

Learning Styles: A Review of Validity and Usefulness

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Abstract

The debate about learning styles has been on going for nearly half a century, many researchers have categorised them into style families. For some reasons, VAK is the most often heard, however, it is only one of the many categories. Current study gives a synthetic introduction of the existing strands of learning style categorizations, and critically discusses the limitations and chances of learning styles in educational studies.

Keywords: learning styles, VAK, validity and usefulness of learning styles

1. Introduction

While working as an English language teacher at some English training schools in China from 2007 to 2014, I witnessed that a popular method of teaching English pronunciation involved using hand gestures and dancing: an approach which symbolizes a kinaesthetic approach of VAK, one of the categorizations of learning styles. Such approach to teaching received its popularity at many institutions, although it has attracted considerable criticism. Therefore, it has become a key interest of mine when engaging in discussions over learning styles. Learning style has become a popular word in the field of education, albeit its popularity, its validity has incurred debate. Learning styles is also a broad terminology, containing categorizations and concepts of various kinds, which might produce troubles for new comers to have a panoramic understanding of the field. This study would start the discussion from the diversity in categorizations of learning styles, and then discuss its limitations and usefulness separately.

2. Kaleidoscope of Learning Styles

The debate about learning styles has been on going for approximately 40 years (Ortega, 2008). According to Keefe (1982, p. 44), 'learning styles are cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to learning environment.' Research into learning styles was originally associated with the theoretical domain of psychology (Cassidy, 2004). However, as learning style research spread into other fields, especially that of education, it began to influence teaching and learning practice (Curry, 1990). It has been widely discussed in academic, pedagogical and commercial contexts (Coffield et al., 2004), with many countries reviewing knowledge about different learning styles to integrate it into policy, e.g. England and Wales (Sharp et al., 2008). However, the relevance of such research has also been questioned and challenged. For example, Curry (1990, p. 50) pointed out limitations within terminology, stating that there was a 'confusion in definition', a 'weakness in reliability and validity of measurement' and disagreement over the 'identification of relevant characteristics in learners and instrumental settings'. Among the critics, Willingham claimed that learning styles do not exist (2012), by which he meant the approach of VAK. However, I argue that this statement seems to have been based on an overly rushed judgment and is representative of over-generalisation, as I explain below. I believe that although the validity of treating learners according to their perceived learning styles is limited by lack of research-based evidence, it is nevertheless a useful approach in some contexts, and I explain this view below.

Criticising learning style (VAK, in his sense), Willingham claimed that 'we use this sensory definition of learning styles.... but our conclusions apply equally to other definitions' (Riener & Willingham, 2010, p. 2). However, VAK is

only a 'weak' version of a learning style method and there are 'strong' versions available (Sharp et al., 2008). According to Sharp et al. (2008), a 'weak' version like VAK means it does not have a reported history of design, development and testing, nor does it have any evidence of validity or reliability. However, the authors categorized the learning styles and learning style families which will be mentioned later as 'strong' versions (Sharp et al., 2008). After years of theoretical development, there is a plethora of learning styles identified in former research. Coffield et al. (2004) identified 71 different learning styles, and this does not claim to be an exhaustive survey. The most famous researchers cover a range of topics: e.g. instruments of learning styles (Dunn & Griggs, 2003), learning styles questionnaires (Honey & Mumfords, 2000), learning style inventory (Kolb, 1999), Myer-Briggs type indicator (Myers & McCaulery, 1985), Riding's cognitive styles (Vermunt, 1998), and an approaches and study skills inventory for students (Entwistle, 1998). Thus, VAK as a weak version of learning cannot be said to adequately represent the whole picture as a basis for judgment.

