

How to Conduct Educational Design Research?

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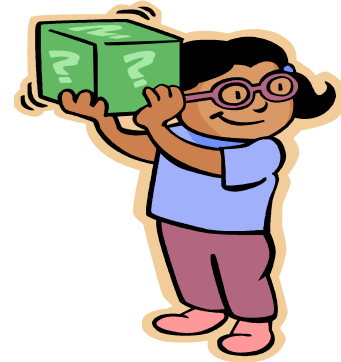
Today's session: 3 parts

- Part I: Foundations of educational design research
- Part II: Core processes
- Part III: Question, answer & discussion

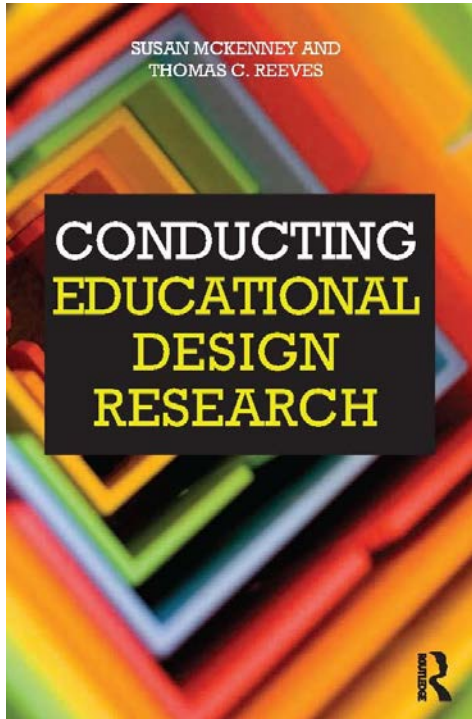


Part I: Foundations of Educational Design Research (EDR)

- Definition
- Similar modes of research & synonyms
- Motives and origins
- Characterizing EDR
- Outputs



Defining Educational Design Research



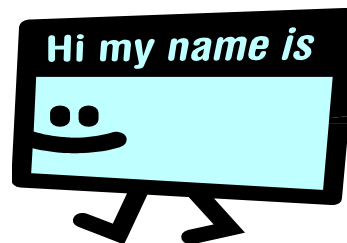
...a genre of research in which the iterative development of practical *solutions* to complex educational problems also provides the context for empirical investigations that yield theoretical *understanding* that can inform the work of others.

- *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

Quest for fundamental understanding

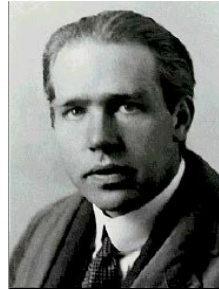
Quest for application

No

Yes

Yes

Pure Basic
Research



Bohr

Use-Inspired
Basic Research

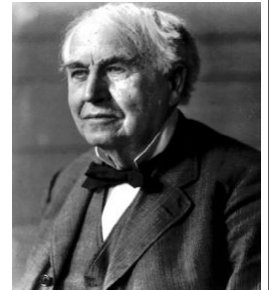


Pasteur

No

This quadrant is rather
sterile. But can you think of
any studies that you would
put here?

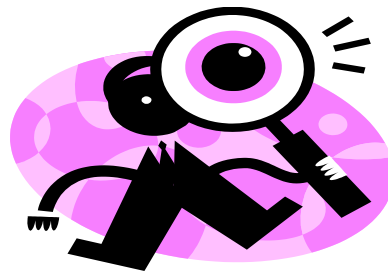
Applied
Research



Edison

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

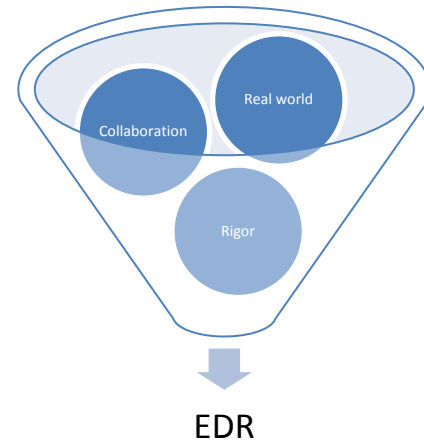
- Do you think that the quest for fundamental understanding *and* the search for practical applications can be successfully combined in one approach?
 - Yes
 - No
 - Unsure
- Why or why not?



