Styles of learning and teaching

Implications for teacher development and evidence-informed education

a tale of metrics, myths & money!

Evidence and educational practice

- EPPI-Centre [http://eppi.ioe.ac.uk/](http://eppi.ioe.ac.uk/)
  Evidence for Policy and Practice Information and Co-ordinating Centre, Social Science Research Unit, Institute of Education, University of London
  Best Evidence Medical and Health Professional Education
BEME Collaboration

BEME rejects the legacy of medical education in which decisions have been made based on pseudoscience, anecdotes, and flawed comparison groups rather than empirical evidence. The BEME approach contends that in no other scientific field are personal experiences relied on to make policy choices, and in no other field is the research base so limited.

http://www.bemecollaboration.org/About+BEME/

Learning styles

http://www.educationplanner.org/students/self-assessments/learning-styles.shtml
What is a learning style?

The term ‘learning styles’ is used as a description of the attitudes and behaviours that determine our preferred way of learning. Most people are unaware of their learning style preferences, they just know vaguely that they feel more comfortable with – and learn more from – some activities than others.

Honey and Mumford, ‘Introduction to learning and learning styles’, The Learning Styles Questionnaire: 80 item version
http://www.peterhoney.com/

- **Definition:** Broadly defined as one of the three primary ways in which a person can learn. Those include visual (sight), auditory (sound), and kinesthetic (actions/touch). An individual's preferred or best process by which they will learn is typically through one or a combination of these styles. In a more general sense, learning styles can include elements of the environment including their optimal time of day, lighting in the room, temperature of the room, etc. They also include a person's own emotionality, physical needs, and sociological needs. These are often discovered through a learning style inventory which is a short questionnaire often provided by the classroom teacher that allows them an avenue to more readily meet and *[sic]* individual student's needs.

http://teaching.about.com/od/gloss/g/Learning-Styles.htm
Examples

Experiential learning
David Kolb, Peter Honey & Alan Mumford
http://www.businessballs.com/kolblearningstyles.htm

Visual, Aural, Read/Write, Kinesthetic (VARK)
- ‘You have a mild Aural learning preference.’
- ‘Based on your input you are a(n): auditory learner.’

Approaches to study
Approaches and Study Skills Inventory for Students (ASSIST)
http://www.etl.tla.ed.ac.uk/questionnaires/ASSIST.pdf

Sutliff & Baldwin (2001)
Should we be using learning styles?

What research has to say to practice
Frank Coffield, David Moseley, Elaine Hall, Kathryn Ecclestone
2004

Criteria:
1. Internal consistency
2. Test-retest reliability
3. Construct validity
4. Predictive validity
Must be independently verified

Critical issues

- Psychometric weaknesses
- The unwarranted faith placed in simple inventories
- No clear implications for pedagogy
- Decontextualised and depoliticised views of learning and learners
- Lack of communication between different research perspectives

“This field suffers from serious conceptual confusion and a lack of accumulated theoretical knowledge,” says Coffield. “It’s deeply confusing even for psychologists attempting to make sense of it.”
"I learned that I was a low auditory, kinaesthetic learner. So there's no point me reading a book or listening to anyone for more than a few minutes..."

Comment from student

I'm a pragmatist and a bit of something or other - activist.

*What do you reckon that tells you about your learning style, then?*

Well, I'm gobby and like talking a lot and I don't like all that boring stuff in books, or when lecturers waffle on and it's not relevant...
Coffield comment:
"The commercial gains for creators of successful learning styles instruments are so large that critical engagement with the theoretical and empirical bases of their claims tends to be unwelcome."

$1000 challenge!

Will Thalheimer's Learning Styles Instructional-Design Challenge
I will give $1000 (US dollars) to the first person or group who can prove that taking learning styles into account in designing instruction can produce meaningful learning benefits.

(2006)

http://www.willatworklearning.com/2006/08/learning_styles.html
Getting everything working together

What do you want the learners to be able to do?

Constructive alignment

What teaching methods and learning activities are suitable?

How will you find out what has been learnt?

John Biggs (1999) Teaching for Quality Learning at University (SRHE and Open University Press, Buckingham)
## Teaching styles?

http://www.teachingperspectives.com/tpi/

## Organisations using the TPI

| American Academy of Orthopaedic Surgeons | Republic Polytechnic, Singapore |
| 2nd Asia Pacific Medical Education Conference | PSU-JFDP Junior Faculty Development Program |
| Canadian Society for Medical Laboratory Science Forum, Hamilton ON | Society for Education in Anesthesia |
| DUC - Deakin / Calgary Universities (On-line & F2F Study) | SoTL - Multinational Teaching Fellows |
| Duke - Graduate School Pathways | U21 - Global |
| Instituto Tecnologico y de Estudios Superiores de Monterrey | U of T - Toronto Teaching Scholars Program |
| Justice Institute of British Columbia | UBC - Certificate in Practice Education in Health Services |
| Korean - Instructors and Educators | UBC - Faculty SoTL Leadership Program |
| North Michigan University Student Teachers | UBC - Teacher Education Longitudinal Study |
| North Michigan University Supervising Teachers | UC Davis - Teaching Scholars Program |
| OT Educators’ National Survey | UNAP-TDI - Universidad Arturo Prat |
| Pankey Institute Dental Faculty (Florida) | University of Southern Queensland |
| Pediatric Academic Societies - Educational Scholars Program | UTEC - UTHSCSA: San Antonio |
| Provincial Instructor Diploma Program (VCC) | UUI - Kennslufraedi HI (University of Iceland) |
| Pediatrics Department, Hershey Medical Center | Vancouver Coastal Health: Educators’ Workshop |
| | Worldwide Universities Network US/UK |

