Using an Understanding of Cognitive Styles to Enhance Pedagogy

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Key Questions

Where do Cognitive Styles fit in the discussion about high impact pedagogies?

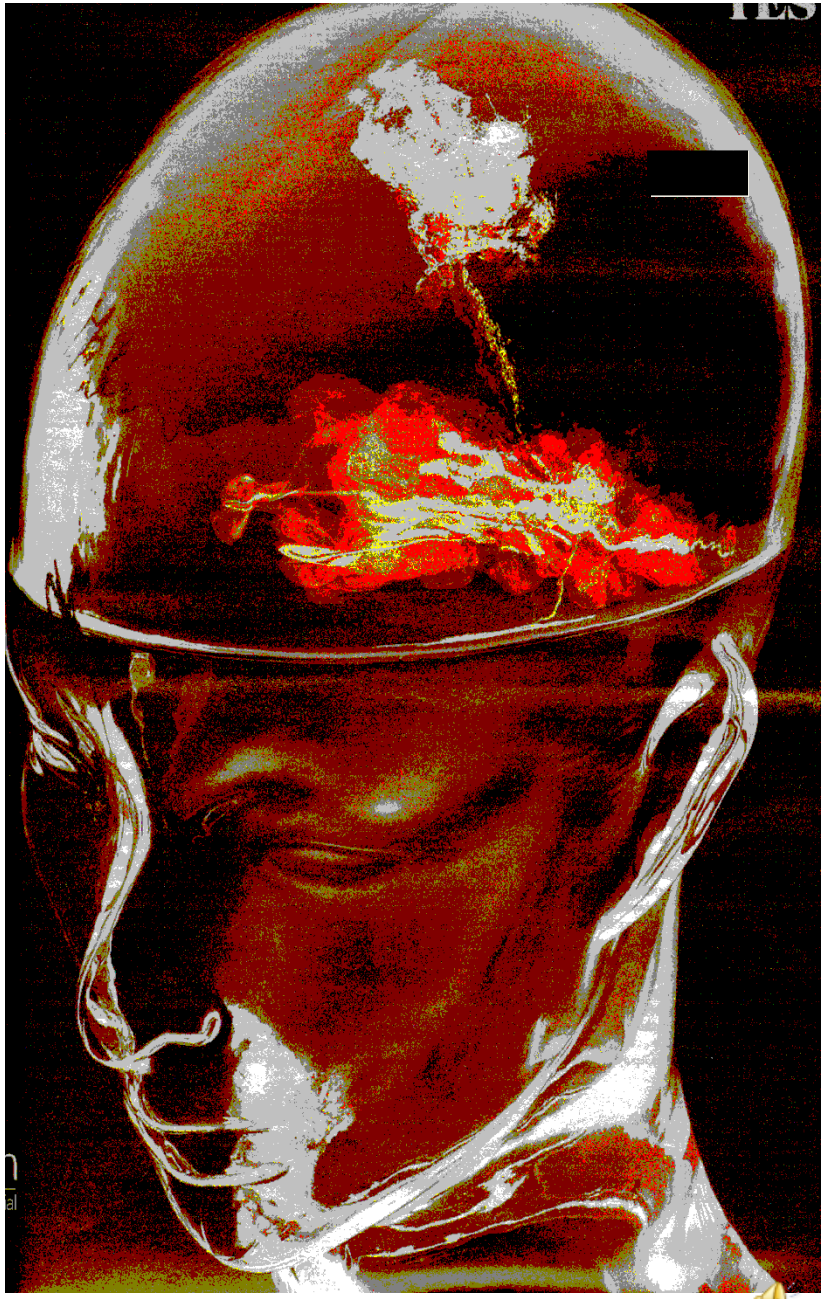
How can understandings of style be effectively translated into practice?

Adapting instruction to the context or the learner?

Styles

Cognitive style(s)
Learning styles(s)
Thinking styles
Intellectual styles
Problem-solving styles
Decision-making styles
Attributional style(s)
Motivational styles
Leadership styles
Organisational styles
Eating styles
Feedback styles

Cognitive controls
Approaches to learning
Dispositions
Learning patterns
Learning orientations



Overview

- What do we know about Cognitive Style?
- Enriched Styles Pedagogies
- The Personal Learning Styles Pedagogy
- Key Considerations

Defining Style

Cognitive style represents **individual differences** in **cognitive functioning** that develops as a result of an **individual's adaptation** to external physical and socio-cultural environments.

