Alignment of Technology with Pedagogical Purposes During Online Course Design

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"My course lacks interactivity and it has no point. I assumed the software would take care of that!"
Simplified design layers model

Key Propositions
(1) Core attributes in the physical affect the potential for attributes in the pedagogical layer
(2) Physical attributes alone do not directly affect learning

(Graham et al., 2014)
Context of the study

- Six courses leading to TELL Endorsement
- Need for quality TPD that provides access to resources and offers greater flexibility
- Current technology offers many innovative ways for interaction, collaboration, coaching (critical for TPD)
Context of the study – cont.

- **Effective TPD & Sociocultural Approach**
  - Learner-centered
  - Inquiry-based
  - Dialogic & Collaborative
  - Contextualized
  - Practice-oriented

- **Online Modality & Collaborative Technology**
  - Access
  - Flexibility
  - Affords reflective space
  - Potential for personalization
Purpose of the study

To explore the process of aligning technology with pedagogy during design of an online course to improve our own practice and to identify possible patterns and principles.
Methodology

Participants:
• Three professionals
• Combined ID & curriculum development experience and TPD and K-12 teaching expertise

Data:
• 20 hours of collaborative conversations recordings
• Related artifacts
Methodology – cont.

Methods:

- Part of a larger DBR project (McKenney & Reeves, 2018)
- Self-study of Teaching and Teacher Education Practices (LaBoskey, 2004; Pinnegar & Hamilton, 2009)
- Data was analyzed using standard qualitative analysis steps
- Process tracing & constant comparative analysis techniques were used (Bennett & Checkel, 2015; Corbin & Strauss, 2008; Ryan & Bernard, 2003)
- Both similarity-based and contiguity-based relationships were explored (Maxwell & Miller, 2012)
- Trustworthiness: member checks, reflexivity, and negative case analysis (Lincoln & Guba, 1985)
Findings I: Core Attributes

Core Attributes of the Pedagogical Layer

Grounded in principles of Sociocultural Theory & Communities of Practice

- Lerner-centered
- Dialogic
- Inquiry-based

- Active and collaborative participation
- Variety of interactions
- Modeling of participatory & ELL-effective practices
- Theory/practice connection
- Deep engagement through reflection
## Findings II: Main Themes

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Contiguity-based relationships (Maxwell and Miller, 2012)

- Data’s temporal and spatial proximity and sequences
- ‘Actual’ rather than ‘virtual’ connections of similarities and differences
- Require identification of relationships in its actual context
Discussion: Core Attributes

Core Attributes

- Core Theoretical Grounding
- Core Methods
- Core Strategies

Design-level
Discussion: Pedagogical Intent

- Core Methods: Selection of content- and context-specific methods and tools
- Core Strategies: Interaction, Inquiry, Dialogue, Collaboration
- Core Components: Learner, Instructor, Task Content, Task Context

Learning Task

Layers/Dimensions

Task-level
Discussion: Alignment Process

**Attention to Pedagogy**
1. Identify core design attributes
2. Establish content, goals & acceptable evidence
3. Propose suitable learning experiences
4. Determine required affordances

**Alignment of Layers (Iterative)**
1. Design the tasks and learning experiences attending to pedagogical intent
2. Adjust the tools to meet pedagogical needs and purposes
3. Evaluate against core attributes and available technology

**Attention to Technology**
1. Identify available technology & tools
2. Determine existing affordances
Implications for practice

- Alignment of technology with pedagogy is possible and feasible
- Attending to the underlying pedagogical principles, along with purposeful use of innovative technology, may improve effectiveness of instruction
- Core attributes, pedagogical intent, and the proposed alignment process are potentially valuable guiding principles for design and development of technology-mediated instruction
Implications for research

- Self-study is an effective method to study collaborative design processes
- Highlights the importance of attending to contiguity-based and not just similarity-based relationships in qualitative analysis
- Suggests the value of reflective and collaborative design practices
Study limitations

- Study is exploratory and limited in scope
- Study is context-specific (TPD for EL teachers)
- Design processes differ across different groups
Future directions

- Explore the efficacy of pedagogical intent and proposed alignment process in designing other courses.
- Investigate design practices and see how different designers use pedagogical intent and the alignment process in their work.