In order to research learning styles, many researchers have categorised themselves into families of learning styles. Riding and Cheema (1991) introduced the Fundamental Dimensions family, which includes two binary pairs of subgroups: wholistist-analytic and verbaliser-imager. Curry's Onion model categorised learning styles according to 'instrumental preference', 'social interaction', 'information processing and cognitive personality' (1987). Coffield et al. (2004) categorised selected learning styles into 'constitutionally-based learning styles and preferences', 'cognitive structure', 'stable personality type', 'flexible stable learning preferences' and 'learning approaches and strategies', and placed VAK in their first subgroup. According to Gardner, the original meaning of VAK does not simply imply using specific instruments to meet specific VAK modality, but that 'every normal individual should develop each intelligence to some extent, given but a modest opportunity to do so' (2003, p. 278). Developing inclusive modality is not wrong; therefore Willingham's condemnation should have been more reserved.

3. Lack of Validity

Although I reject Willingham's hurried statement, I agree with some of his criticisms. An approach based on addressing learning styles does indeed have many limitations. For example, learning style could label students in such a way as to limit their potential for learning (Hattie, 2011). Over-commercialisation of learning styles can dilute the point made by the research resulting in a very vague or misleading use of the terms which may mislead people; e.g. Smith and Call's Alps (1999), which he claimed as a learning style approach based on VAK plus theory, and combined with brain based learning techniques. The Alps influences many people. However, Bruer (1997) suspected that brain based learning has no scientific support. Pashler et al. (2009) claimed that too much research into learning styles consumes valuable education resources, and more time should be spent on research in other fields to guide teaching and learning. A further criticism of VAK is that Willingham (2012) claims that most memories are stored in terms of meaning rather than in a visual, auditory or kinaesthetic way. The term learning style itself is open to criticism. Curry (1990) said definitions, even terms describing learning styles, sometimes become confused, e.g. the terms "learning styles", "learning strategies" and "cognitive styles".

Apart from these criticisms, the lack of research evidence supporting the validity of relying on learning styles in a pedagogical context is a major problem. According to Sharp et al. (2008), in order to legitimise the learning style hypothesis, research should at least satisfy 'face validity', 'construct validity', 'predictive validity', 'ecological validity' and 'cultural validity'. However, the truth of current learning styles research is that it is, as Demos (2004) described, reliant on variable research evidence and a weak foundation of scientific evidence. There are many factors contributing to this situation. These can be recognised in terms of external factors and internal factors. External factors are closely related to commercialisation and utilitarianism. Due to learning styles, these are connected with commercialisation, and many researchers or promoters may 'rush prematurely into print and marketing with very early and preliminary indications of factor leadings based on one dataset' (Curry, 1990). Such marketing makes some researchers more utilitarian; therefore, research into learning styles is then non-statistically based; for example it is collected via self-declaration questionnaires, interviews or through online tests or tasks (Sharp et al. 2008). Because of this, there is a need, as discussed by Cohen et al. (2011), to acquire statistical evidence in order to evaluate the advantages of referring to learning styles.

While internal factors are inherent in learning styles, assessment or statistical evidence itself, Pashler et al. (2009) claim that a learning styles hypothesis could only be confirmed if the assessment process fulfilled the requirement that the learners 'be divided into two or more groups', 'subjects within each learning style group must be randomly assigned to one of at least two different learning methods', 'all subjects must be given the same test of achievement' and 'the results need to show that the learning method that optimises test performance of one learning-style group is different than the learning method that optimises the test performance of a second learning style group'. However, after comparison with previous research literature, Pashler et al. (2009) did not find evidence to support their claim. Similarly, research done by Massa and Mayer (2006) suggested results that did not support the long-held ATI hypothesis (specific instruments

should be matched to specific learning styles). They also found that cognitive ability is unrelated to learning styles. Coffield et al. (2004) analysed 71 popular learning style models and found few of them satisfied the validity requirements claimed by their authors. Therefore, in reference to external and internal factors, more rigorous collection of evidence regarding learning styles is needed. However, interestingly, there is research that supports learning style hypotheses; especially the ATI hypothesis (e.g. Naimie et al., 2010; Sen & Yilmaz, 2012). In terms of their research, Curry (1990) commented that the results obtained could be due to the Hawthorne effect influencing participants' behaviour and researchers' bias.