Cognitive style arises from a system of **interacting processes**. It is an **adaptive system** that moderates the effects of <u>both</u> **individual's predispositions** (innate and learned) and the **external environment.**

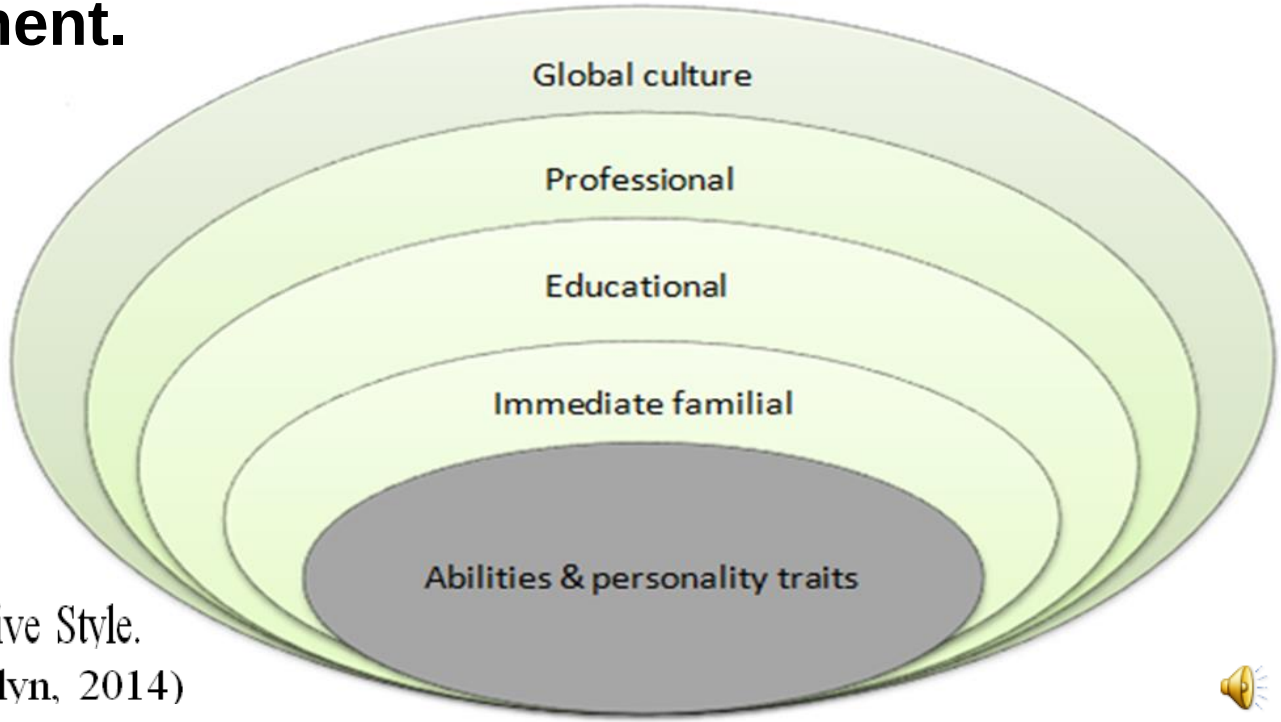


Figure 5.1 Layers Affecting Cognitive Style.
(Kozhevnikov, Evans, & Kosslyn, 2014)

