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CAIA Seminar

Are Learning Styles Dead?

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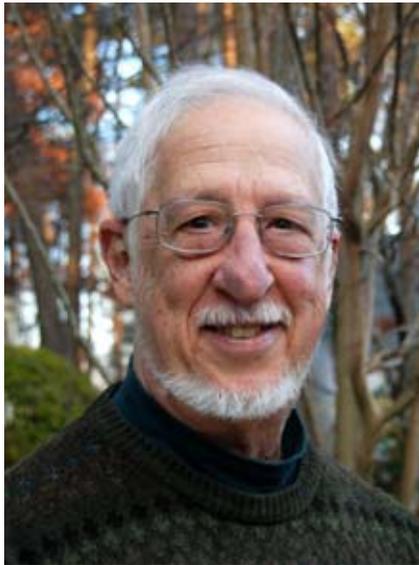


Presentation Overview



- What are learning styles?
- What is the current state of learning style research?
- Considerations for future learning style research.
- Conclusion.
- Overview of PhD research project.

Learning Styles



Richard Felder

*Learning styles theories assume that individuals vary in the way they process information, and thus will **vary in the way they learn**.*

(Litzinger et al., 2007)

*“Studies have shown that **greater learning** may occur when teaching styles **match learning styles** than when they are mismatched”.*

(Felder and Brent, 2005)

*The research shows that when you use learning styles students learn better **“every single time”**.*

(Rita Dunn, quoted in Coffield et al., 2004: 36)

What are Learning Styles?



Sarasin's VAKT:

- **Visual**
- **Auditory**
- **Kinaesthetic/Tactile**

Felder's ILS:

Perception

- *Sensing or Intuiting*

Input

- *Visual or Verbal/Auditory*

Processing

- *Active or Reflective*

Organisation

- *Inductive or Deductive*

Understanding

- *Sequential or Global*

Current Learning Style Theories



Allinson and Hayes, Apter, Bartlett, Betts, Biggs, Broverman, Cacioppo and Petty, Canfield, Christensen, Conti and Kolody, Cooper, Curry, Das, Dunn and Dunn, Entwistle, Epstein and Meier, Felder and Silverman, Friedman and Stritter, Galbraith and James, Gardner et al. , Gordon, Grasha-Riechmann, Gregorc, Groner, Guilford, Harrison-Branson, Herrmann, Hermanussen, Wierstra, de Jong & Thijssen, Hill, Holzman & Klein, Honey and Mumford, Hudson, Hunt, Jackson, Kagan, Kaufmann, Keefe and Monke Kirby et al. , Kirton, Kogan, Kolb, Letteri, Marks, Marton & Säljö, McCarthy, McKenney and Keen, Meredith, Messick, Miller, Myers-Briggs, Paivio, Pask, Pettigrew, Pintrich, Smith, Garcia & McEachie, Reinert, Renzulli-Smith, Rezler-Rezmovic, Richardson, Riding, Schmeck et al. , Sheehan, Sternberg, Tamir-Cohen, Torrance, Vermunt, and Walters

i.e. 71 different theories (Coffield et al., 2004: Appendix 1)

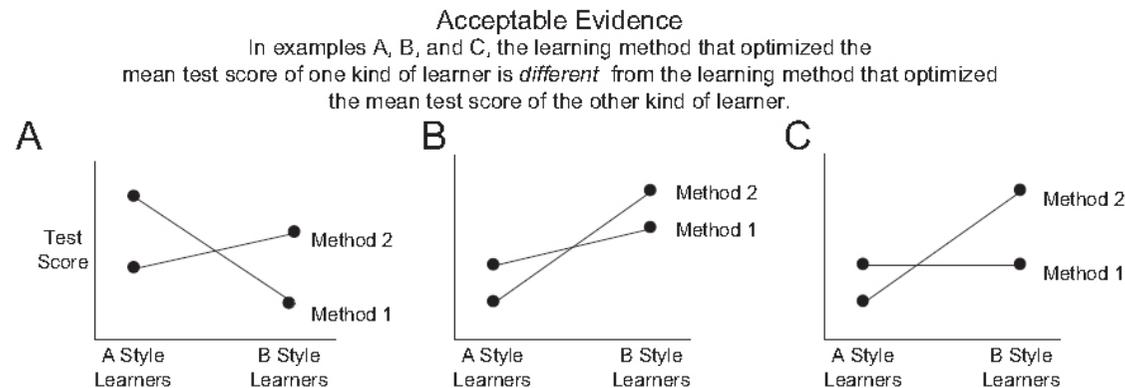
Lack of Theoretical Grounding & Coherence