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

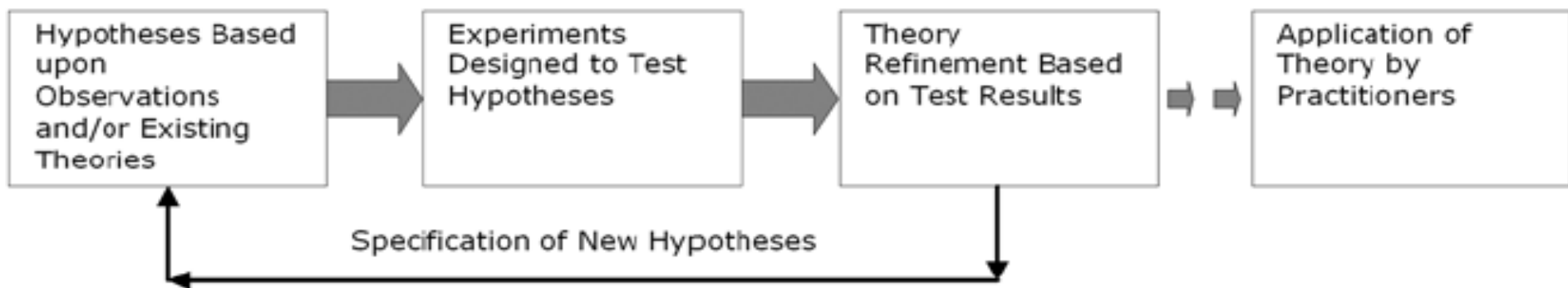


A brief look at 4 models

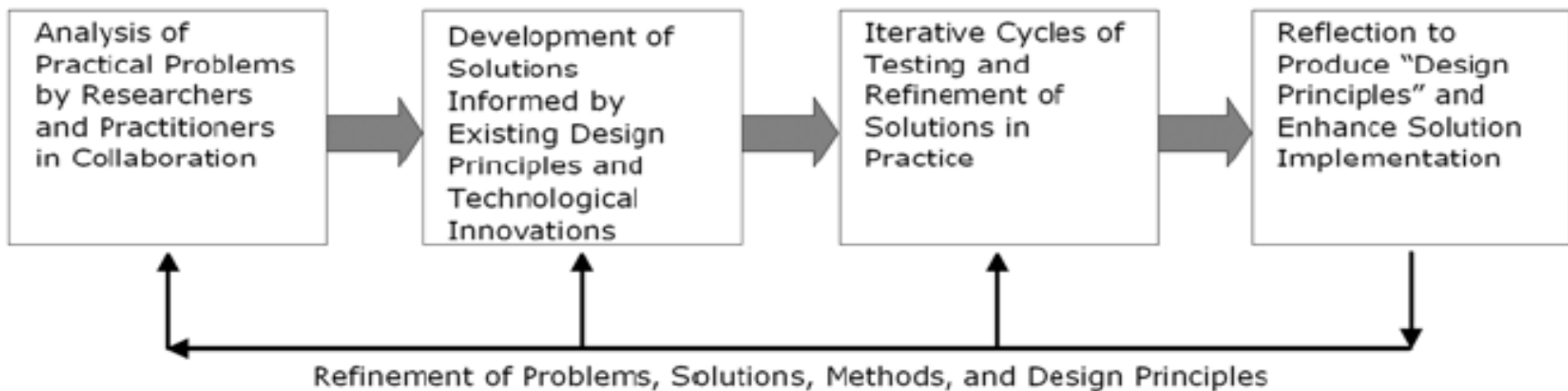
- Reeves (2006)
- Ejersbo et al (2008)
- McKenney, Nieveen & van den Akker (2006)
- Bannan-Ritland & Baek (2008)