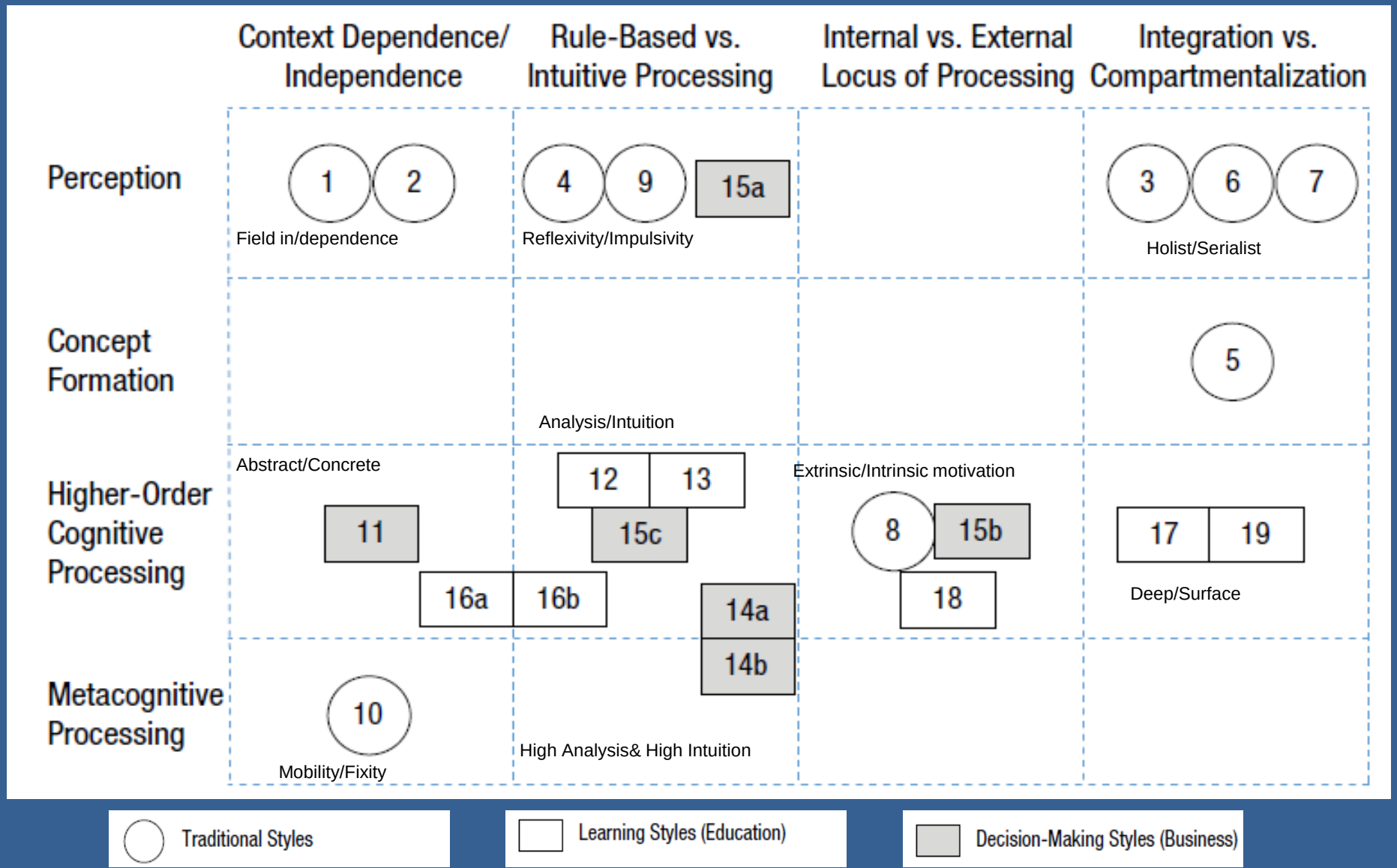
Cognitive Styles are....

- **Multidimensional – we all use a variety of styles.**
- **Pejorative – what styles we use in specific contexts can matter...although different styles may be used to achieve the same outcomes.**
- **Flexible individual differences – they can be developed.**
- **They operate at different levels of information processing and within different cognitive style families.**

Cognitive Styles Hierarchy

1. Perceptual level as to how one processes individual preferences
2. Complex problem-solving
3. Self-monitoring functions
4. Flexibility

Cognitive Styles Matrix



Kozhevnikov, Evans, & Kosslyn, 2014 http://psi.sagepub.com/content/15/1/3.full.pdf+html

Cognitive Processes and Controls

Context dependent vs Independent

Field Dependence-Independence (Witkin et al.,1954); Form-Articulation: Element Articulation (Messick, 1963); Flexible Control- Constricted Automatization v Restructuring (Klein, 1964; Gardner et al, 1959)

Rule-based vs Intuitive Processing

Conceptual-Perceptual (Broverman, 1960); Conceptualising styles (Wallach, 1962)

Scanning – Focusing (Broad vs Narrow) (Benfari, 1966; Gardner & Long, 1962; Holzman, 1954/66)

