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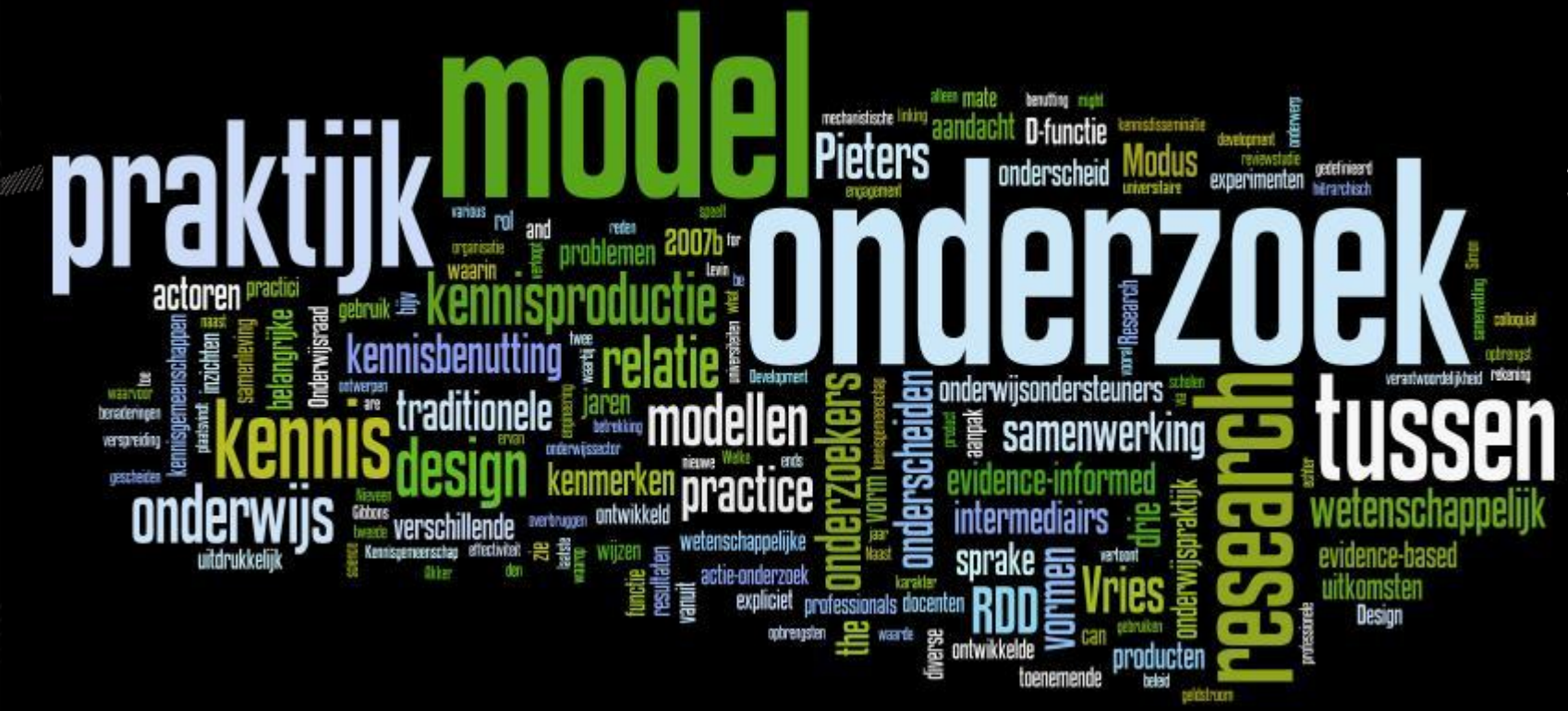


Symposium at the ORD: 9-6-2011

Introduction and background

- PROO Literature Review: *Examining Research & Development (R&D) in Education*
- Three main forms of R&D distinguished:
  - Design research;
  - Teacher communities; and
  - Research, development, diffusion (RDD)
- Focus: Characteristics and outputs of integrated R&D

