# No evidence to back idea of learning styles

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There is widespread interest among teachers in the use of neuroscientific research findings in educational practice. However, there are also misconceptions and myths that are supposedly based on sound neuroscience that are prevalent in our schools. We wish to draw attention to this problem by focusing on an educational practice supposedly based on neuroscience that lacks sufficient evidence and so we believe should not be promoted or supported.

Generally known as “learning styles”, it is the belief that individuals can benefit from receiving information in their preferred format, based on a self-report questionnaire. This belief has much intuitive appeal because individuals are better at some things than others and ultimately there may be a brain basis for these differences. Learning styles promises to optimise education by tailoring materials to match the individual’s preferred mode of sensory information processing.

There are, however, a number of problems with the learning styles approach. First, there is no coherent framework of preferred learning styles. Usually, individuals are categorised into one of three preferred styles of auditory, visual or kinesthetic learners based on self-reports. One study found that there were more than 70 different models of learning styles including among others, “left v right brain,” “holistic v serialists,” “verbalisers v visualisers” and so on. The second problem is that categorising individuals can lead to the assumption of fixed or rigid learning style, which can impair motivation to apply oneself or adapt.

Finally, and most damning, is that there have been systematic studies of the effectiveness of learning styles that have consistently found either no evidence or very weak evidence to support the hypothesis that matching or “meshing” material in the appropriate format to an individual’s learning style is selectively more effective for educational attainment. Students will improve if they think about how they learn but not because material is matched to their supposed learning style. The Educational Endowment Foundation in the UK has concluded that learning styles is “Low impact for very low cost, based on limited evidence”.

These neuromyths may be ineffectual, but they are not low cost. We would submit that any activity that draws upon resources of time and money that could be better directed to evidence-based practices is costly and should be exposed and rejected. Such neuromyths create a false impression of individuals’ abilities, leading to expectations and excuses that are detrimental to learning in general, which is a cost in the long term.

One way forward is to draw attention to practices that are not evidence-based and to encourage neuroscientists and educationalists to promote the need for critical thinking when evaluating the claims for educational benefits supposedly based on neuroscience. As part of Brain Awareness Week that begins 13 March, we support neuroscientists going into schools to talk about their research but also to raise awareness of neuromyths.

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# Teachers must ditch 'neuromyth' of learning styles, say scientists

Eminent academics from worlds of neuroscience, education and psychology voice concerns over popularity of method

The academics say the learning style approach is ineffective, a waste of resources and potentially even damaging.

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[Teaching](https://www.theguardian.com/education/teaching) children according to their individual “learning style” does not achieve better results and should be ditched by schools in favour of evidence-based practice, according to leading scientists.

Thirty eminent academics from the worlds of neuroscience, education and psychology have signed [a letter to the Guardian](https://www.theguardian.com/education/2017/mar/12/no-evidence-to-back-idea-of-learning-styles) voicing their concern about the popularity of the learning style approach among some teachers.

They say it is ineffective, a waste of resources and potentially even damaging as it can lead to a fixed approach that could impair pupils’ potential to apply or adapt themselves to different ways of learning.

The group opposes the theory that learning is more effective if pupils are taught using an individual approach identified as their personal “learning style”. Some pupils, for example, are identified as having a “listening” style and could therefore be taught with storytelling and discussion rather than written exercises.

The letter describes that approach as “one of a number of common neuromyths that do nothing to enhance education”. It is signed by Steven Pinker, Johnstone family professor of psychology at Harvard University; Dorothy Bishop, professor of developmental neuropsychology at the University of Oxford; and leading neuroscientist [Prof Uta Frith](https://www.theguardian.com/science/2013/feb/24/uta-frith-autism-neuroscience-rational) of University College London among others.

School leaders say the enthusiasm for learning styles in schools has faded, but research in 2012 among teachers in the UK and Netherlands found that 80% believed individuals learned better when they received information in their preferred learning style. In 2013, research by the Wellcome Trust found that 76% of teachers had used learning styles in their teaching.

As part of international [Brain Awareness Week](https://www.bna.org.uk/mediacentre/events/brain-awareness-week/), which starts on Monday, scientists want to raise awareness of these commonly held beliefs about how to improve learning, which are supposedly based on research but not backed up with scientific evidence.

As part of the campaign, an organisation called [Speakezee](https://www.speakezee.org/) is sending neuroscientists into schools to raise awareness among teachers and pupils of the latest research based on established scientific findings, and to flag up the shortcomings of the learning style approach.

“Teachers need to be armed with up-to-date evidence of what has been shown to be effective so that schools are not wasting time or money on unsubstantiated practices that do not help students,” the letter says. “It is hard to establish the cost to the education system of using learning styles. Some schools have it as part of their teaching ethos whereas others bring in external consultants or send teachers on training courses.

“Aside from the cost in terms of time and money, one concern is that learning styles leads to belief that individual students are unable to learn because the material is inappropriate.”

It continues: “The brain is essential for learning, but learning styles is just one of a number of common neuromyths that do nothing to enhance education.”

The letter, organised by Prof Bruce Hood, chair of developmental psychology in society at the University of Bristol, says most people believe they have a preferred learning style – either visual, auditory or kinesthetic – and teaching using a variety of these styles can be engaging.

“However the claim that students will perform better when the teaching is matched to their preferred sensory modality (learning style) is simply not supported by the science and of questionable value,” he said.

According to Hood, a recent poll of more than 100 head teachers of independent schools found over 85% believed in learning styles, and 66% used them in their schools with many sending teachers on courses and 6% paying for external consultants. Amounts spent ranged from nothing to over £30,000 per year, he said.

Geoff Barton, headteacher of King Edward VI school in Bury St Edmunds, Suffolk, who is soon to take over as general secretary of the Association of School and College Leaders, said he hoped the age of neuromyths was over.

“I think the fad about learning styles faded long ago, and I would be surprised if many schools continued to subscribe to the approach. That said, the notion of making teaching and learning more varied in classrooms is helpful and likely to motivate a wider range of students,” he said.

“Modern neuroscience – rather than some quick-fix version of it – should help teachers and students to develop real learning, real progress and real success.”

The [Educational Endowment Foundation](https://educationendowmentfoundation.org.uk/resources/teaching-learning-toolkit/learning-styles/), an independent grant-making charity, has also documented its concerns about a learning styles approach.

It said: “There is very limited evidence for any consistent set of learning ‘styles’ that can be used reliably to identify genuine differences in the learning needs of young people, and evidence suggests that it is unhelpful to assign learners to groups or categories on the basis of a supposed learning style.”

The Department for Education declined to provide a formal comment on learning styles, but a spokeswoman said it was up to teachers to decide what they wanted to use in their classrooms.