Levelling-Sharpening (Gardner et al.,1959; Holzman and Klein, 1954); **Splitters and Lumpers** (Cohen, 1967);

Reflectivity-Impulsivity (cognitive tempo)(Kagan et al.,1964)

Risk Taking v Cautiousness (Kogan & Morgan, 1969, Kogan & Wallach, 1964;1967)

Diverging-Converging (Hudson, 1966;1968)

Compartmentalisation vs Integration

Holist-Serialist (Pask, 1972; 1976)

Breadth of Categorising (Bruner et al., 1961; Pettigrew, 1958; Kogan and Wallach, 1964; Messick & Kogan, 1963)

Cognitive Complexity – simplicity (Bieri et al., 1966); **Conceptual Integration** (Integrative Complexity) Allard & Carlson, 1963; Bieri, 1966; Harvey, Hunt & Schroder,1961); Messick & Kogan, 1966); Schroder, Driver & Streufert, 1967; Signell, 1966)

Tolerance-Intolerance (Gardener et al., 1959; Klein et al., 1962)

Simultaneous-Successive Processing (Das, 1988)

Surface-Deep (Marton,1975)

Visual Verbal

Perceptual Modality Differences (Messick et al., 1976)

Object Visualisation; Spatial Visualisation and Verbalisation (Kozhevnikov, 2007)

Enriched Styles Pedagogies

Promote autonomy in learning

- **Informed understanding** of styles used to underpin curriculum development including assessment and housekeeping.
- Targetting the **development of certain styles** over others – alignment to tasks / objectives.
- Development of styles – supporting **students to self-regulate** their learning through instruction.
- Consideration of the **holistic experience** of the student.
- **Integrated and developmental** approach.
- **Explicit discussion with students** to consider best approaches for context/ task/ student learning needs.
- Students **active participants** – responsible for managing own development through access to alternative ways of doing / thinking.

Components of the Personal Learning Styles Framework (PLSP)

A.	Exploration of student and teacher beliefs/ modelling and support.
B.	Careful selection and application of styles.
C.	Optimising conditions for learning / Sensitivity to learner context
D.	Design of learning environments
E.	Supporting learner autonomy: Choices in learning / student voice

(Evans 2013; Evans & Waring; 2014; Waring & Evans, 2015, pp.187-214)

Components of a Personal Learning Styles Pedagogy (Evans 2013; Evans & Waring, 2015; Waring & Evans, 2014)

A.	**Exploration of Student and Teacher Beliefs/ Modelling and Support**
(i)	Focus on the learning histories of student and teacher.
(ii)	Holistic understanding: Consideration of the whole experience of the learner.
(iii)	Exploration of learner (student and teacher) beliefs about learning (e.g., ability, self-efficacy, identity and sense of fit within learning contexts).
(iv)	Enhancing learner awareness and application of styles as part of ongoing instruction on individual learning differences. Understanding of individual differences central to the design of learning environments.
B.	**Careful Selection and Application of Styles.**
(i)	Judicious and informed use of instruments /styles models.
(ii)	Critical analysis of styles as part of instruction on individual learning differences. Appropriate application of styles models: Instruments used as metacognitive tools to support understanding of the learning process.
(iii)	An integrated approach: Awareness of the interdependence of cognitive style and other individual learning differences – role of cognitive style as a moderator variable.
(iv)	Development of cognitive styles as an integral element of culturally responsive pedagogies.
C.	**Optimising Conditions for Learning** / Sensitivity to learner context
(i)	Sensitivity to needs of the learner: Recognising unique starting points. Addressing the emotional dimension of learning: Working with students to ensure readiness (will and skill).
(ii)	Enabling a positive learning environment: Focusing on supporting students during important transition points in their learning.
(iii)	Care afforded to how new ideas introduced as to the level of cognitive complexity in order to support learner flexibility.
(iv)	Supporting learners' integration into communities of practice.
(v)	Attention given to learners' networks of support and development of identity within academic context.