Shared analysis framework

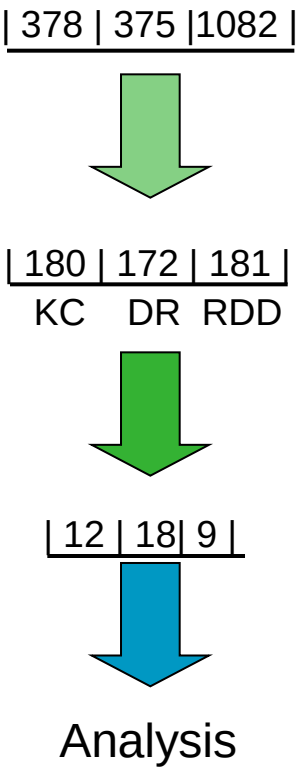
- Characteristics of 3 forms of R&D (teacher communities; design research; or rdd), with attention to:
  - Participants involved (e.g. practitioners, intermediaries or researchers);
  - Knowledge used to inform design and development
  - Outputs (e.g. new knowledge, practical contributions)

Methodology

- Search Scopus, WoK and ERIC per model
- Abstract screening: education, R&D, participants, empiricism
- Full text screening: R&D link
- Analysis

Notes:

- Search terms related to ‘R&D models’
- Time span 2008/2009: yield vs. pragmatics
- Research journals as source of information
- Only explicit R&D link



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DESIGN RESEARCH

Design research – framework

- Dual goal:
  - Knowledge production
  - Practical solution
- Process characteristics:
  - Interventionist: to improve teaching practice
  - Iterative: multiple cycles of research, development, testing and revision
  - Collaborative: researchers and practitioners involved

Design research – project descriptions

Country:	USA (10), China (2), Canada, France, Netherlands, Norway, Singapore, UK
Target:	Primary (7), secondary (3), tertiary (6), professional development (2)
Content area:	Science (7), math (3), computer science (2), health, language, teaching, history, management

Design research – participants

	Teach	Research	Develop	Facilitate
Teacher	• All	• All tertiary-level • Only three other (limited)	• Nearly all: topic, activities, ideas for redesign	• one, within same faculty
Researcher	• (Unless tertiary-level teacher)	• All	• All	• 2 teachers professional development programs
Developer			• 2: online environment; math module for upscaling	
Other		• Doctoral students	• Students: choice of topic • Others (n.s.): learning environment	

Design research – knowledge base

- Development based upon (reported):
  - Literature (11)
    - Usually: ‘adapted’, but hardly specified how
  - project data (15)
  - practical knowledge (6)
- 6: one knowledge source
- 2: all three

Design research - knowledge production

- Public knowledge
  - Empirical data (18): user experiences, learning gains, teaching and learning practices.
  - Procedural/declarative (9): design changes and rationales
  - Generalizations (9): principles, theory, lessons learned
- Private knowledge (1): what the participants learned
- Dissemination:
  - Journals, thesis (12)
  - Project website (3), meetings & conferences (3)

Design research – Conclusions

- Large variety in topics and level
  - Usually up to 5 teachers, up to 3 researchers
- Teachers and researchers: designing collaboratively
  - Few professional developers involved
  - Teacher-researchers: in tertiary education
  - Other teachers: little involvement in knowledge construction & dissemination
- Little room for detailing design choices, changes and theory

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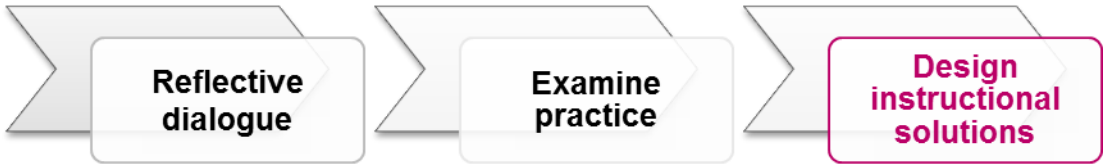
TEACHER COMMUNITIES

Teacher communities – Framework

- TC as an *overarching concept* (PLC, inquiry communities, CoP, action research)
- Two generic goals:
  - ***Improve practice*** (and hence student learning)
  - ***Professional development*** (use/share/generate knowledge)
- Underlying assumptions:
  - Teachers are “producers or mediators” of knowledge (Richardson, 1994)
  - R-P connections are not unidirectional, but reciprocal and intricate
- Various activities