4. The Usefulness of Learning Styles

Although there are those who comment negatively on learning styles research, in practical contexts it has been claimed to be a useful measure. For example, in special education, the winner of the 2011 *Pearson Teaching Award for special needs teachers*, is a music teacher in a special school who used his talent in lights, music and sound effects to assist many SEN (special educational needs) students to make progress in their learning (BBC 2, 2011). This might be seen as learning styles oriented. Inclusive education is also important in special education, as it guarantees equal human rights for SEN people to be educated and employed (Tod & Ellis, 2006). In the DfES (2002), circles of inclusion were introduced; these involved finding a balance in learning objectives, teaching styles and students' access to learning. The circles aim to cater to students' diverse needs and to lower potential barriers to learning (Tod & Ellis, 2006). Tod and Ellis (2006, p. 288) claim that: 'in spite of emerging research questioning the existence of learning styles, there is still a utility in emphasizing a particular modality for a child who experience difficulty,' thus learning styles are always taken into consideration. For example, for pupils who cannot concentrate, a more practical and kinaesthetic activity could be helpful; for a pupil with hearing impairment, more auditory help may be useful (Tod & Ellis, 2006). However, as discussed above, the empirical basis for these claims is unclear. In addition, learning styles are also reported to be helpful in the following contexts: academic achievement (Cassidy & Eachus, 2000), clinical training in medical schools (McManus et al., 1998), career development (Bates, 1994) and police training (Brizer, 2003).

Learning style could also be used as a component of, or in conjunction with, other teaching or learning theories. Mr Richard Rodd is the winner of the 2011 Pearson Teaching Award for History teachers. In his class, he immerses students in models of historical events. For example, when he teaches WWII, he uses artificial smoke, a darkened classroom and sounds of horses galloping. He even has students prepare soldiers' costumes to create a stimulating environment. When teaching a notorious murder, he would model the crime scene and encourage students to investigate in a hands-on way (BBC2, 2011). As a result, 96% of the learners in his GCSE classes in 2011 achieved grades from A+ to C (Pearson website, 2012). This could be seen as an example of using VAK in class in such a way that it implicitly becomes a natural form of scaffolding for students. Thus VAK could be used as a component of cognitive apprenticeship. Cognitive apprenticeship means trying to involve students in real activity and social interactions (Brown et al., 1989), usually in a setting that contains teacher modeling and scaffolding. Similar examples could also be found in Dono-Koulouris' research (2011). The researcher used experiential learning, academic service learning, and learning styles to foster students' understanding of the global environment.

The usefulness of learning styles could also be shown to influence teachers' understanding of individual differences. According to Pajares (1992), teacher beliefs will influence their teaching. When teachers are critically aware of learning styles, they are likely to be very careful when designing a lesson plan, during their teaching, and when assessing individual students. Similarly, when parents are critically aware of learning styles, they may be more understanding of their children's differences from others and be more supportive of their children. Supportive parents are important in influencing pupils learning (Desforges & Abouchaar, 2003). Furthermore, in Othman and Amiruddin's studies, learning style approaches are found to some extent to improve students' motivation (2010). Many researchers have also offered suggestions in order to improve the use of learning styles, e.g. Kirby (1988) and Pask (1988) encourage avoidance of specific styles or style-like consistency but pursue a versatile or "synthetic" style, which means they make flexible use of different learning styles.

5. Conclusion

Although the validity of learning styles has not been scientifically supported, they are reported to be useful in many situations. Therefore, we should be careful and critical when drawing on learning styles for course design. At the present time, categorically denying the importance of learning styles is not appropriate. However, it is likely that as time passes more conclusive and reliable research will take place to allow teachers and policy makers to reach a more definitive conclusion about the applicability of learner style teaching models and their suitability in different situations.