As at 6th September 2013
Review your TPI profile

1. Review the Summary Paragraphs
2. Examine Your Profile Sheet
3. Note the Height and Range of Your Overall Scores
4. Check the Differentiation among Your Perspectives
5. Identify Your Dominant, Back-Up, and Recessive Perspectives
6. Check for Internal Consistency
7. Examine any Internal Discrepancies
8. Look for Consistency Across Perspectives
9. Self-Corroboration
10. Next Steps: Peer/Professional Validation

Review your TPI profile

Next Steps: Peer/Professional Validation:
• Is it now clearer that there are multiple and legitimate views on what constitutes 'good teaching'?
SETS

Staffordshire Evaluation of Teaching Styles
1. The all-round flexible and adaptable teacher
2. The student-centred, sensitive teacher
3. The official curriculum teacher
4. The straight facts no nonsense teacher
5. The big conference teacher
6. The one-off teacher

Mohanna et al (2008)
1: the all round flexible and adaptable teacher
2: the student-centred, sensitive teacher
3: the official curriculum teacher
4: the straight facts, no-nonsense teacher
5: the big conference teacher
6: the one-off teacher

Questions

1. What inventories exist?
2. What are their theoretical bases?
3. How have they been validated?
4. How have they been used?
5. With what effects?
6. Implications for faculty development?
7. Possibilities for further research?
Search strategy

• Database searches (SCOPUS, ERIC)
  – thesaurus
  – text string

• Hand searching
• Ancestry searching

• Grey literature
  – “Teaching styles questionnaire”: about 39,500 results

Strategy did not attempt to find...

• Learning style, cognitive style and personality inventories (e.g. MBTI)
• Inventories on particular teaching roles or teacher behaviour:
  – supervision, coaching, facilitation
• Inventories relating to specific aspects of teacher behaviour
  – teacher confirmation
• Material in languages other than English
### Choosing search terms

<table>
<thead>
<tr>
<th>teaching</th>
<th>style</th>
<th>inventory</th>
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<tbody>
<tr>
<td>teacher</td>
<td>approach</td>
<td>tool</td>
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</table>

|       |              |              |
| teaching | style       | inventory    |
| teacher  | approach    | tool         |
| training | perspective | toolkit      |
| trainer  | conception  | scale        |
| educator | philosophy  | inventory    |
| instructor| orientation| questionnaire|
| instructional | strategy    | survey       |
|           | method      | self assessment|
|           | value       | instrument   |
|           | belief      | profile      |
|           |             | form         |
Search results

• 2,222 title + abstracts checked

• 144 items for full text review

• Problems
  – Publication in conference proceedings (8)
  – Publication in books (11)
  – No publication relating to development of instrument
  – Websites [Google: “Teaching styles questionnaire”: about 39,500 results]

Instruments found

Overall total: 52

• Excluding those which relate specifically to...
  – teaching of children
  – fields of limited relevance to medical education (e.g. language teaching)
  – a particular form of teacher behaviour (e.g. ‘confirmation’)

Sub-total: 36
The 36 instruments...