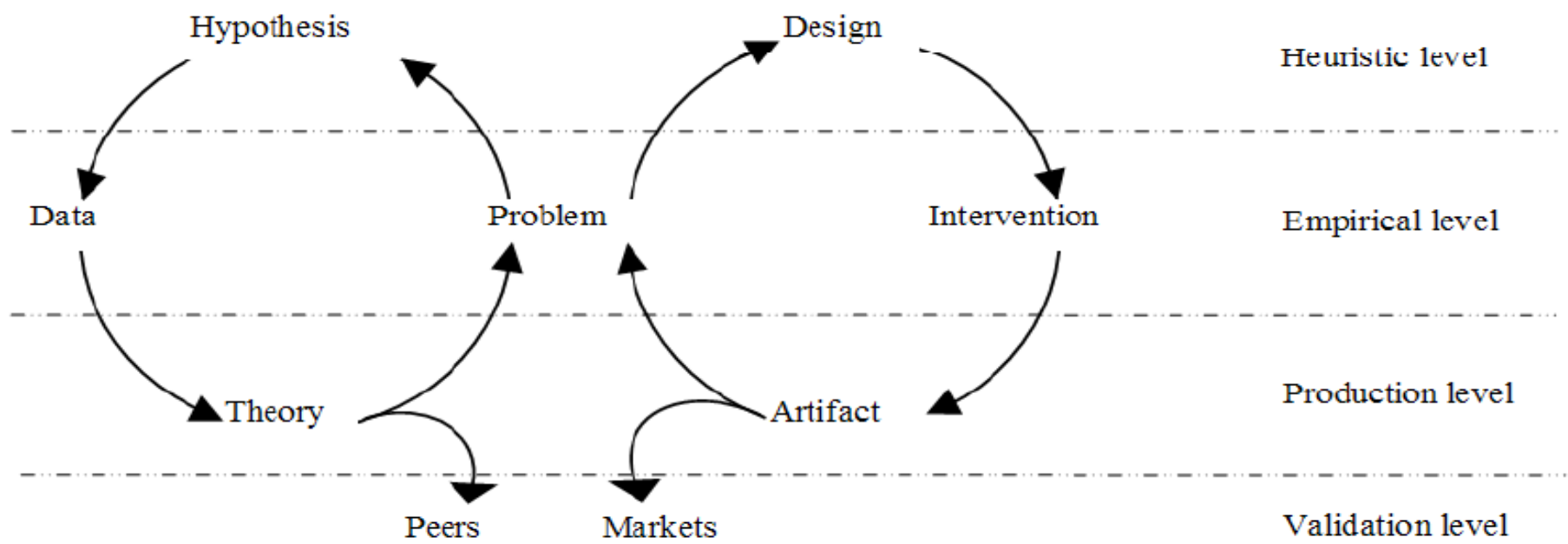


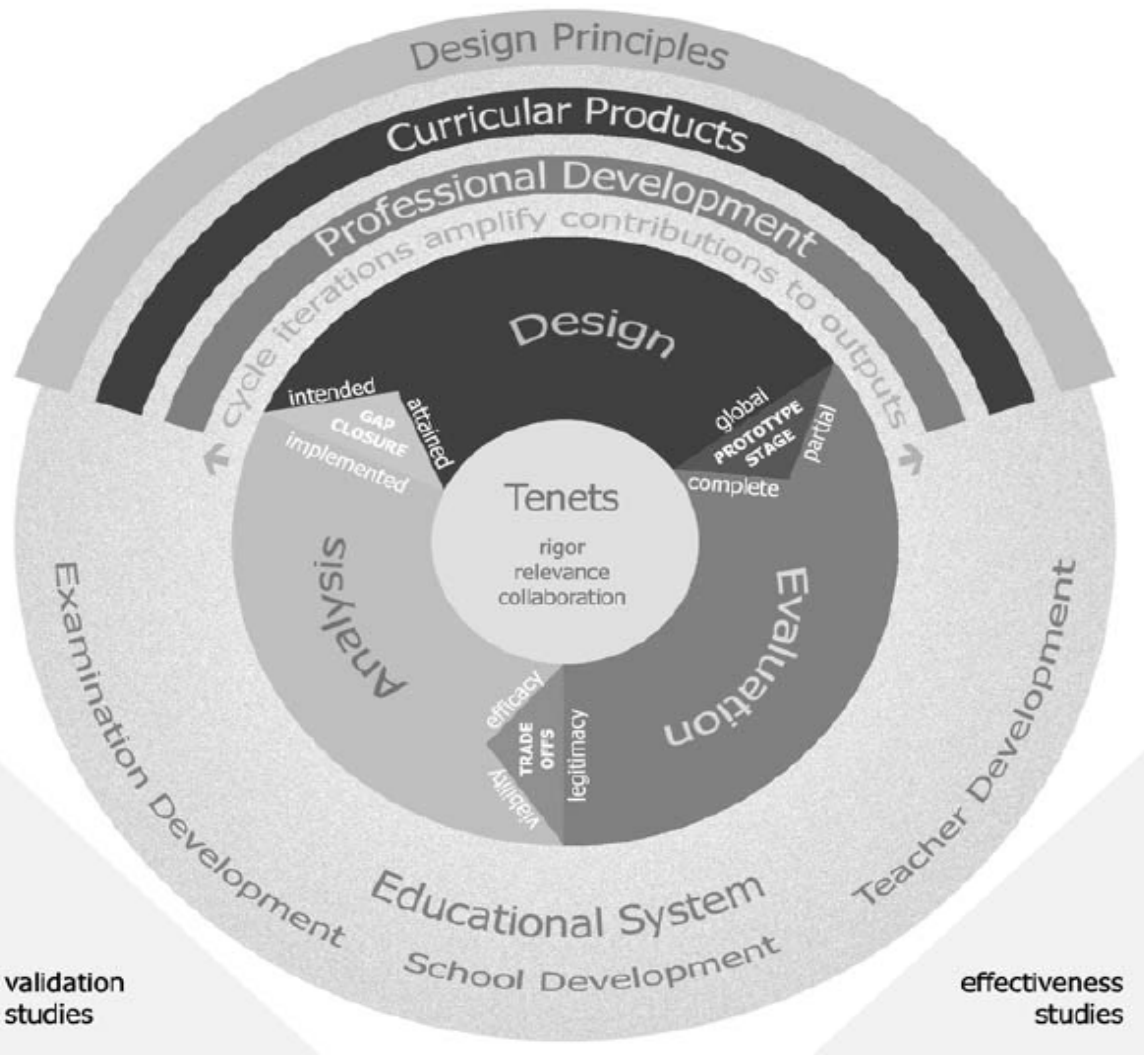
Predictive Research



Design Research





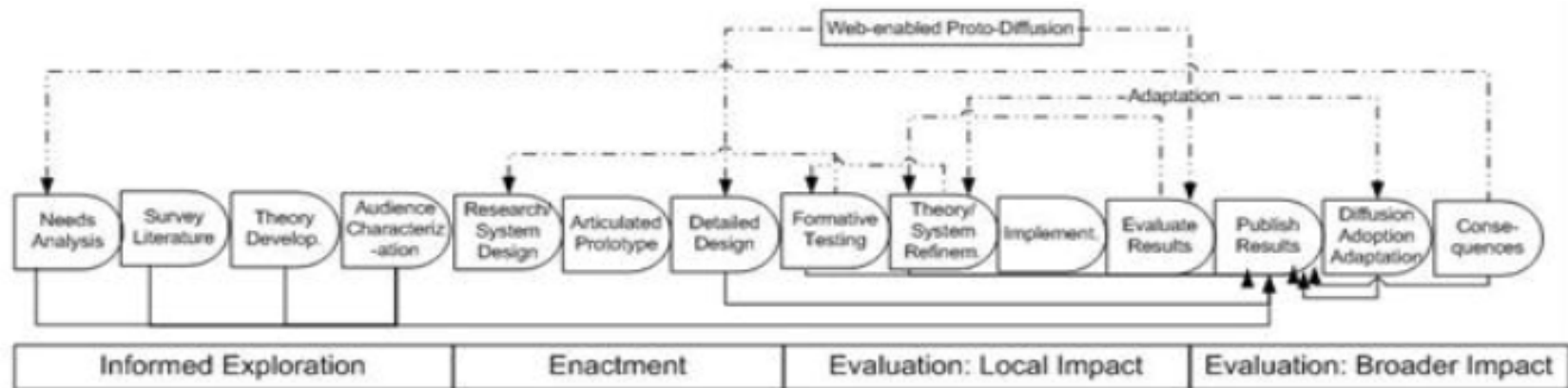


validation studies

effectiveness studies

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Guiding Questions for Research

Applicable Research Methods

<p>Questions: What are identified gaps/problems in theory, practice, and/or the marketplace? What information can be gleaned from existing data or research? How can we characterize the problem or learner need? What are the systemic social, cultural, and organizational influences or constraints on design? What are characteristics of the audience?</p>	<p>Questions: What are the learning targets for innovation? What design principles or strategies may be applicable? How to identify and operationalize cognitive and performance processes in design? To what extent does the design embody the theoretical model?</p>	<p>Questions: Is the enacted design usable, valid and relevant? Is the design instance accessible and efficient in delivering instruction or supporting learning? What is the local impact or effectiveness of the design instance? How effective is the design solution in achieving learning targets at its highest fidelity in full context?</p>	<p>Questions: What factors influence diffusion, adoption and adaption of innovation? What are the pragmatic demands of the learning environment that influences adoption of design? What policies and cultures shape participants use of innovation?</p>
<p>Methods: Benchmarking Performance/needs analysis Interviews Survey of Experts Focus Groups Observations/Role Modeling Case Studies</p>	<p>Methods: Task Analysis Contextual Analysis Designer Logs Expert Review Audience Review</p>	<p>Methods: Usability Testing Expert Review Observation or Video records Interviews Formative Evaluation Pre-post Comparative Studies Quasi-experimental studies</p>	<p>Methods: Analysis of computer log files Multi-site Interviews, Surveys and Observations Data mining Correlational studies Quasi-experimental studies</p>