Learning style theories suffer from “a *lack of consensual or coherent theory, poor psychometric test properties, self-promoting and affirming researchers, over commercialization of tests, and poorly established applications and links to practice*”

(Coffield, 2004)

Absence of Evidence



Pashler et. al., 2008

There is an “**utter failure** to find that assessing children’s learning styles and matching to instructional methods has any effect on their learning”.

(Stahl, 1999)

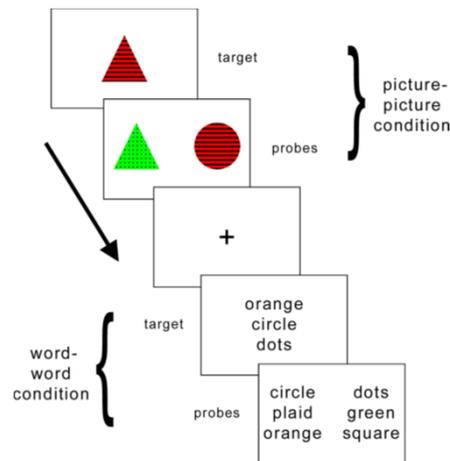
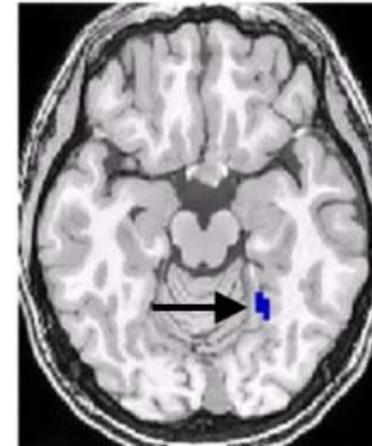
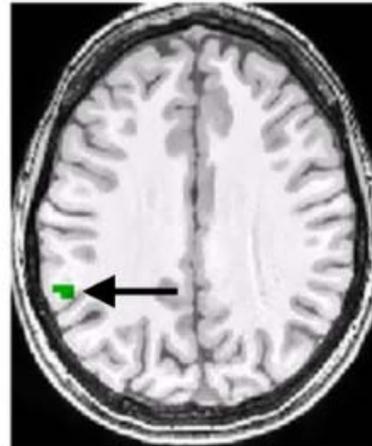
Neuromyth 3 - There is a visual, auditive and a haptic type of learning

(OECD, 2013)

Variables in Learning



This list does not include any variables on the teaching side e.g. funding, quality of resources, quality of curriculum, quality of teaching, etc. This last variable is peculiarly absent from the learning styles literature.



“During the word-based condition, activity in a functionally defined brain region that responded to viewing pictorial stimuli (fusiform gyrus) correlated with self-reported visualizer ratings on the VVQ. In contrast, activity in a phonologically related brain region (supramarginal gyrus) correlated with the verbalizer dimension of the VVQ during the picture-based condition”

Learning Styles – stubbornly refuse to go away



Source: <http://www.afb.org>



Source: <http://www.dailyhistory.net/images/helen-keller-dwight-d-eisenhower.jpg>