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Teaching Style Inventory x 3</td>
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<tr>
<td>2</td>
<td>Teaching Style Questionnaire</td>
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<tr>
<td>3</td>
<td>Teaching Styles Inventory for PBL</td>
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<td>4</td>
<td>Teaching Styles Quiz</td>
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<td>5</td>
<td>Teaching Styles Self Evaluation</td>
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<td>6</td>
<td>Teaching Styles Self-Assessment Tool</td>
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<tr>
<td>7</td>
<td>Spectrum of Teaching Styles</td>
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<tr>
<td>8</td>
<td>Staffordshire Evaluation of Teaching Styles</td>
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<tr>
<td>9</td>
<td>Thinking Styles in Teaching Inventory</td>
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<td>10</td>
<td>Preferred Thinking Styles in Teaching Inventory</td>
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<tr>
<td>11</td>
<td>Approaches to Teaching Inventory</td>
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<tr>
<td>12</td>
<td>University Teaching Inventory [ATI + self efficacy]</td>
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<tr>
<td>13</td>
<td>Teaching Perspective Inventory</td>
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<tr>
<td>14</td>
<td>Instructional Perspectives Inventory</td>
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<td>15</td>
<td>Instructional Styles Inventory</td>
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<td>16</td>
<td>Lecturers’ Conception of Teaching and Learning Questionnaire</td>
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<tr>
<td>17</td>
<td>Philosophies Held by Instructors of Lifelong-learners</td>
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<td>18</td>
<td>Philosophy of Adult Education Inventory</td>
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<td>19</td>
<td>Preferred Teaching Approach Inventory</td>
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<td>20</td>
<td>Principles of Adult Learning Scale</td>
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<td>21</td>
<td>Teacher Behavior Preferences Survey</td>
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<td>22</td>
<td>Teaching Goals Inventory</td>
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<td>23</td>
<td>Teaching Methods Inventory</td>
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<td>24</td>
<td>Trainer Style Inventory</td>
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<td>Training Style Inventory</td>
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<td>26</td>
<td>Trainer Type Inventory</td>
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<td>27</td>
<td>Effective Teacher Inventory</td>
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<tr>
<td>28</td>
<td>Clinical Teacher Characteristics Instrument</td>
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<tr>
<td>29</td>
<td>Supervisory Belief Inventory/Index</td>
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<tr>
<td>30</td>
<td>1:1 Teaching Styles Inventory</td>
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<td>31</td>
<td>Perceptions of Teaching Environment</td>
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<td>32</td>
<td>Constructivist Learning Environment Survey</td>
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<tr>
<td>33</td>
<td>Questionnaire [untitled] x 2</td>
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Where do the ‘styles’ come from?

- Can’t tell!
- ‘The body of theory and knowledge advanced in the literature’ – e.g. Conti PALS
- Distillation from recognised ‘schools’ of philosophy
- Theory-driven (esp constructivist)
- Guiding metaphor – e.g. ‘mental self-government’
- Pragmatic categorisation of methods/activities
- Analogy with learning style constructs
- Expert opinion and consensus exercises
- Cumulative research programme (qualitative<>quantitative)
Reasons for developing and using TSIs

- Faculty development and reflective practice
- Evaluation of faculty development
- Relationships between...
  - learning styles, teaching styles, learning context
  - (trainee) teacher’s cognitive style and their teaching style
  - teacher self-reported ‘styles’ and teaching practice
  - teaching styles and student ratings (SEQs)
  - teaching styles of different teacher groups (discipline/field)
  - teaching styles of different teacher groups (international/cultural)
  - teaching styles and occupational stress
- To make money?

http://www.members.shaw.ca/mdde615/tchstyles.htm
Mapping the literature

Teacher

Teaching style

Cognitive style

Learning style

Learner

Learning style

Cognitive style

Context
Some findings

Two key dimensions...
- Teacher-focused/information transfer
- Student-focused/conceptual change

Stable or relational?

‘Good teaching’?

‘Matching hypothesis’
- Some support for ‘matching hypothesis’ in relation to mentor/supervisor (preceptor/resident) relationships

Some problems

- The psychometric issue

- The ‘style’ issue
  - analogy with ‘learning style’
  - highly variable constructs in the literature
  - technical vs ‘lay’ interpretations of the term

- The categorisation issue
  - rejection of the entire approach?
  - ‘labelling’
... findings indicate that learning and study processes are proving incapable of description in terms of neat, conceptually simple, and low dimensionality models. Why should we assume teaching to be different? Should not teaching also be multifaceted and differentiated? Common sense and an expanding literature on teaching ... dictate precisely such an expectation.

(Meyer and Eley, 2006, 647)

Evidence on use in faculty development?

• ‘Tool to initiate ... critical analysis’ leading to ‘conscious knowledge of values and beliefs’ (Conti 2007)
• ‘values clarification’ exercise (Glickman 1985)
• ‘a useful trigger tool in “phenomenographic pedagogic” discussion.’ (Trigwell et al, 2005)
• ‘this foundational conceptualization provides a base from which nurse educators can (1) communicate across differences of philosophical perspective and intent; and (2) critically reflect on their educational practices’ (Pratt et al, 2007)
• ‘instrumented learning’ (Blake & Mouton, 1972)
Does it matter?

Heuristics

• ‘In some cases, heuristics can be highly adaptive and beneficial to the accumulation of knowledge. In others, they can distort judgments and bias learning.’

(Holcomb et al, 2009)

Considerations for use...

Framework for critical reflection
Brookfield’s (1995) Four lenses
1. Autobiographical lens [e.g. TPI, SETS]
2. Peer lens [e.g. ‘critical friend’, Dahlgren et al (2006)]
3. Student lens [e.g. student feedback]
4. Theoretical lens [inc best evidence]

Developmental process
   Novice > Expert
Conclusions

• Some instruments are inappropriate for research or faculty development
• The term ‘style’ is likely to be extremely confusing
• In selecting inventories for faculty development, it may be worth paying attention to...
  – the point in the teacher’s development
  – how its use is integrated within a framework for reflection and development processes
  – how its use could be a catalyst for consideration of the relationships between evidence and values
• Need qualitative research on experiences/perceptions/uses of inventories by medical teachers (novice>expert)

References