References

- Bates, T. (1994). Career development for high flyer. *Management Development Review*, 7(6), 20-24. <http://dx.doi.org/10.1108/09622519410771763>

- BBC 2. (2011, October, 30). Retrieved from: <http://www.bbc.co.uk/programmes/b016xjqv>
- Brizer, M. L. (2003). The theory of andragogy applied to police training. *Policing: An International Journal of Police Strategies and Management*, 26, 129-140. <http://dx.doi.org/10.1108/13639510310460288>
- Brown, J. S., Allan, C., & Paul, D. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42. <http://dx.doi.org/10.3102/0013189x018001032>
- Bruer, J. T. (1997). Education and the brain: a bridge too far. *Educational Researcher*, 26(8), 4-16. <http://dx.doi.org/10.2307/1176301>
- Cassidy, S., & Eachus, P. (2000). Learning style, academic belief systems, self-report student proficiency and academic achievement in higher education. *Educational Psychology*, 20(3), 307-322. <http://dx.doi.org/10.1080/713663740>
- Cassidy, S. (2004). Learning styles: an overview of theories, models, and measures. *Educational Psychology*, 24(4), 419-444. <http://dx.doi.org/10.1080/0144341042000228834>
- Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004). *Learning styles and pedagogy in post-16 learning: a systematic and critical review*. London: Learning and Skills Research Centre.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education*. London: Routledge. <http://dx.doi.org/10.4324/9780203720967>
- Curry, L. (1987). *Integrating concepts of cognitive or learning style: A review with attention to psychometric standards*. Ottawa, ON: Canadian College of Health Service Executives.
- Curry, L. (1990). A critique of the research on learning styles. *Educational leadership*, 10, 50-56. Retrieved from: <http://eric.ed.gov/?id=EJ416434>
- Demos (2004). About learning: report of the Learning Working Group. London: Demos. Retrieved from: http://www.demos.co.uk/files/About_learning.pdf
- Desforges, C., & Abouchaar, A. (2003). *The impact of parental involvement, parental support and family education on pupil achievement and adjustment: a literature review*. London: DES. Retrieved from: http://bgfl.org/bgfl/custom/files_uploaded/uploaded_resources/18617/Desforges.pdf
- DfES (2002). *Including all children in the literacy hour and daily mathematics lesson*. Nottingham: DfES. Retrieved from: <https://www.entrusted.co.uk/Resources/leadershipandmanagement/Ofsted%20and%20Statutory%20Guidance/Including%20all%20children%20in%20the%20daily%20literacy%20and%20mathematics%20lessons.pdf>
- Dono-Koulouris, M. (2011). *Experiential learning, learning styles, and academic service learning fosters greater understanding of a global environment*. Retrieved from: <http://library.iated.org/view/DONOKOULOURIS2012EXP>
- Dunn, R., & Griggs, S., (2003). *Synthesis of the Dunn and Dunn learning styles model research: who, what, when, where and so what-the Dunn and Dunn learning styles model and its theoretical cornerstone*. New York: St John's University.
- Entwistle, N. J. (1998). Improving teaching through research on student learning. In J.J.F. Forrest (Eds.) *University teaching international perspectives*. New York: Garland.
- Gardner, H. (2003). *Frames of mind*. New York: Basic Books.
- Hattie, J. (2011). *Visible learning for teachers: Maximizing impact on learning*. London: Routledge.
- Honey, P., & Mumfords, A. (2000). *The learning styles helper's guide*. Maidenhead: Peter Honey Publications Ltd.
- Keefe, J. W. (1982). Assessing student learning styles. In J. W. Keefe (Eds.), *Student learning styles and brain behaviour*, 1-18. Reston, VA: National Association of Secondary School Principals.
- Kirby, J. R. (1988). Style, strategy, and skill in reading. In R.R. Schmeck (Eds.), *Learning Strategies and Learning Styles*, 229-274. New York: Plenum Press.
- Kolb, D. A. (1999). *The Kolb Learning Style Inventory*. Boston: Hay Group.
- Massa, L. J., & Mayer, R. E. (2006). Testing the ATI hypothesis: Should multimedia instruction accommodate verbalizer-visualizer cognitive style? *Learning and Individual Differences*, 16(4), 321-336. <http://dx.doi.org/10.1016/j.lindif.2006.10.001>
- McManus, I. C. et al., (1998). Clinical experience, performance in final examinations, and learning style in medical students: prospective study. *British Medical Journal*, 316, 345-350. <http://dx.doi.org/10.1136/bmj.316.7128.345>