Teacher communities – Project descriptions

	Content-based professional development projects	Inquiry-based professional development projects	Action research projects
Goal:	Support the implementation of an instructional framework	Engage teachers in systematic inquiry	Address a specific problem identified in teachers' practice
Country:	USA / Canada	USA / Canada	Varied (Cyprus, New Zealand, Canada, Greece, Spain)
Target:	In-service Primary school teachers	In-service Secondary school teachers	(mostly) Primary school teachers
Content area:	Science / literacy	Maths/Science/Literacy	Inclusive education/maths/science
Number of TC involved:	More than one	More than one	One

Teacher communities – Participants

TEACHERS

DESIGNER

LEARNER RESEARCHER

UNIVERSITY RESEARCHERS

RESEARCHER

DESIGNER OF PD

FACILITATOR

SCHOOL SUPPORT

(E.g., *science coordinator, resource teachers, principal, etc.)*

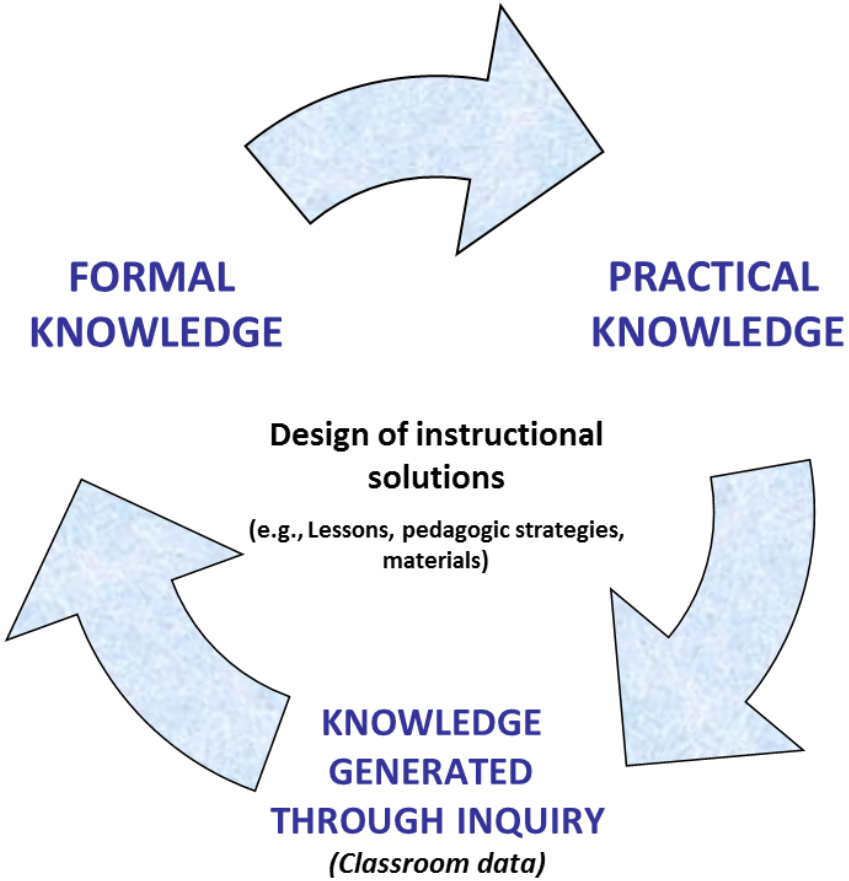
FACILITATOR

CONTENT EXPERTS

(E.g., science *Ph.D. students, experienced teachers, etc.)*

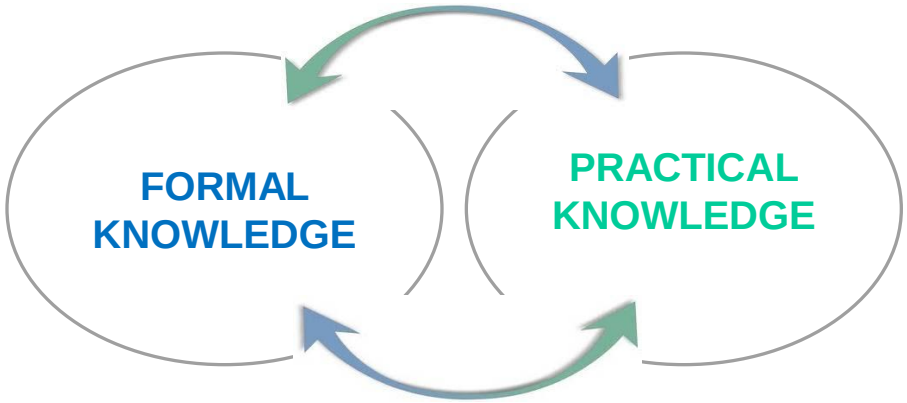
Teacher Educator / FACILITATOR

Teacher communities – Knowledge base

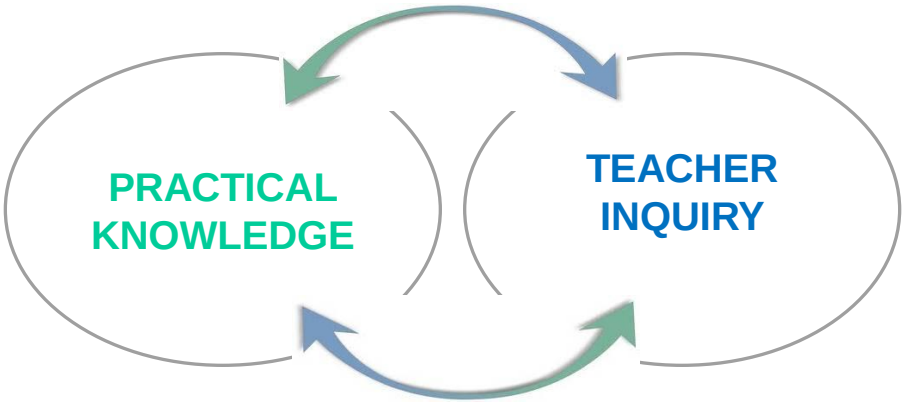


Teacher communities – Knowledge base

Orientation 1:



Orientation 2:



Teacher communities – Knowledge (re-)creation

- Nature of findings reported:
  - Case studies – Unit of analysis: individual teachers / community
  - (Mostly) University researchers' perspectives on the TC
  - Findings tightly bound to the context and presented as "lessons learned"
  - Themes: contributions of PD or AR to teacher learning / practice

- Initiatives for dissemination outside the TC ***(mostly in PD projects)*:**
  - Academic circuit: scientific publications/ conferences
  - Professional circuit: school presentations / professional conferences

Teacher communities - Conclusions

- Nature of R-P connections revealed ***rich variations*** across projects.
- The ***facilitator role*** (adopted by university researchers or content experts) is central for strengthening R-P connections.
- The two orientations identified might be limited by the ***emphasis*** they give to teacher knowledge over teacher inquiry or vice-versa.
- (Surprisingly) the role of ***teachers as co-constructors of knowledge*** and theorizers is not discussed.

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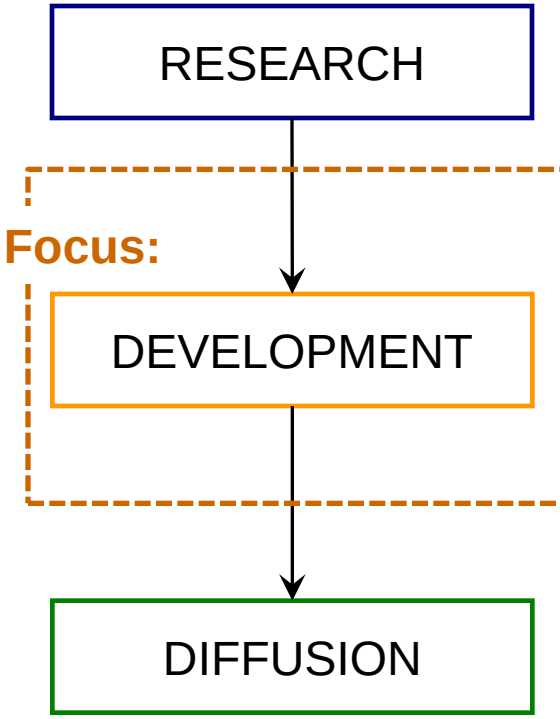
RESEARCH, DEVELOPMENT, DIFFUSION

RDD – Framework



- Aims at advancing knowledge.
- Provides the basis for an innovation.