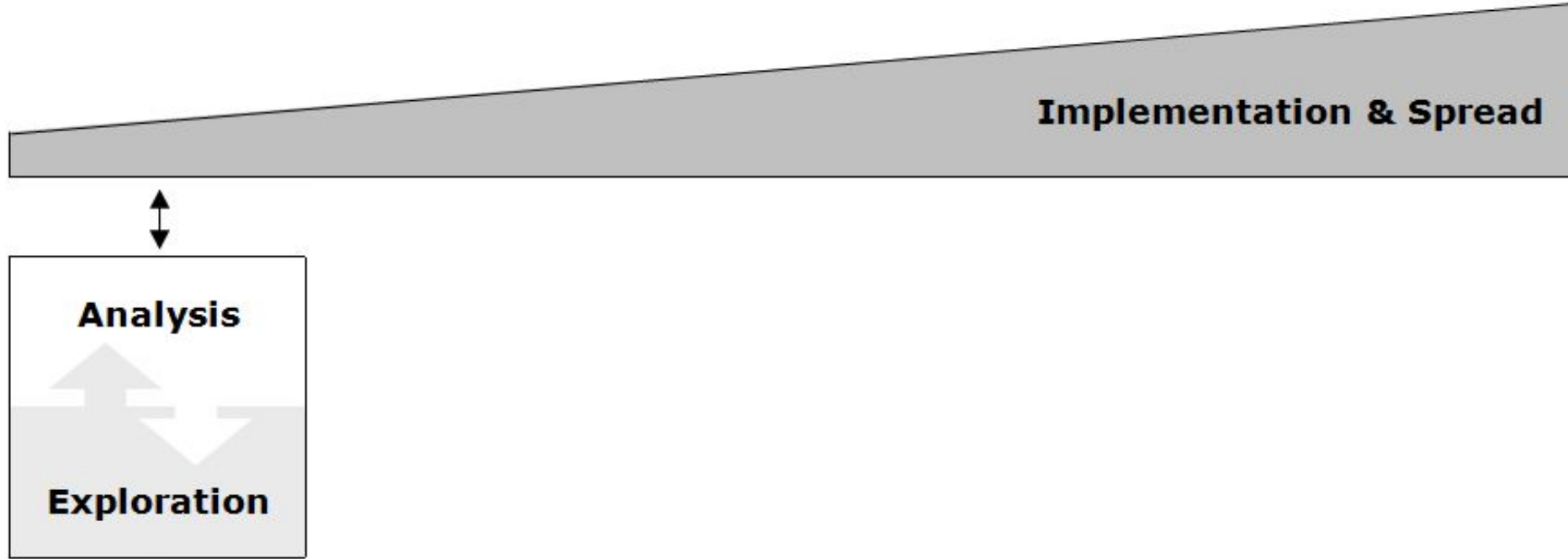
A generic model for EDR

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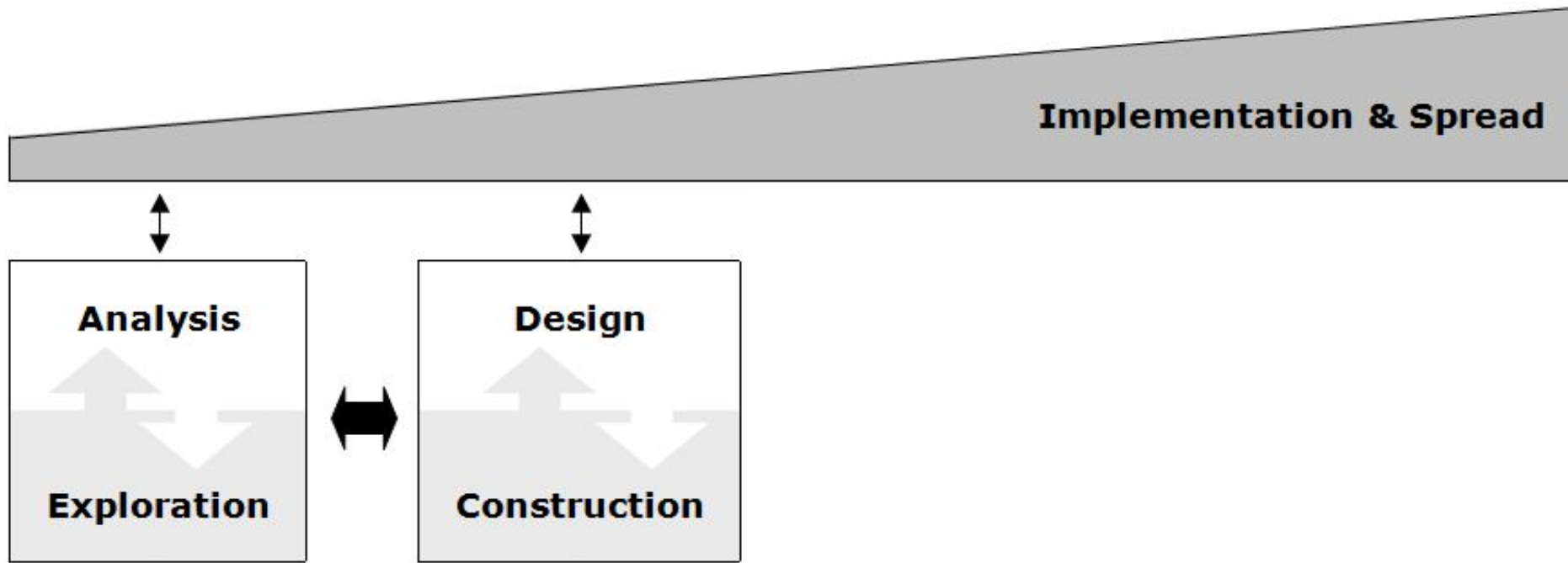


