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Releasing students from the cognitive straitjacket of visual-auditory-kinaesthetic learning styles

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Learning styles pervade common nomenclature in schools and are found in many strategic-planning documents for raising achievement in learners. This is the so-called meshing hypothesis; matching a student's preferred learning style to instruction improves a student's learning (Lethaby and Mayne, 2018; Aslaksen and Lorås, 2018). A learning style can be defined as 'cognitive, affective, and physiological traits [that indicate] how learners perceive, interact with, and respond to learning environments' (Keefe, 1982, p. 44, quoted in Sharp et al., p. 294). As it stands, at least 12 distinct learning styles (and more than 60 derivatives) have been outlined, which try to categorise a learner's preference for processing information (Coffield et al., 2004). By far the most popular model of learning style is the visual-auditory-kinaesthetic (VAK) model and its corollary VARK (reading/writing). This model categorises a learner as either visual – preferring to process information using visual prompts; auditory – preferring to process information through talking and listening; or kinaesthetic – preferring to process information through tactility or movement. The categorisation process is initiated with a survey that the learner self-completes, consisting of several statements to which they can agree or disagree, such as 'I remember something better if I write it down' (Cohen et al., 2006, p. 1). The agreeability for each statement is then correlated

› with a preferred learning style, either ‘visual’, ‘auditory’ or ‘kinaesthetic’, or, in some cases, a combination (such as ‘visual-auditory’). The simplicity of this model is one of the reasons for its popularity.

The problem?

It follows to suggest, then, that matching a learning activity to a learner’s preferred style results in increased achievement. This link is a commonly held idea, with 93 per cent of UK teachers surveyed in 2012 believing that ‘Individuals learn better when they receive information in their preferred learning style’ (Dekker et al., 2012, p. 4). Individuals *do* have preferred learning styles, but the link to raised achievement is false and overwhelmingly relegated to the status of neuromyth (Sharp et al., 2008; Pasquinelli, 2012; Kirschner and van Merriënboer, 2013; Willingham et al., 2015; Kirschner, 2017), with one leading study concluding that ‘there is no adequate evidence base to justify incorporating learning styles assessments into general educational practice’ (Pashler et al., 2008, p. 105). Yet clearly it remains an entrenched approach among many practitioners. Worse still is that categorising students as visual, auditory or kinaesthetic learners can place unwarranted limitations on their perceptions of the ways in which they can and cannot learn.

Why, then, is the VAK model so popular if it does not raise achievement? The issue is multifaceted, which has led to widespread use of the model from as early as primary school. Several for-profit organisations were quick to commercialise learning styles, producing VAK-ready lesson plans and questionnaires

for teachers and schools, as well as providing professional development opportunities (Sharp et al., 2008; Pashler et al., 2008). At around the same time, schools were becoming more accountable for student attainment. Senior leadership teams in schools wove learning styles, typically the VAK model, into school-wide strategies for raising achievement. These often materialised as a requirement for learning activities to match VAK learning styles in lesson plans, VAK-model questionnaires for incoming students, and the inclusion of learning styles into syllabi of initial teacher training (ITT) programmes. Finally, the Office for Standards in Education (Ofsted), whose inspector pool is often made up of teachers and ITT lecturers, allowed the model to persist too long. Either implicitly or explicitly, there is an expectation for schools to be doing the ‘right stuff’ – inspectors seeing such matching of learning styles may have viewed it favourably as an indicator of good practice. Because of this, schools would be less likely to ‘take a risk’ and stop using the model. All this widespread exposure to the model would inevitably lead to a strong confirmation bias, where a person is more likely to accept something that corroborates their existing beliefs of this unsubstantiated link that matching a student’s learning style to instruction promotes achievement.

So, where do we go from here?

Consider first the perspective of the practitioner. A teacher who uses learning styles in this way must be presented with methodologically sound research that attempts to dispel such a

neuromyth. This, however, is significantly more complicated than it might first appear, since the strength of confirmation bias and the inertia to changing one’s beliefs cannot be underestimated (Riener and Willingham, 2010; Macdonald et al., 2017). This observation can be reasoned by noting that the use of learning styles and the VAK model has become ingrained in many practitioners’ teaching – they have studied it, integrated it into their teaching and had it reinforced by their peers, and to some extent, this makes them stakeholders in the belief. Therefore, it is important to reframe the issue with research-informed, practical advice. For example, a *learning objective* could be better suited to a visual, auditory or kinaesthetic learning activity, *rather than the student or their preferred learning style*.

