pathways.

Successful critical thinkers can deploy the following skills:

- 1) Analysis of information and arguments – a detailed examination of the different components.
- 2) Synthesis of information – linking information from different sources to form a coherent whole.
- 3) Evaluation of information and theories – testing information against relevant criteria for relevance, reliability and validity.
- 4) Problem solving – deploying multiple simple problem solving techniques to solve new, complex problems within a discipline.

Steps to successfully teaching critical thinking (domain specific):

- 1) Identify what is meant by critical thinking within that domain.
- 2) Identify the key knowledge (powerful knowledge) students need to engage with this thinking.
- 3) Select the best sequence to learn the underlying skills.
- 4) Decide which skills need to be revisited across different units, terms and years.

3) Knowledgeable Learners

The 2019 Ofsted framework placed a strong emphasis on “knowledge rich” curricula based on research conducted by HMI (2017) and this has now become a fundamental value in most schools. The research behind this is clear and draws on the science of memory, especially relating to cognitive load. It is clear that when students are faced with new information, tasks or problems to solve they find this considerably easier if the prior knowledge on which they need to draw is securely embedded. This reduces overall cognitive load and frees students to engage in more sophisticated analytical, problem-solving and creative thinking (Willingham, 2020). Whilst this is not universally accepted, some psychologists argue that expert thinking does not really differ from the thinking of novices in terms of the cognitive structures, they just have more knowledge. This is probably too radical a conclusion to be sustained by the current evidence, but that “a major component of expertise is seen to be the possession of ... accessible and usable knowledge” (Glaser, 1987) seems increasingly convincing.

The specifics of “knowledge” that learners should acquire remain variable depending upon context. The national curriculum acts as a strong starting point with schools expected to build beyond this after analysing the context and needs of their student body. However what knowledgeable learners look like in a more general sense is:

- 1) Learners with a clear sense of which is the “powerful knowledge” that they need to take forward from a unit of study.
- 2) Learners for whom said knowledge is securely embedded and can readily accessible when needed.
- 3) Learners who are able to see the connections between knowledge in different units of study.

4) Self-aware and Empathetic

The EEF’s teaching and learning toolkit shows that interventions designed to support or boost students’ social and emotional learning boost progress by up to 4 months on average at moderate cost. Developing students’ self-awareness and empathy is therefore not only a value in and of its own right, but links to other areas of cognitive and learning development. The main reason for this is the links to emotional and attitudinal outcomes in the sort of ‘soft skills’ that promote learning such as motivation, resilience and team work. The impact is particularly strong in primary schools, possibly because younger students are more receptive to such interventions.

An EEF review of practice in primary schools (Wigelsworth et al, 2020) found the following key priorities in social and emotional learning:

- 1) Emotional self-awareness
- 2) Self-Management
- 3) Social Awareness
- 4) Relationship skills
- 5) Responsible decision-making

Self-awareness in learners is one of the fundamental keys to developing self-regulation and metacognitive skills that guide learning and progress. Evidence suggests that metacognition is one of the highest-impact interventions for closing the disadvantage gap in education (+7months) (EEF, 2020). Research suggests that a key skill of successful learners with research indicating that metacognitive skills alone account for 17% of variance in learning outcomes by background (compared to intelligence which is only 10%) (Muijs and Bokhove, 2020).

CASEL (2005) defines 5 core competencies for social and emotional learning that link to functionality in education and the wider world: self awareness, self-management, social awareness, relationship skills, responsible decision-making. Empathy is a thread that would run through several of these.

5) Confident Learners

The importance of confidence in educational outcomes has long been recognised with research suggesting that this “dispositional” factor can be one of the greatest obstacles or keys to educational success throughout a young person’s whole life (Norman, 2003). When learners lack confidence they struggle to deploy a wide range of tools that support learning including: asking and answering questions, responding to feedback, redrafting and restructuring work and independent study. More fundamentally, confidence is closely tied to a range of other factors shown to impact upon educational outcomes such as resilience, motivation and growth mindset.

Relating confidence to issues such as anxiety, research has demonstrated that lack of confidence, low motivation or high anxiety can cause extensive problems in situations the student perceives to be high-stakes which includes formal assessments but can be any classroom or social interaction.

Despite its significance, confidence can be quite a woolly concept with a range of possible definitions. There is debate within education (and wider psychology) about the extent to which it is a personality trait (stable over time) versus a domain or situationally specific mindset. Definitions therefore range from “assuredness in oneself and in one’s capabilities” (Erwin & Kelly, 1985) to “positive emotional response” to challenge (Barsevick & Johnson, 1990). However it is necessary to be cautious about adopting a fixed mindset in relation to confidence in education.

