Common Myths in Education, #1:
What's your 'Learning Style'? More importantly: Does it matter?

Learning Styles are mentioned frequently by practicing teachers at all levels. It is an immensely popular way of looking at students and learning; but do they deserve the attention they receive?

Background, and problems with, Learning Styles

What are they? The idea underlying "learning styles" is that each person has their own characteristic preferred "mode" of accessing, processing and retaining information. There are more than 100 different published learning styles inventories, and you may have encountered one or more of these schemes. Examples include the VARK scheme (Visual, Auditory, Read/write, Kinesthetic), Kolb's inventory (Reflective Observation, Concrete Experience, Abstract Conceptualization, or Active Experimentation), the Myers-Briggs type or personality indicators (introvert, extrovert, intuitive, thinking, etc) or others.

> *Learning styles* "refers to the notion that individuals differ in regard to what mode of instruction or study is most effective for them (Pashler et al., 2009).*

How is an individual "style" determined? Usually, a particular learning style is established by answering a short set of questions. The score is used to place you on the particular scale and is presumed to describe your own preferred approach to "learning". However there are many, many facets of both "thinking" and "learning" (which can be thought of as "change in thinking ability"). It is naive to pretend that a simple questionnaire can identify an individual's optimal approaches to motivation, persistence, retention, context and prior knowledge, physiological capabilities, and so on.

The myth of learning styles: Several meta-studies have analyzed the validity and reliability of learning styles. Most have attempted to determine if students taught in their "preferred style" learned better in subsequent assessment tasks (for example Pashler et al. 2009, Geake 2008).

To show that a learning style is a more effective way to learn, students must perform *better* on a test after being taught in their "preferred" style, AND perform *worse* when taught in any other style. Unfortunately distinctions in outcomes are not observed. In one metastudy of 108 published styles, not one was found to increase learning of participants (Pashler et al. 2009).

> *"The contrast between the enormous popularity of the learning-styles approach within education and the lack of credible evidence for its utility is, in our opinion, striking and disturbing. If classification of students' learning styles has practical utility, it remains to be demonstrated" (Pashler et al., 2009).*

Misconceptions they cause: If learning styles myths that don't actually help students, what sort of misconceptions or negative impacts can be caused by using them? First, recall that "receiving" information, "encoding" (for memory) the information, "activating" or accessing information for recall, and mentally manipulating information (like making decisions) are all very different processes. Neuroscience shows that the larger the variety of ways in which information has been received, processed and utilized, the more likely mental capabilities will improve, and retention will persist for the long term.

> *"We need to take extreme care when moving from the lab to the classroom. We do remember things visually and aurally, but information is not defined by how it was received" (Geake, 2005).*

As one example, consider a class that has a hands-on "activity" followed by time for individual, mental "reflection". Through the lens of learning styles, one might decide that the activity will only help "active" students, while the reflection will only help introverted students. However, ALL students will be encoding and processing information during both these two different components of the class, thus increasing the likelihood that students will be able

to access and make use of the knowledge and skills they have practiced in these two related components of the class.

Not only do learning styles encourage us to categorize students, they encourage students to categorize themselves. You have probably had a student tell you "*I'm a visual learner; you should show more videos*". This is problematic because one of the most important keys for successful learning is to NOT give up when adversity is encountered (see "desirable difficulties" below). In other words, learning styles may encourage people to reduce their effort in situations that are inconsistent with their own perception of what is optimal.

More effective ways of thinking about learning

Human brains work in ways that are far more similar than they are different. One origin of the "learning styles" notion is that humans clearly are able to encode information many different ways. But no single way is better than any other for one particular individual. In fact, students will benefit much more by working with information in a variety of ways than if they encounter or process information in only one (allegedly) preferred way. (Willis 2006)

So what to do? Rather than wasting time trying to support many "learning styles", here are four different frameworks for thinking about teaching that should result in better learning for ALL students.

Expert/novice differences: The differences between novice and expert approaches to learning are reasonably well know. However, experts tend to have difficulty trying to remember, or recognize how novices are thinking. So, rather than trying to force information or concepts to align with several possible "preferred" *student* perspectives, instructing time will be better spent focusing on ways of helping students think with more *expert-like* perspectives. (Bransford, J. (2000).)

Fixed or growth mindset: Someone with a *Fixed Mindset* believes they are either good at something or not, while someone with a *Growth Mindset* believes they can improve at a task. Students with a *Fixed Mindset* avoid making mistakes and attempt to show that they are smart or good instead of trying to learn and improve skills. Students with a *Growth Mindset* embrace mistakes as opportunities to learn and tend to take approaches to learning that help them grow. Discussing these ideas with students early in their careers (or in the course) will be more beneficial than trying to align their work with preconceived preferences. (Dweck and Leggett 1988, Mueller and Dweck 1998)

Metacognition: The ability to think in a mature way about one's own thinking is one key difference between experts and novices. For example, when solving a problem, experts tend to look at the answer and ask "is this reasonable? Am I thinking about this is the correct way?" In contrast, novices may just move on to the next question. Experts are also much better at determining when they know "enough", while novices are often not able to recognize when they do not grasp concepts sufficiently. Time spent supporting students' growth of their metacognitive abilities will be more useful than time spent worrying about "learning styles". (Bransford, J. (2000))

Desirable difficulties: Finally, it is not necessarily helpful to make things easier for students. There is plenty of evidence that appropriate difficulties are desirable for enhancing learning. Something that is "harder" and causes students to struggle a little is more likely to foster retention than something that did not require much effort. HOWEVER, it may be tricky to find the perfect balance. Tasks that are too difficult tend to de-motivate students, causing them to become frustrated and/or encouraging a fixed mindset. (Bjork 1994)

Conclusion

Although "*Learning Styles*" may seem to be a compelling concept, there are many more effective ways to prioritize and structure instruction that target generally consistent aspects of how we all learn, rather than pandering to wide ranges of individual "preferences".

References: See Vol.5 No. 5 at http://www.eos.ubc.ca/research/cwsei/eossei-times.html

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"Learning Styles" - Some references.
See contacts below for more references or ideas/suggestions.

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