Focus:

- **Design**: Translation of research knowledge into an educational solution suitable for use.
- **Evaluation/testing**: feasibility, generalizability, performance

- **Dissemination**: spread the innovation, create awareness
- **Adoption:** trial, installation and institutionalization

RDD – Project descriptions

	Model/Guideline projects	Health promotion projects
Goal:	Assist teachers in the design of instructional activities.	Prevent eating disorders / Promote physical activity
Country:	USA / Canada / Netherlands	USA / Netherlands / Germany
Target:	University programmes High schools	Primary schools Pre-schools
Content area:	Varies (Cartography, pediatric residency, mathematics)	Physical Education

RDD – Participants

RESEARCHERS	CONTENT SPECIALISTS	TEACHERS
• **Co-design** the educational solution. • **Asses** the quality, utility, feasibility and effectiveness of the educational solution. • (Sometimes) Act as **trainers** or **facilitators**.	• Assist in the **design** process. • Assist with **data collection.** • Provide **advice** to teachers during implementation.	• Contribute to the **design** process (feedback). • **Implement** the educational solution designed by the project team. • (Sometimes) Assist with **dissemination.**

RDD – Knowledge base informing design

	Author	Sources informing the design of educational solutions			
		Research literature	Data from needs assessment	Pilot study/ formative evaluation	Expertise Multidisciplinary team
Educational Model/ Guidelines	Balram & Dragicevic	△	△	•	
	Kittredge et al.	△	△	△	△
	Stone, Alfed & Pearson	△		•	△
	Mooij	△		•	
Prevention/ Health promotion program	Berger et al.	△		△	
	Jurg, et al.	△		△	•
	Jansen et al.	△		•	
	Carlson et al.	△	△	△	•
	Williams et al.	△		△	•

△ Explicitly acknowledged influence in the design process • Highly probable influence in the design process

RDD – Adoption, implementation & dissemination

TEACHER OWNERSHIP

- Involvement in design activities (proactively or reactively)

PROFESSIONAL DEVELOPMENT

- Workshops, coaching, demonstration, exemplary materials

AWARENESS

- School meetings, newsletters, walking interventions

RDD – New knowledge production

- The nature of the findings reported varies depending on the ***stage of the development process*** (e.g., pilot implementation, effectiveness study, dissemination).
- Overall, findings are mainly concerned with the utility, adequacy and feasibility of the educational solution.
- (Usually) considerations about further dissemination and/or scaling up are addressed.

RDD – Conclusions

- Most projects were conceived from the mindset of working at scale.
- In most cases, multidisciplinary teams were involved in the development process.
- Projects spent (at least) 2 years in the development process.
- Data from needs assessments and pilot studies was used formatively to refine the intervention.

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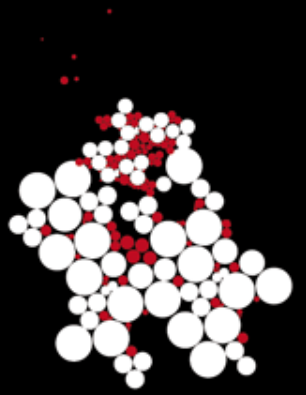
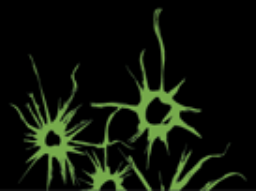


GENERAL CONCLUSIONS



Conclusions

- Participants: Multiple roles
  - Teachers: (co-) designers, researchers, implementers...
  - Reseacrhers: designers, teacher educators, facilitators...
  - Content experts / Specialists: (co-)designers, facilitators....
  - Multi-disciplinary teams strongest in RDD, then DR, then TCs
- Knowledge informing design:
  - almost all use (research) literature; most use project data; Many use practical expertise
- New knowledge production: primarily public in DR (but often also local); primarily local in TCs; mostly limited to effectiveness and conditions for dissemination in RDD

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Thank you!

Now let's hear what our discussants and audience have to say about all this…