Disability 'Confirms' Existence of Learning Styles



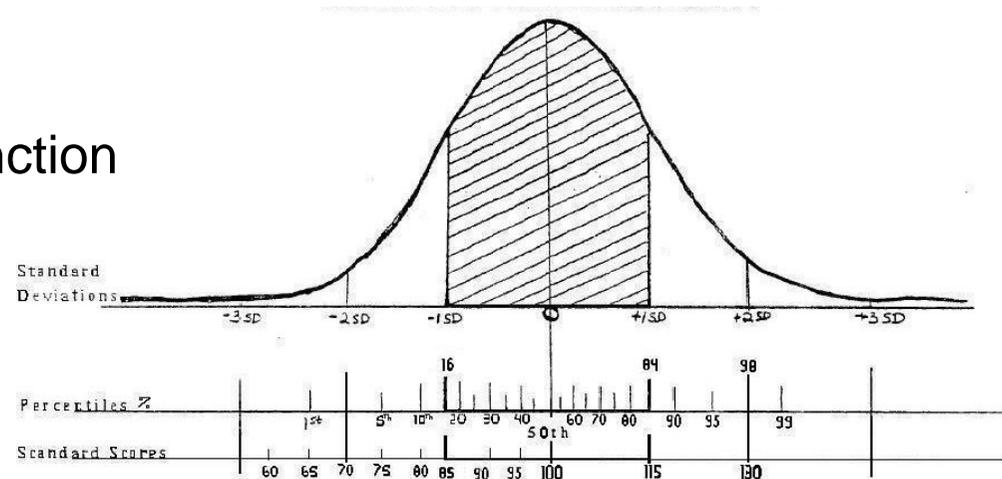
*“Finally, some students have specific **learning disabilities**, and these affect their learning in specific ways. For example, there is considerable research on **dyslexia** and the strategies for addressing it. These strategies of course differ from those appropriate for those students on the **autistic spectrum** or those with **hearing difficulties**. In each of these cases, a specific difference in the student calls for individual diagnosis and attention.”*

(Riener and Willingham, 2010: *The Myth of Learning Styles*, p.33)

Case Study - Mapping Autism To Learning Style Preferences



- Small working memory
- Poor central coherence
- Poor executive function
- Systemising



Guidelines for Describing the Severity of Language Disorders

Relationship of Range to Mean	Description
Between -1 and -1 1/2 SD* below the mean	Mild to moderate language disorder
Between -1 1/2 and -2 SD* below the mean	Moderate language disorder
Below -2 SD* of the mean	Severe language disorder

*SD refers to standard deviation

Considerations for future learning style research



There is a need to “*develop more action research, and **longitudinal and mixed method research***”.

(Peterson et al., 2009, p. 521, emphasis added).

Conclusion



- There is currently **insufficient evidence** to warrant any curriculum interventions on the basis of learning styles.
- There is evidence that there are **some students** who may have strong learning style preferences based on their psychometric profile.
- **Longitudinal research** needs to be conducted on whether learning style preferences affect student learning choices and outcomes.
- Learning style need to be revised and refined with a **stronger foundation in cognitive science.**

Assumptions in This Research Project



1. If learning style theory is correct, students with strong preferences for a learning style will, over time, select the learning activities that align with their preferences. It is expected that this would be due to the difference in cognitive load for students who undertake activities in a non-preferenced learning style.
2. If learning style theory is correct, students with a strong learning style preference should perform better in those parts of the unit that catered for their learning style preference.

Research Question



What are the patterns of resource usage by:

- Students with **similar** learning style preferences.
- Students with **different** learning style preferences.