D.	**Design of Learning Environments**
(i)	Housekeeping attended to (organisation of resources; information for students and lecturers etc).
(ii)	Teaching methods informed by an understanding of cognitive styles and attuned to the requirements of the content and context (constructive alignment).
(iii)	Aimed at supporting learners in developing understanding of learning to think within a specific discipline and to be become part of that community.
(iv)	Judicious use of accommodation of cognitive styles and the concept of matching.
(v)	Judicious approach in promoting development of the most appropriate cognitive styles for specific contexts.
(vi)	Teaching strategies aimed at stretching the student through careful addition and removal of scaffolding and sufficient constructive friction: Aimed at developing and broadening cognitive styles and strategies as and when appropriate.
(vii)	Designs focused on encouraging learners to adopt deeper and more self-regulated/directed approaches to learning (constructivist approaches with a strong emphasis on the development of metacognitive skills). Supporting learners to reflect critically on the learning process to include self- and co-regulation. Appropriate use of tools to support process.
(viii)	Maximising learning opportunities: Design of learning environments focused on enhancing awareness of different learning strategies through explicit guidance and exposure to diverse learning experiences: Different ways of seeing and doing, observation, modelling, practice, application, reinforcement, and transfer.
(ix)	Authentic and appropriate assessment designs to support the development of deep approaches to learning.
(x)	Appropriate use of technology to support learning.
E.	**Supporting Learner Autonomy: Choices in Learning / Student Voice**
(i)	Focus on the centrality of the learner as a co-constructor of knowledge.
(ii)	Focus on the role of the student in managing the learning process. Learners as co-designers of their learning experience(s).
(iii)	Learner control afforded through design of curriculum (content, process, product) including e-learning possibilities.
(iv)	Flexible designs facilitated through, for example, organisation of resources to maximise access; choices in pathways through programmes; nature of assessment.
(v)	The importance of guided/informed choice for learners.
(vi)	Informed and responsible use of groupings individual and group work. Collaborative learning opportunities informed by understanding of styles (e.g., dangers/limitations of labelling, justification for groupings).

Integrated Approach to Academic Practice: PLSP

i. Placing the **student at the centre** of the learning process;

ii. Exploring **learner beliefs about learning**; considering motivational and affective elements of learning;

iii. Examining, with students, the **processes** involved in learning from a **cognitive styles perspective**;

iv. Identifying **effective strategies** to support **learner autonomy**;

v. Seeing learning as a **collaborative venture** with students and teachers working together to support independence in learning;

vi. Research informed;

vii. Authentic;

viii. Reinterpretation of what catering for individual needs involves.

Evans, C. and Waring, M. (2009) The Place of Cognitive Style in Pedagogy: Realising Potential in Practice In: L. F. Zhang and R. J. Sternberg (Eds.) *Perspectives on Intellectual Styles (pp.* 69-208). *New York:* Springer.

Exploration of Beliefs

- **Clarification of the rationale underpinning the curriculum design: mapping of elements to show how they all fit together.**

- **Understanding student's emotional learning journeys.**

Application of Models

- To promote understanding.
- Demonstrate how to use with learners.
- Discussion of value and limitations of approaches.

Optimising conditions

- **Importance of emotions in style.**
- **Importance of relational dimension** (sensitivity to context; social intuition; understanding self; boundary crossing; will to offer).
- **Sense of fit within a community.**

Design of Learning Environments

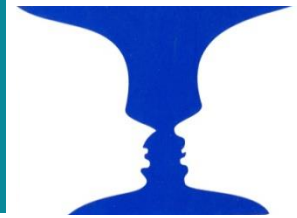
- Housekeeping.
- Overarching principles of effective learning for all; Adaptive rather than adapted.
- What styles are most appropriate to promote in a given situation?
- Development of flexibility vs specialization?

Flexibility

"All fixed set patterns are incapable of adaptability or pliability. The truth is outside of all fixed patterns…when one has no style, he can fit in with any style." *(Bruce Lee)*

- Individuals **vary in their level of cognitive flexibility**; importance of strategy development is highlighted.
- **Challenge** is required to develop style (exposure to different contexts / requirements).
- Development of **self-regulatory skills** – "*To become different from what we are, we must have some awareness of what we are.*"
- **Style reinforcement/fixity** in certain contexts may be beneficial.
- Nature of the task and required outcomes impacts on **team composition choices**.

