

Session 10

Organizing What We Know: The Structure of the Disciplines

A Common Core with Variations

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My preferred approach to teaching is to heighten students' interest and enjoyment of learning "through the 'sense of excitement of discovery' they experience as the structure of a discipline becomes clear to them." (Darling-Hammond *et al.*, 2003; Bruner, 1960) Since the central modes of inquiry and knowledge-finding tools of the disciplines all begin with the same questions,

- How does each discipline construct, critique, and revise knowledge?
- How do you know something is true?
- What counts as evidence?

and certain ideas cut across disciplines to form a common core—namely notions of

- description,
- analysis,
- careful observation,
- the evidence for a claim and
- theory

a similar 'sense of excitement of discovery' exists for all disciplines.

These similarities facilitate the transfer of knowledge of approach, if not facts, from one discipline to the other. I can help my students understand the structure of a topic by providing an overarching conceptualization of the big ideas and then locating specific facts or information that relate to the big ideas. (Darling-Hammond *et al.*, 2003)

Comparison of Methods for Discovering Knowledge for Various Disciplines

Discipline	Description	Analysis	Careful Observation	Evidence	Theory
Language	Phonics	Semantics Patterns	Usage and meaning, Root meanings	Word patterns and meaning	Syntax
Literature	Story	Plot Patterns	Literary elements	Character	Theme
History	Story	Validity Patterns Conjecture	Contempo- rary accounts Archaeology	Events	Power Culture Society
Mathematics	Frame Equations	Graphs Patterns Conjecture Equations	Manipula- tives	Proofs Manipula- tives Physical predictions	Inverse operations Ratio and proportion Balance and Equilibrium
Biology	Story Equations	Taxonomy Genetics Chemistry Patterns	Phenotypes Genes Reactions	Flora and fauna, chemical structures	Evolution

The table above, **Comparison of Methods for Discovering Knowledge for Various Disciplines**, shows that the methods of inquiry for all of the disciplines have many similarities, and thus discovery engenders a similar sense of excitement for any of the disciplines. The disciplines use methods of inquiry that are similar at a higher metacognitive level, indicated by the column headings in the table, and a comparison of the elements in cells for each discipline show that disciplines rely on many of the same more concrete elements for discovery. For example concrete stories are used to describe three of the five disciplines, literature, history and biology, and concrete patterns are sought to analyze all five of the disciplines. Some of the concrete elements for biological analysis and observation are unique, for instance taxonomy and genetics.

The similarities in the methods of inquiry into the disciplines illustrates that some concepts, such as patterns, are fundamental to acquisition of knowledge. I plan to find or create spiral curricula that introduce these central and fundamental concepts “early in a child’s education and revisits these concepts again and again in the later grades in more sophisticated ways.” (Darling-Hammond *et al.*, 2003, pg. 176) By using spiral curricula, I will narrow the gap between ‘advanced’ knowledge and ‘elementary’ knowledge” (Bruner, 1960, p. 26) and provide my students the knowledge and learning strategies they need to provide for themselves and their families in a competitive world.

References

1. Darling-Hammond *et al.* 2003. *The Learning Classroom: Theory Into Practice*. Detroit: Annenberg Media.
2. J. Bruner 1960. The importance of structure. In *The process of education* (pp. 16-32). Cambridge, MA: Harvard University Press.