One of the main reasons that formative assessment can lack impact is students’ underlying confidence. Low confidence limits their ability to engage with feedback and new ideas, their resilience when addressing or improving work and even their response to simple quantitative feedback such as grades (Elliott, 2016).

There are a wide range of different ways to capture, measure and define confidence but for educational purposes, Dweck’s work on Growth Mindset is probably the most directly useful. However it should be noted that research continually suggests that confidence comes from success, it is not a precursor to success. “Teachers who are confronted with the poor motivation and confidence of low attaining students may interpret this as the cause of their low attainment and assume that it is both necessary and possible to address their motivation before attempting to teach them new material. In fact, the evidence shows that attempts to enhance motivation in this way are unlikely to achieve that end. Even if they do, the impact on subsequent learning is close to zero (Gorard, See & Davies, 2012). In fact the poor motivation of low attainers is a logical response to repeated failure (Coe et al., 2014).”

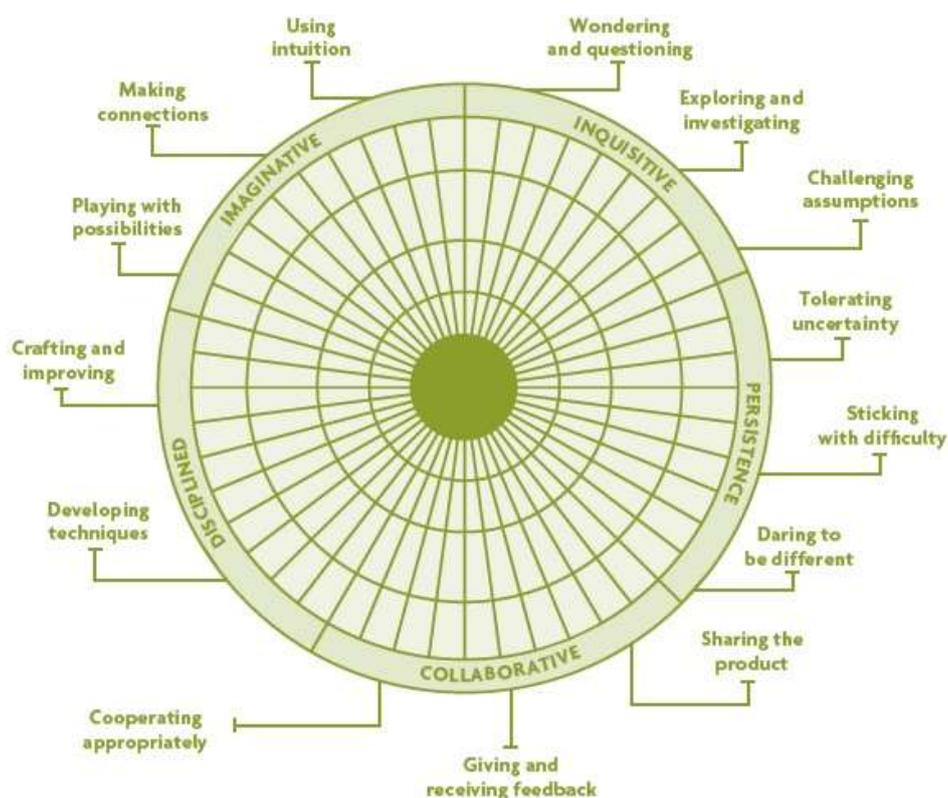
6) Creative Learners

Creativity in learning was defined by the National Advisory Committee on Creative and Cultural Education (NACCCE, 1999) as “imaginative activity fashioned so as to produce outcomes that are both original and of value.”

At times, however, creativity has been confused with ‘play’, ‘imagination’ or tasks which, whilst fun, do not necessarily embed learning. In fact, truly successful creativity in learning builds on a solid platform of knowledge, analytical and problem solving skills and subject mastery that ensures that thinking is not just original but is “of value.” It has been increasingly recognised as an important part of education with the OECD conducting research across 11 countries to explore how it is most effectively nurtured within schools. PISA has recently added it to its assessment criteria and intends to measure “creative thinking” from 2021. (Lucas, 2019.)

Creative thinking can be broken down in a number of ways. One particularly helpful model is The Centre for Real-World Learning’s Five Dimensional Model of Creativity (2013):

FIGURE 1:
THE CENTRE FOR REAL-WORLD LEARNING’S FIVE-DIMENSIONAL MODEL OF
CREATIVITY (LUCAS ET AL., 2013)



However it can be distilled in a simpler summary of the iterative cycle needed to generate novel and effective solutions:

- 1) The generation of ideas
- 2) The evaluation of ideas
- 3) The improvement of ideas

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