

Learning Styles in Education: A Critique

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Abstract

Learning styles-based instruction is popular in mainstream society and education, yet lacks empirical data to support its use. Misconceptions surrounding the effectiveness of learning-styles based instruction are a disservice to students and educators, with the limited resources and funding available in education. Limitations in learning-styles based instruction are considered and recent research in effective teaching practices is shared in this paper to provide evidence-based alternatives to learning-styles based instruction.

The notion of learning styles-based instruction has become synonymous with effective teaching and increased metacognition in learners (Cuevas, 2016). Measuring students' learning styles and matching teaching methods to students' learning preferences is a practice that educators rarely question. The practice is encouraged in teacher education training (Scott, 2010), and is well-supported by educators, parents, and the general public (Cuevas, 2015). However, despite the broad appeal and acceptance of learning styles-based instruction, there is limited scientific data to indicate that the learning styles hypothesis is an effective instructional/ learning tool for teachers and students (Cuevas, 2015; Pashler, McDaniel, Rohrer, & Bjork, 2009; Scott, 2010). A number of evidence-based teaching strategies are more effective than learning styles-based instruction in positively affecting students' learning, growth, and engagement (Hattie & Donoghue, 2016; Jordan, Glenn, & McGhie-Richmond, 2010).

Defining Learning Styles

The acceptance of learning styles-based instruction in mainstream society and education, despite the lack of empirical data to support its use, is not the only misinterpretation of the learning styles hypothesis. Misconceptions exist in defining what criteria constitute a learning style (Scott, 2010). There have been over 71 different learning style models proposed to date (Pashler et al., 2009). Researchers define a learning style as a "concept that different people prefer to process information in different ways" (Cuevas, 2016, p. 2) and learn better when teaching methods are matched to their learning style. There is also debate among researchers whether Howard Gardner's multiple intelligence theory is a subset of learning styles. Many researchers contend that Gardner's multiple intelligence theory conflates with common-held definitions and more importantly, with public perception and understanding of learning styles-based instruction (Cuevas, 2016; Pashler et al., 2009).

Howard Gardner (n.d.) refuted claims that his multiple intelligence theory is a subset of the learning styles hypothesis. Gardner argued that his multiple intelligence theory is not the same as the learning styles hypothesis; he described multiple intelligences and learning styles as different psychological constructs. Gardner defined a learning style as a way that someone approaches something, but he described intelligence as a "computational power of a mental system" (p. 4), and claimed that learning styles and intelligence may be related but are not the same thing. Interestingly, Gardner described two primary educational implications from multiple intelligence theory: individuation and pluralization. Gardner's definition of individuation in education closely matches researchers' definition of learning styles-based instruction – that people should be taught and assessed in ways that match how they learn (Cuevas, 2016; Rohrer & Pashler, 2012). While the debate is more complex than this issue of semantics, many researchers contend that educators and the general public do not distinguish between the terminology of learning styles-

based instruction and multiple intelligence theory in definition or practice (Cuevas, 2016; Pashler et al., 2009; Scott, 2010).

The blurred distinction between learning styles-based instruction and the application of multiple intelligence theory in education is apparent in the use of Jennifer Katz's three-block model in classrooms. The three-block model is being taught in education faculties and school divisions across Manitoba (Katz, 2016). Professional development for the three-block model is currently offered to teachers in western Canada and the northern United States (Katz, 2016; Manitoba Teachers' Society, 2016). While the program is about much more than learning styles (in fact, it would be inaccurate to simplify and suggest otherwise), the foundation of the program is grounded in teaching students Howard Gardner's multiple intelligence theory, determining each student's multiple intelligence profile, and developing teaching strategies around students' strengths and weaknesses as learners (Katz, 2012). Educators are also encouraged to cover curriculum and teach lessons that use the nine multiple intelligences (Katz, 2012). It should be noted, however, that Howard Gardner (n.d.) did not endorse tests to measure students' multiple intelligences and only speculated about a possible ninth and tenth intelligence. Therefore, it must be emphasized that the three-block model is rooted Katz's interpretation of the multiple intelligence theory and individuation. Evidently, the distinction between learning styles-based instruction and multiple intelligence theory by educators is not entirely clear.