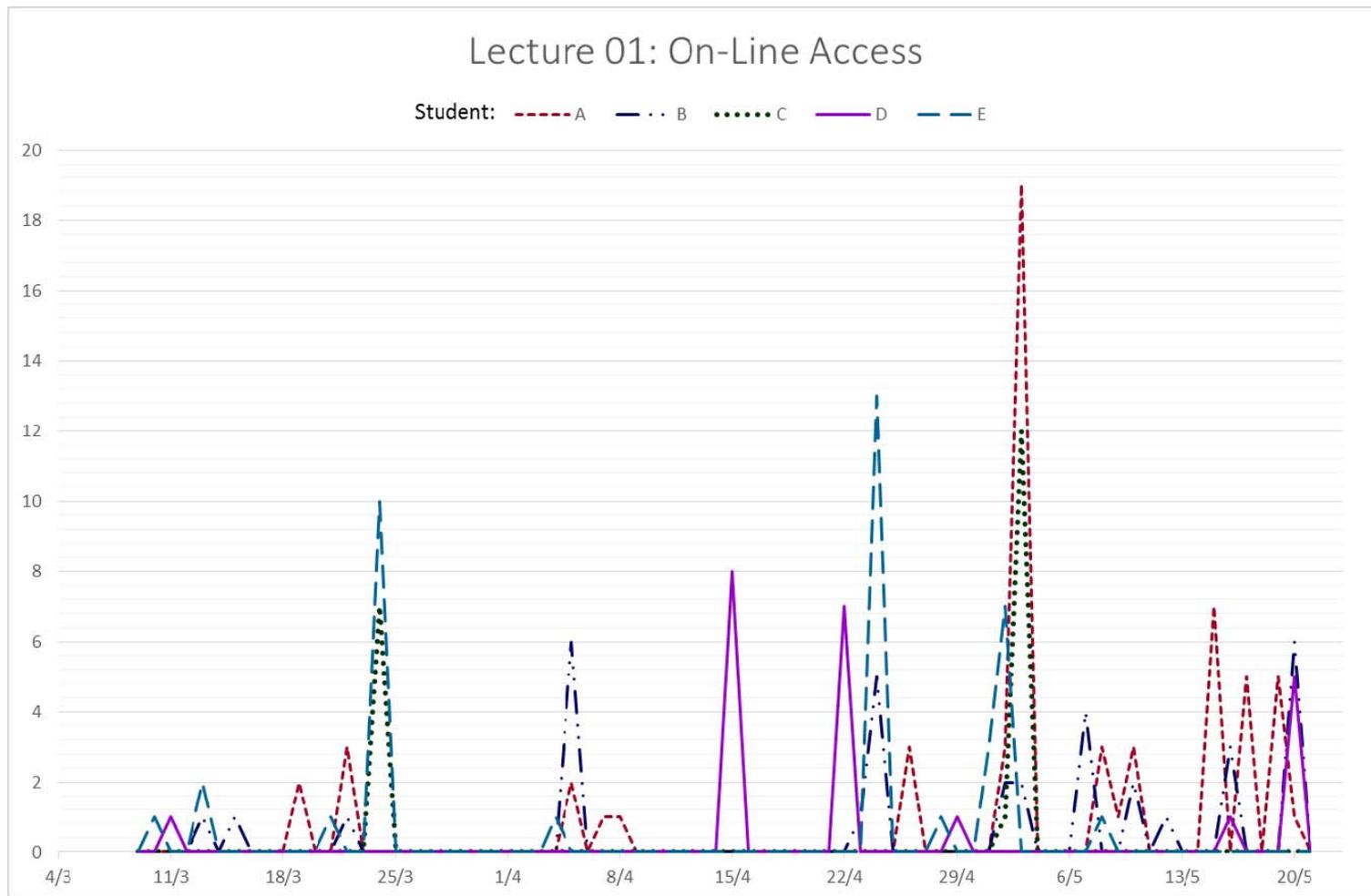
Methodology



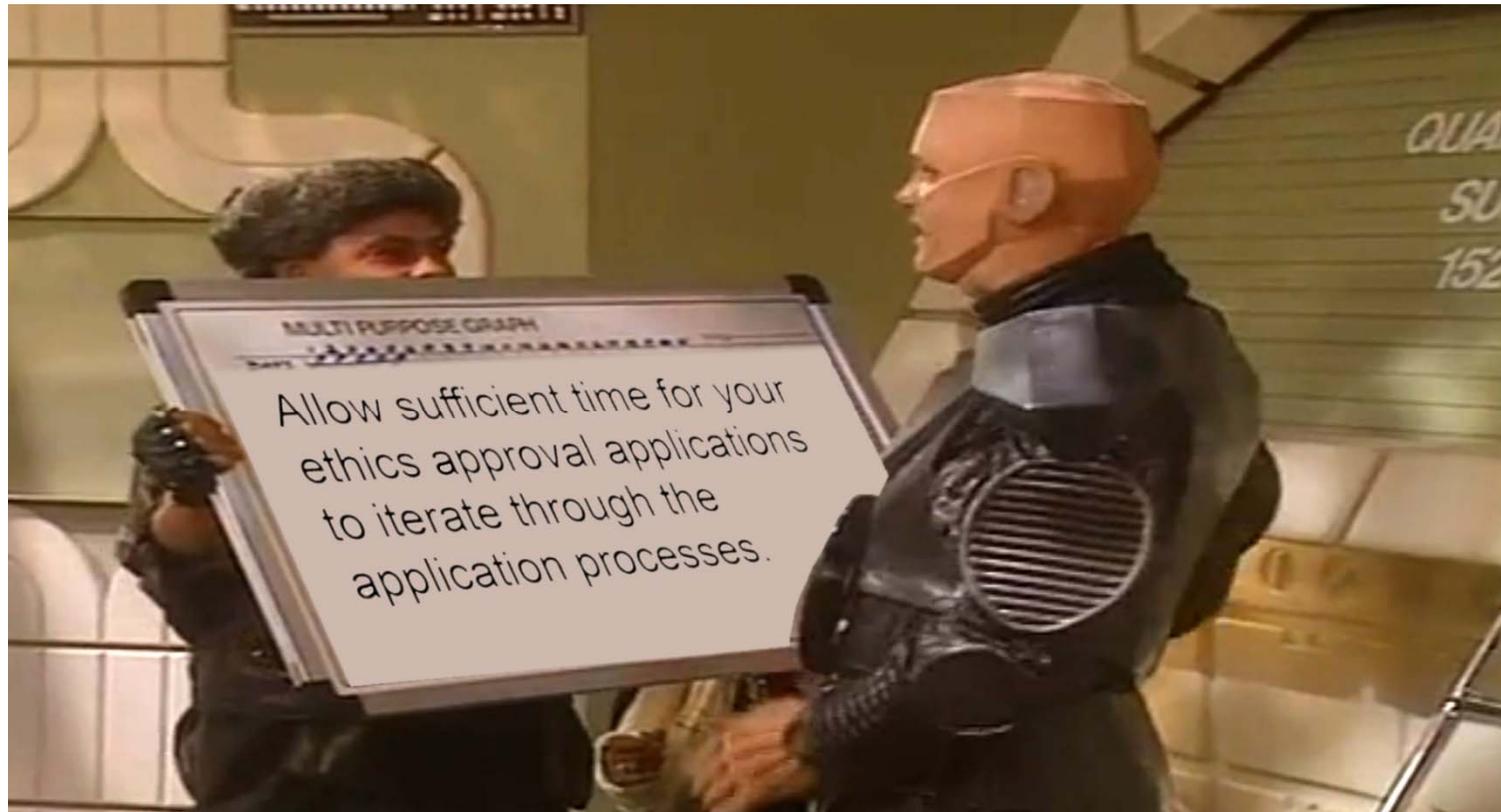
- Classify students according to Felder's ILS.
- Self-reported resource usage via surveys and interviews.
- Record access to resources such as:
 - Attendance at lectures, labs and tutorials
 - Blackboard hosted resources [visual and auditory resources have been provided]
 - RULE jail access:
 - Assignment jail
 - Laboratory jail
 - Exploratory jail
- Analyse for similarity/differences in usage patterns between learning style groups.
- Compare grades of those matching style and resource selection with those who mismatch*.

(* numbers are currently too low to do this significantly)

Mapping Resource Usage to Learning Style



Ethics Approval for Human Research



The End



Source: <http://www.donttellmetheending.com/2008/03/im-not-dead-yet/>