Perceptual Issues



In exploring complexity not forgetting the basics:

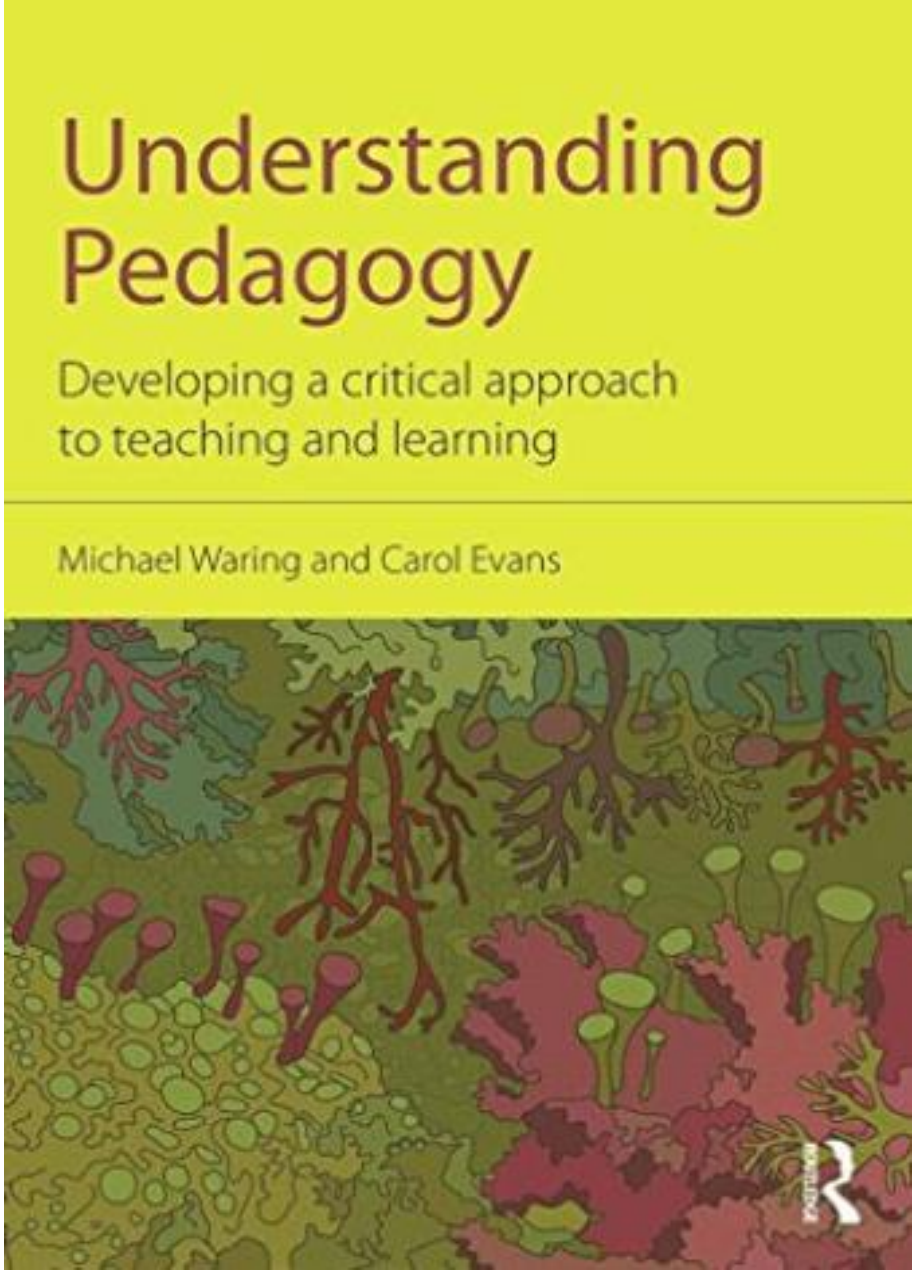
- Individuals are not visual **or** verbal.
- Theories such as **dual coding and working memory capacity** to assist adaptation and transfer and to minimise noise in learning contexts have value.
- Think more about **the basics**; speed of transitions; size of viewing window; access to all materials from start of the programme; appropriate removal of scaffolding; flexibility within curricula; guided choice; training in developing feedback seeking skills, emotional regulation etc....
- Development of **self-regulatory skills** - *To become different from what we are, we must have some awareness of what we are."*

Supporting Learner Autonomy

- Guided choice.
- Genuine partnership?
- Supporting adaptation and transfer?
- Promotion of tools to support independence in learning.