Learning Styles as a Teaching Strategy

Learning styles-based instruction has been a pervasive instructional tool in education for many decades. Government education departments encourage using learning styles in lesson planning and instruction (Scott, 2015). References to learning styles-based instruction is common in teacher education textbooks and training (Cuevas, 2015). In Manitoba, the *Success for all Learners* government-issued document outlines strategies for customizing teaching to students' learning preferences (Manitoba Education, 2007). In the document, educators are also encouraged to incorporate multiple intelligence theory into their lesson planning by integrating components of each of the seven intelligences into their lessons (Manitoba Education, 2007). In a 2015 review of teacher education texts, every text analysed included information on learning styles and encouraged educators to incorporate learning styles-based instruction into their classroom practice (Cuevas, 2015). None of the texts studied indicated that there was a lack of empirical data to support learning styles-based instruction. Teachers are graduating from teacher education programs believing that learning styles-based instruction is an effective and pedagogically sound teaching strategy (Cuevas, 2015; Scott, 2010), yet current research suggests that there is no evidence to support the efficacy of this approach to teaching (Cuevas, 2015; Pashler et al., 2009; Scott, 2010).

In a large-scale review of the learning styles hypothesis in 2009, it was determined that there was a lack of sound scientific process and subsequent empirical data to support teaching strategies that cater to students' individual learning styles (Pashler et al., 2009). As a result of the findings of this study, Pashler et al. (2009) developed criteria to encourage future legitimate research about the learning styles hypothesis. In 2010, another article was published detailing flaws in the learning styles hypothesis (Scott, 2010). Three primary concerns with learning styles-based instruction were identified: learning styles are poorly defined and lack empirical data to support the hypothesis, the cultural appeal and commercialization of learning styles-based instruction has made the hypothesis popular, and the use of learning styles-based instruction is at the very least ineffective but can have detrimental effects for student learning and self-concept (Scott, 2010). In 2015, an article was published in response to the large-scale 2009 review, and the authors' findings were analogous with both Pashler et al.'s (2009) and Scott's (2010) earlier publications; there is no empirical data to suggest that learning styles-based instruction positively affects learning outcomes for students (Cuevas, 2015).

It is difficult to imagine that learning styles-based instruction in education is “little more than a fad, albeit an endearing one, and one whose utility as a guide for practice has been questioned and refuted repeatedly for some decades” (Scott, 2010, p. 11), when the hypothesis behind the “fad” is such a common teaching strategy. However, researchers are staunch in their position, and state that it is irresponsible for educators to continue using learning styles-based instruction when there is no empirical evidence that there is any benefit to learners (Cuevas, 2015). However, learning styles-based instruction continues to hold appeal; the notion that everyone can easily learn if instruction is customized to their preferences is compelling (Pashler et al., 2009). The prevailing belief of learning styles-based instruction in education also encourages confirmation bias amongst educators (Cuevas, 2015; Rohrer & Pashler, 2012). It is professionally advantageous for educators to observe and believe in learning styles-based instruction. Disagreeing with learning styles-based instruction would be akin to saying that one did not believe in differentiation.

Reframing Differentiation

The expectation that teachers differentiate their instruction and provide an inclusive learning environment is ubiquitous with sound pedagogical practice in the 21st century classroom. However, successfully differentiating and developing inclusive practices, may be difficult for educators (Marshall, 2016). Nearly two-thirds of educators agree with inclusion in principle, yet less than one-third feel that they can successfully teach by using inclusive practices with the resources that they have (Jordan et al., 2010). In addition, teachers are under pressure to raise test scores and achievement with students while subsequently being told that they must meet the needs of an increasingly diverse range of learners. In response, effective differentiation has become ambiguous to many educators. This ambiguity has created demanding workloads, with educators executing superficial practices in differentiation by creating individualized worksheets and activities that have little educational benefit for students (Marshall, 2016). While teachers’ efforts in differentiation and inclusion are laudable, they are often misguided, lack support and resources, and are not rooted in an evidence-based approach.

Differentiation, inclusion, and learning styles-based instruction are often viewed as inter-related entities that define effective instruction in education. Conversely, in a comprehensive meta-analysis of factors that influence effective instruction, individuation was ranked 100 out of 138 variables and was found to have a small effect size (Marshall, 2016). A number of teaching strategies have been found to affect student learning and inclusion better than individuation. In a study that analysed research on effective inclusive teaching practices, several features distinguished effective teachers: maximizing use of instructional time by providing explicit lesson objectives that engage all learners in the classroom, expecting high standards for all learners, using well-established routines that include time for teachers to work with individuals and small groups of learners (particularly learners with disabilities or students struggling with a lesson), and prompting that encourages student response and dialogue, along with effective error correction and skilled feedback (Jordan et al., 2010). Teaching practices that benefited inclusion also increased student achievement overall (Jordan et al., 2010). Effective teaching practices benefit all learners. The key is for educators to know what teaching practices current empirical data indicate are most effective.