Implementation & Spread

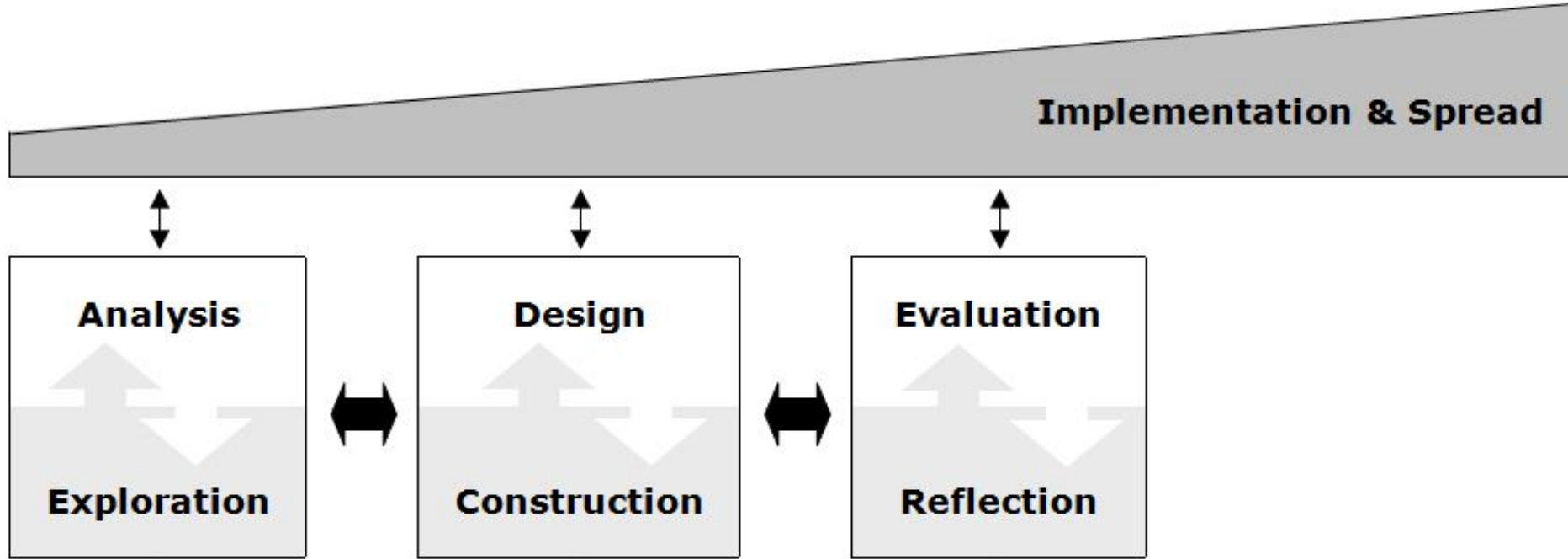
A generic model for EDR



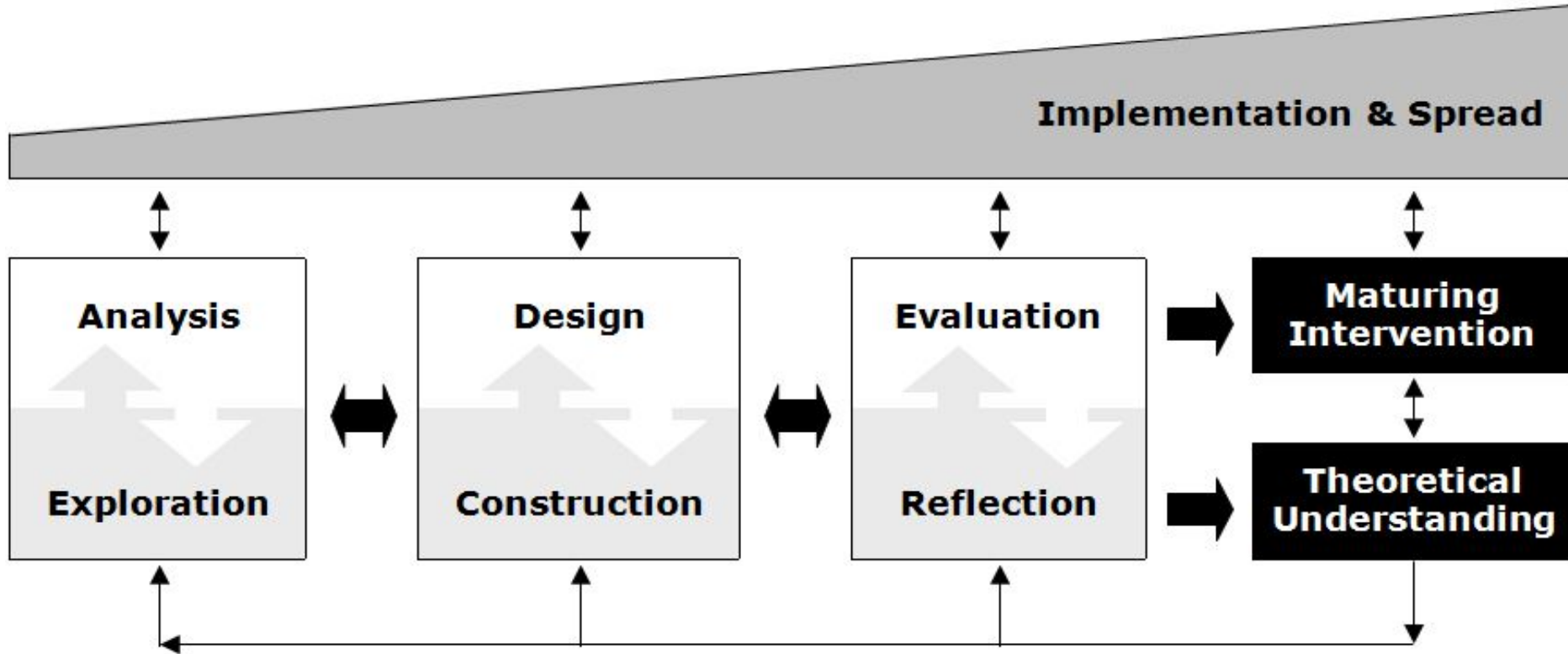