Summary

- Cognitive styles impact learning and teaching.
- Teaching to one style is not appropriate.
- It is important to support the development of the most appropriate styles and strategies required for the context.
- Teaching for cognitive stimulation and efficient instruction are compatible.
- Linking to what has gone before.
- Examining with students their networks of support.
- Training in self-regulatory processes (cognitive; **affective**, and metacognitive).
- Aim to develop student resilience in learning.



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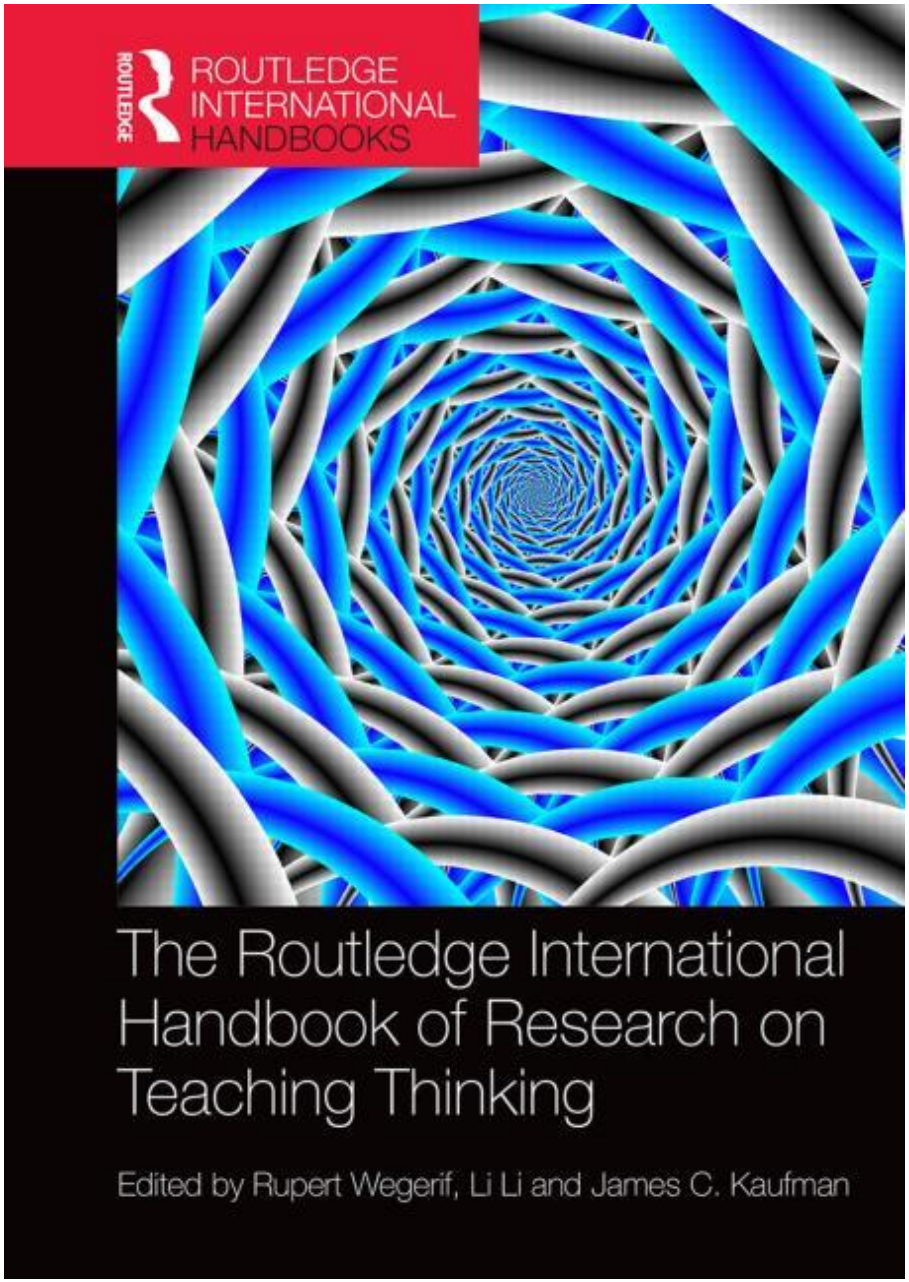

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Thank you

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