Knowledge and Belief Change in Academic Development

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Introduction

• Delves into what it means to know something compared to believing it and how changes in knowledge and beliefs are critical to the process of academic development depicted in MDL.
• The interplay between knowing and believing is analyzed through the Characteristics of the Learner and Argument Integration Model (CLAIM; Murphy 2007; Murphy & Alexander, 2013).
• Discusses two areas of inquiry that speak to the interplay of knowledge and beliefs: epistemic beliefs and conceptual change.
• Discusses three orientations to pedagogical practice that promote knowledge and belief change: persuasive pedagogy, relational reasoning, and quality talk.

Characteristics of the Learner and Argument Integration Model

- Explains how individuals move from the initial state where they believe that and know of (initial recognition), to a level where they believe about and know about (explanatory power), and finally to the level where they truly know that and believe in the idea being considered (examined understanding).

Epistemic Beliefs

- Individuals’ epistemological stances must be complemented by epistemic competence.
- Students need to be explicitly taught about standards of evidence in a domain and conditions to which such standards apply.

Epistemological Stance

- A default system of beliefs about knowledge and knowing foundational to day-to-day operations, distinguished by varied means of knowledge justification.
- May be hard to change, but not impossible.

Epistemic Competence

- The ability to recognize and utilize the standards of evidence and justification in a domain.

Conceptual Change

- Misconceptions are inevitable at all stages of academic development.
- The nature and frequency of misconceptions differ by stage, reflecting the interplay of knowledge, strategic processing, and interest and learners’ level of knowing and believing at that stage.

• Many incomplete or malformed concepts
• Beliefs unexplored and unexamined
• Misconceived ideas tenacious due to limited knowledge, deep-processing strategies, interest, and no impetus to critical analysis
• Domain-specific concepts intricately intertwined and held with deep conviction
• Knowledge and beliefs closely aligned and well examined
• Must undergo dramatic shifts in the entire network of knowledge and beliefs

Teaching for Changes in Knowledge and Beliefs

Persuasive Pedagogy

- Accepts learning as a change in students’ knowledge, beliefs, and interests.
- Involves taking the argumentation structure and features of persuasive text and adapting them to the classroom.
- Values students’ existing knowledge, beliefs, and interests
- Makes the content more intriguing and provocative, prompts students to consider alternative perspectives to instigate an examined understanding.

Relational Reasoning

- Ability to discern patterns in and forge relations between otherwise fragmented knowledge (Alexander & the DRLRL, 2012).
- Develop students habits of mind to consider if what they are learning is similar to (analogical), an unusual case of (antithetical), or categorically distinct from (antinomous) what they already know or believe.
- Associated with performance in reading, science, mathematics, engineering, medical diagnosis, and nursing. Classroom based training underway.

Quality Talk

- A teacher-facilitated critical-analytic approach to discussion (Murphy et al., 2009; Wilkinson et al., 2010).
- Provide conditions for promoting quality discussions: use small, heterogeneous groups and shared control between teacher and students.
- Teachers model and scaffold discourse tools, e.g., authentic questions, uptake, and high-level thinking questions.
- Empirically shown to enhance student talk, which contributes to high-level comprehension of text and better learning outcomes in language arts (Li et al., 2016) and science (Murphy, Firetto, & Greene, 2016).