The dissonance between theory and practice is an ongoing challenge in education. Research on learning and metacognition has shown that people’s beliefs and intuition about learning are often wrong and “lead people to manage their own learning and teach others in non-optimal ways” (Pashler et al., 2009). In addition, teachers’ beliefs about effective teaching practices and learning are difficult to change once they have been established (Jordan et al., 2009; Scott, 2010). It is essential that teacher education training and policy become better aligned with current research, in order to ensure that future educators are not being versed in rhetoric, such as learning styles-based instruction, that is not empirically sound. While learning styles-based instruction is espoused

to aid in differentiation and inclusion, it has instead become another way for educators to stereotype, label, and misperceive their students' abilities (Scott, 2010). This is a dangerous myth to perpetuate in education when teachers' beliefs about learning are often static, and demonstrates why there needs to be a focus on evidence-based effective instructional practices in teacher education training and education policy.

Alternatives to Learning Styles-Based Instruction

Dual coding is an alternative theory to learning styles-based instruction. Ironically, dual coding is less well known but has more empirical data to support its use. Dual coding theory posits that there are two pathways to encode information into long term memory: a visual pathway and a verbal pathway (Cuevas, 2016). All learning is processed by using language in some way; even activities or concepts that appear rooted in other skills use language to make connections to prior knowledge, to encode words, and to consider the meaning of concepts (Cuevas, 2016). While the exact area and way that such information is processed is still being researched, there is evidence that dual coding provides learners opportunities to process and retain more information. Therefore, students should be provided visuals when learning, while receiving instruction from educators who use teaching strategies that best suit the content of the topic being studied. Ultimately, all information is processed by using verbal and visual pathways; regularly catering instruction to a students' individual learning preference is not an efficient use of teachers' time or resources (Cuevas, 2016; Rohrer & Pashler, 2012; Waterhouse, 2006).

Effective instruction in education requires a dynamic combination of evolving strategies. In a study that used a large-scale meta-synthesis to test the legitimacy of a conceptual model of learning, six primary teaching/learning strategies were formulated (Hattie & Donoghue, 2016). Educators were encouraged to interweave skill development with student dispositions and motivation, teach skills and strategies within the context of the content being taught, consider the requirements of the task (surface or deep knowledge) with the order and way students are taught, teach students to recognize similarities and differences across learning situations for transfer of knowledge, teach students about learning, and recognize that learning is the process of moving from a surface understanding to a deeper transfer of knowledge that can allow students to apply and extend their understanding to a variety of subjects and ideas (Hattie & Donoghue, 2016). The importance of encouraging "skill" development, a "will" to learn, and a "thrill" of learning for students can not be undervalued (Hattie & Donoghue, 2016, p. 9). Effective teaching is both an art and science that must engage and motivate learners while being grounded in an evidence-based approach.

Implications

Learning is an undeniably complex, evolving endeavour that requires a diverse set of instructional practices to see success (Hattie & Donoghue, 2016; Jordan et al., 2009). Nevertheless, in education, there is a prevailing myth/hope that there is one idea or program that will be able to meet all learners' needs (Hopkins, 2013). Learning styles-based instruction appeals to the notion that students can be easily tested and categorized, while simultaneously catering to the unique needs of the individual learner. This misinterpretation of learning is a disservice to all students when limited resources in education are used for fads that lack empirical data. Students do not need to be taught each subject by using a milieu of strategies catered to their individual needs. Rather, learners require diverse instruction that is efficient, engaging and dynamic, and uses techniques that are best suited to each subject/concept being taught (Hattie & Donoghue, 2016; Jordan et al., 2009; Pashler et al., 2009). When science conflicts with long-held beliefs in education, it is difficult for most educators to let those existing beliefs go (Cuevas, 2015); however, it is essential that the strategies educators use benefit students' learning and make the most of the

limited amounts of time and resources available. Learning styles-based instruction may be popular, but that does not make it pedagogically sound.

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Jackie Gudnason is in the M. Ed. program (guidance and counselling) at Brandon University. Jackie works for Brandon School Division as an early years guidance counsellor, and previously worked for Rolling River School Division as an early years teacher. Jackie is passionate about embracing the art, heart, and science of teaching using evidence-based practices to help all learners see success.