A generic model for EDR



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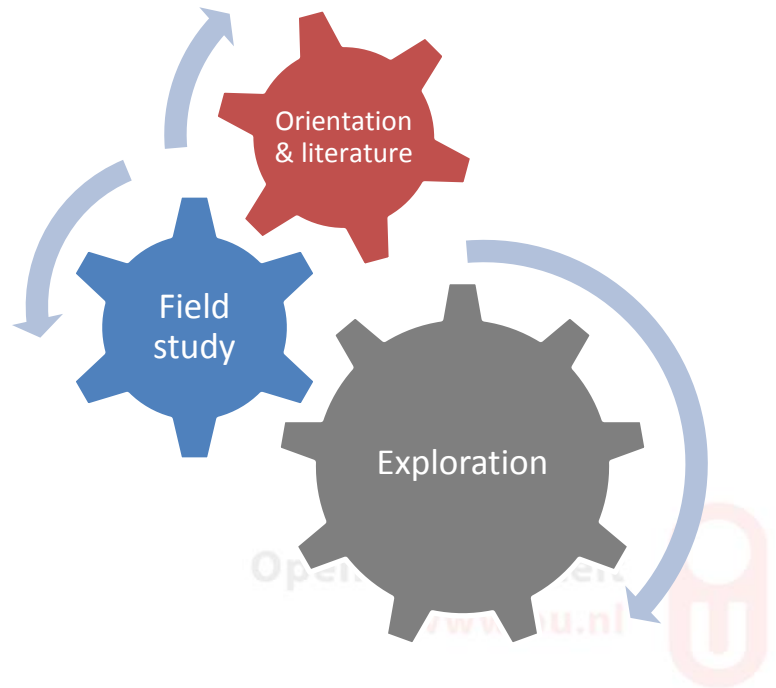


