Designing for Productive Adaptations of Curriculum Interventions

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The Dilemma of Adapting Curriculum Materials

- Students' prior experiences and cultural and linguistic practices can never be fully anticipated by curriculum.
- Teachers face the challenge of balancing the goals and intentions of multiple stakeholders.
- The fidelity perspective privileges a few stakeholders while diminishing the importance of local responsiveness.
- Consequences to being unresponsive to students' characteristics and resources are manifest in the long-standing inequities in US classrooms.

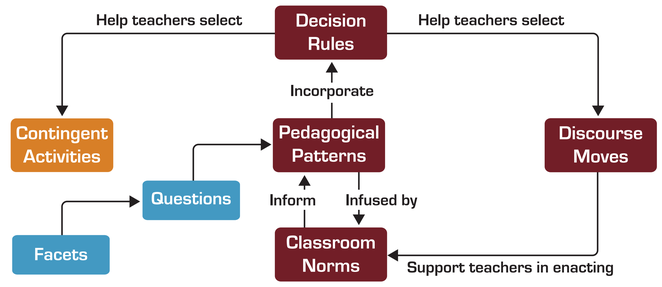
Case Illustrations

Mathematics: The ACCLIME Project

The ACCLIME project focused on middle school mathematics teachers use and understanding of innovative curriculum materials. The data collection and analysis in this project involved videotaping teachers' enactments of instructional units from the Connected Mathematics Project (CMP) curriculum program (Lappan, Fey, Fitzgerald, Friel, & Phillips, 2006), with the primary analytic focus on understanding teachers' reasons for enacting and adapting the materials in particular ways.

Science: Contingent Pedagogies (CP)

The CP project used classroom response systems ("clickers") to support classroom assessment with a middle school Earth science curriculum.



Criteria for Productive Adaptations

Responsive to Multiple Stakeholders

- Faithful to the aims of curriculum developers
- Informed by local policy interpretations
- Responsive to the perspectives of students and parents in local context

The teachers' adaptations were in response to their observations of students. In terms of following the developers' intentions, the teachers refrained from making substantial revisions until they developed a deeper sense of the design. The teachers, however, were attentive to their own goals and purposes when they revised the tasks.

- PD helped teachers become informed users and adaptors of tools
- Questions provided diagnostic evidence of student understanding of core ideas taught in the units (district need)
- Tools consistent with the curriculum developers' intentions of promoting thinking and reflection

Reflexive and Responsive to Discourse Practices

- Deliberate and strategic inclusion of home/everyday forms of language and cultural perspectives (c.f., Moschkovich, 2007; Setati, 2012; Setati & Adler, 2000)
- Support cultural and discursive connections between home and classroom (Rosebery, Ogonowski, DiSchino, & Warren, 2010)

The teachers adapted the tasks in *Accentuate the Negative* based on long-term observations of student thinking, aided by discourse moves organized around students' conjectures and algorithms. From the interactive discussions, the teachers noticed how students reasoned, which helped them identify the ways in which tasks were productive or unproductive with respect to developing coherent and sensible algorithms.

- Teachers used tools as resources to support productive adaptions
  - Socioscientific Norms to promote scientific participatory practices and sense making
  - Facets, Questions and Patterns to pay attention to the substance of students' ideas
  - Discourse Moves and Contingent Activities to respond to persistent problematic ideas

Maintain and Enhance Complexity and Engagement

- Aim at high-level engagement in practices associated with deep learning in the disciplines
- Develop positive dispositions toward rigorous disciplinary practices
- Provide avenues for broad participation in practices that acculturate students into a discipline

The teachers' adaptations enhanced the cognitive demand of the tasks by maintaining the productive ambiguity of the tasks and removing the unproductive ambiguity. The adaptations provided increased opportunities for students to make important connections and were critical to student learning.

- Teachers adapted CP approaches to give students thinking/writing time before responding to questions
- Teachers adapted questions to make content more comprehensible to English learners while maintaining academic complexity (e.g., by incorporating visual images)

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