How to Conduct Educational Design Research?

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Today’s session: 3 parts

• Part I: Foundations of educational design research
• Part II: Core processes
• Part III: Question, answer & discussion
Part I: Foundations of Educational Design Research (EDR)

- Definition
- Similar modes of research & synonyms
- Motives and origins
- Characterizing EDR
- Outputs
Defining Educational Design Research

...a genre of research in which the iterative development of practical solutions to complex educational problems also provides the context for empirical investigations that yield theoretical understanding that can inform the work of others.

- McKenney & Reeves, 2012
Many names

- Educational Design Research
- Design-Based Research
- Design Experiments
- Formative Research
- Development Research
Motives & origins

• From research
  – Dominant research limitations
  – Need ‘ecologically valid’ studies
  – Champion (e.g.): Ann Brown

• From practice
  – Frustration with ‘no significant differences’
  – Need usable knowledge for practice
  – Champion (e.g.): Jan van den Akker
### Pasteur’s Quadrant

<table>
<thead>
<tr>
<th>Quest for fundamental understanding</th>
<th>Quest for application</th>
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<tbody>
<tr>
<td>Pure Basic Research</td>
<td>Use-Inspired Basic Research</td>
</tr>
<tr>
<td>Bohr</td>
<td>Pasteur</td>
</tr>
<tr>
<td>This quadrant is rather sterile. But can you think of any studies that you would put here?</td>
<td>Applied Research</td>
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<tr>
<td></td>
<td>Edison</td>
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Characteristics of EDR

• Theoretically-oriented
• Interventionist
• Collaborative
• Responsively grounded
• Iterative
Two predominant orientations

• Kinds of questions asked, knowledge sought, solutions developed:
  – Research “on” interventions
  – Research “through” interventions

• Subtle distinctions are not mutually exclusive
  – Some design researchers lean more towards one type or another
  – Most long-term studies involve both orientations at some point
EDR: Outputs

• Fundamental understanding (knowledge), e.g.
  – To describe, explain, predict and/or prescribe
    • Articulating characteristics of the (type of) solution developed
    • Articulating things the solution engenders (or not)
    • Often with details on when, by whom, under which circumstances

• Applied use (solutions), e.g.
  – Products
  – Programs
  – Processes
  – Policies
Poll & discussion

• Do you think that the quest for fundamental understanding \textit{and} the search for practical applications can be successfully combined in one approach?
  – Yes
  – No
  – Unsure

• Why or why not?
Part II: Core processes

OK, this sounds nice, but what do you actually DO?

- Many models, each with different accents
- A generic model
  - Analysis & exploration
  - Design & construction
  - Evaluation & reflection
  - Implementation & spread
A brief look at 4 models

• Reeves (2006)
• Ejersbo et al (2008)
• McKenney, Nieveen & van den Akker (2006)
• Bannan-Ritland & Baek (2008)
### Predictive Research

1. Hypotheses Based upon Observations and/or Existing Theories
2. Experiments Designed to Test Hypotheses
3. Theory Refinement Based on Test Results
4. Application of Theory by Practitioners

Specification of New Hypotheses

### Design Research

1. Analysis of Practical Problems by Researchers and Practitioners in Collaboration
2. Development of Solutions Informed by Existing Design Principles and Technological Innovations
3. Iterative Cycles of Testing and Refinement of Solutions in Practice
4. Reflection to Produce “Design Principles” and Enhance Solution Implementation

Refinement of Problems, Solutions, Methods, and Design Principles
A generic model for EDR
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Analysis & exploration

• Orientation & literature
• Field study
• Exploration
Design & construction

- Exploring solutions
- Mapping solutions
- Constructing solutions
Evaluation & reflection

• Planning
• Field work
• Meaning making
Implementation & spread

• Implementation (adoption, enactment & sustained maintenance)

• Spread (dissemination & diffusion)

• Mindset: Planning for *actual use*

• Determinants of implementation & spread
Poll & discussion

• How natural or contrived would it be to conduct educational design research during your thesis work?
  – Very natural
  – Partly natural and partly contrived
  – Very contrived
  – Unsure

• Might you like to?
  – Why or why not?
EDR and MSc students: One example

• Q: Can MSc students do EDR
• A: Yes, though rarely all elements
  – Example: Within this design research PhD study,
  – 10 MSc students carried out sub-studies
Part III: Q&A, discussion

• Your questions?
• Your answers?
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