A generic model for EDR



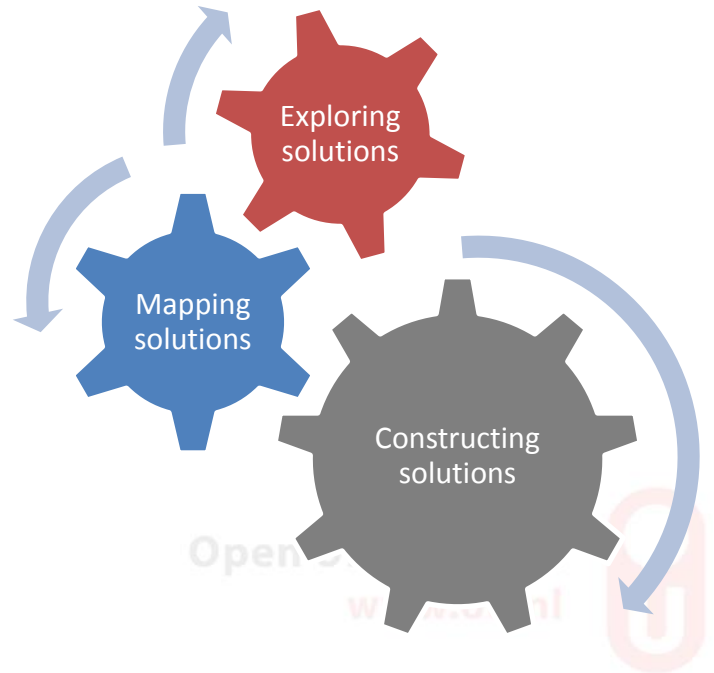
Analysis & exploration

- Orientation & literature
- Field study
- Exploration



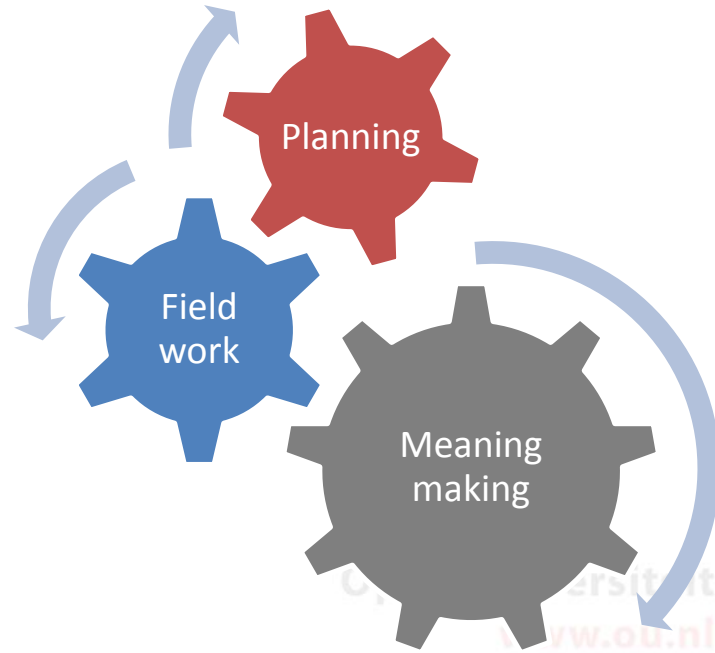
Design & construction

- 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

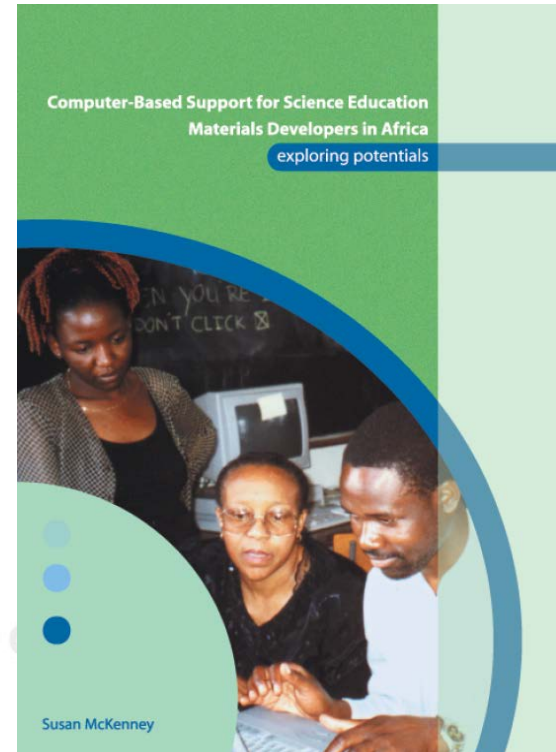
- How natural or contrived would it be to conduct educational design research during your thesis work?
 - Very natural
 - Partly natural and partly contrived
 - Very contrived
 - Unsure
- Might you like to?
 - Why or why not?



Part III: Q&A, discussion

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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