A strengthening of the evidence base surrounding the bankrupted

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concept of learning styles and the VAK model is vital, to highlight what has been shown to work in the classroom and what has not. This is only credible, however, when two conditions are met. The first is that all studies are held to the same academic standards, which, unfortunately, is not always the case. This has led to doubts over the validity and reliability of several studies, which confuses the evidence base (Kirschner, 2017). Perhaps most worrying is that confirmation bias can dismiss well-designed and conclusive studies in favour of affirmative results from a poorly designed, unreliable study. The second condition requires the research to be suitably available, as well as being accessible to the practitioner’s context. A large portion of neuroscientific research is locked behind paywalls, to which a classroom teacher is unlikely to have access. As

such, research is more likely to be ‘accessed’ through media outlets or word of mouth. This can lead to misinterpretation and misapplication of current research (Purdy, 2008). Collaboration between the neurosciences and practitioners can improve the dissemination and application of research, bridging the gap between research and practice, and moving towards open-access research, which is a growing trend among many research councils.

What progress has already been made?

It is important to note the significant developments made to address these issues in recent years. Firstly, the latest Department for Education (DfE) guidance for ITT programmes now explicitly warns practitioners off the use of learning styles in lesson design, stating that learning styles are ‘not supported by evidence and attempting to tailor lessons to learning styles is unlikely to be beneficial’ (DfE, 2019, pp. 20–21). Secondly, the establishment of ‘The Teaching and Learning Toolkit’ from the Education Endowment Foundation (EEF) provides a freely available resource that summarises the literature and highlights the effectiveness and strength of the evidence base for many strategies and interventions, including the use of learning styles (EEF, 2018a). Moreover, they note that, from surveys of teaching staff in schools, 63 per cent of school senior leaders and 25 per cent of classroom teachers are designing curricula and school policies and adopting interventions by consulting this evidence-based toolkit (EEF, 2018b), which can be viewed as an encouraging step towards

disseminating evidence-based practice among practitioners. The establishment of the EEF also provides a platform for individuals to reference in raising concerns about interventions and their added value. Often, those who might be acquainted with educational research and raise concerns about the adoption of school-wide interventions (like the VAK model) are dismissed or viewed as not being a ‘team player’ – particularly if senior leadership view the intervention to be of perceived value to an Ofsted inspection. Neuromyths are increasingly being discussed in many popular books aimed at practitioners. Such books are often more readily available and accessible than academic journals for practitioners, since they contextualise research findings for the education sector, as well as being widely sold for a cost far less than an academic journal.

Together, these developments expose practitioners to the same message, *that matching preferred learning styles to instruction is not beneficial*. Importantly, this exposure is coming from different angles: new teachers are being taught about neuromyths and will be mentored by senior colleagues who are more likely to believe these neuromyths (Dekker et al., 2012); school leaders are more frequently accessing evidence-based research to inform decisions; and teachers are more likely to read popular books that bring neuromyths to the foreground.

What about the student?

Up to this point, a case has been made for challenging practitioners’ beliefs in using the




› VAK model to raise achievement. But what about students who hold such beliefs about their ability to learn and process information? One example is a student who says something along the lines of ‘I *have* to do an experiment because I can *only* learn using my hands.’ The key here lies in giving a concrete example to the contrary of this belief, to reinforce the message that it is the *content* to be learned that might benefit from a VAK approach, and *not the student*. While any interaction must be differentiated to suit the context of the student, for this student enquiring about an experiment, I might ask two questions related to the content studied. The first would be: ‘If I gave you all the equipment (to measure the specific heat capacity of water), could you do it?’ Probably not. Secondly: ‘If I explained to you (what specific heat capacity is), do you think you could do the experiment better?’ Probably yes. I know the

student’s academic background so these are loaded questions, but it allows for highlighting the key point: the content (the specific heat capacity of water) is best learned through a mixture of what might be interpreted as VAK approaches (reading instructions, teacher–talk and diagrams, and the practical experimental investigation), but which is actually just good teaching.

Conclusion

This is not a resolved issue. A simple literature search reveals recently published articles in diverse fields that use the VAK model as a tool for predictive or curriculum design decisions, as well as a myriad of teacher-made VAK resources being shared online. The education sector requires high-quality, evidence-based research to be efficiently and coherently disseminated between neuroscientists, practitioners and students to stop the

propagation of unhelpful neuromyths. New ideas can become quickly adopted in schools as go-to interventions, which risks the cycle of confirmation bias. ‘Growth mindset’, for example, is increasingly referenced in schools and their educational strategies for improving academic performance (Yeager et al., 2019), but the positive effects of growth mindset might be more nuanced than expected if its use is oversimplified or an educational context is not carefully considered (Dweck and Yeager, 2019). The VAK model should serve as a cautionary tale that education is susceptible to new ideas that can flourish far faster than they can be properly evaluated and contextualised for the classroom. 

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