- Myers, I. B., & McCaulery, M. H. (1985). *Manual: a guide to the development and use of the Myers- Briggs Type Indicator*. Palo Alto, CA: Consulting Psychologists Press. <http://dx.doi.org/10.1037/024196>
- Naimie, Z., Siraj, S., Piaw, C. Y., Shagholi, R., & Abuzaid, R. A. (2010). Do you think your match is in heaven? Teaching styles/ learning styles match and mismatch revisited. *Procedia-Social and Behavioural Sciences*, 2(2), 349-353. <http://dx.doi.org/10.1016/j.sbspro.2010.03.023>
- Ortega, L. (2008). *Understanding second language acquisition*. London: Hodder Education. <http://dx.doi.org/10.4324/9780203777282>
- Othman, N., & Amiruddin, M. H. (2010). Different perspectives of learning styles from VARK model. *International Conference on Learner Diversity, 2010*. <http://dx.doi.org/10.1016/j.sbspro.2010.10.088>
- Pajares, F. (1992). Teachers' beliefs and educational research: cleaning up a messy construct. *Review of Educational Research*, 62, 307-332. <http://dx.doi.org/10.3102/00346543062003307>
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2009). Learning styles: concepts and evidence. *Psychological Science in the Public Interest*, 9(3), 105-119. <http://dx.doi.org/10.1111/j.1539-6053.2009.01038.x>
- Pask, G. (1988). Learning strategies, teaching strategies and conceptual or learning style" in *Learning Strategies and Learning styles*. In R.R. Schmeck (eds.), 83-100. New York: Plenum Press.
- Pearson website, (2012, December). Retrieved from: http://www.teachingawards.com/winners/2011/UK_Panel/48769
- Riener, C. and Willingham, D. (2010). The myth of learning styles. *Change: the magazine of higher learning*. Retrieved from: <http://www.changemag.org/Archives/Back%20Issues/September-October%202010/the-myth-of-learning-full.html>
- Riding, R. J., & Cheema, I. (1991). Cognitive styles: An overview and integration. *Educational Psychology*, 11(3&4), 193-215. <http://dx.doi.org/10.1080/0144341910110301>
- Sen, S., & Yilmaz, A. (2012). The effect of learning styles on students' misconceptions and self-efficacy for learning and performance. *Procedia Social and Behavioural Sciences*, 46(2012), 1482-1486. <http://dx.doi.org/10.1016/j.sbspro.2012.05.325>
- Sharp, J. G., Bowker, R., & Byrne, J. (2008). VAK or VAK-uos? Towards the trivialisation of learning and the death of scholarship. *Research papers in education*, 23(3), 293-314. <http://dx.doi.org/10.1080/02671520701755416>
- Smith, A., & Call, N. (1999). *The ALPS approach, accelerated learning in primary school*. Stafford: Network Educational Press Ltd.
- Tod, J., & Ellis, S. (2006). Providing for inclusion. In J, Arthur, T., Cremin., and D, Wray. (Eds.), *Learning to teach in primary school*. London: Routledge.
- Vermunt, J. D. (1998). The regulation of constructive learning processes. *British Journal of Educational Psychology*, 68, 149-171. <http://dx.doi.org/10.1111/j.2044-8279.1998.tb01281.x>
- Willingham, D. (2012). Retrieved from: <http://www.youtube.com/watch?v=sIv9rz2NTUk>



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