Computing Education Research Datavetenskapens Didaktik

Investigating the Discipline

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Lecture Outline

- What is CER?
  - Views and discourse
  - Development of a common understanding
- Taxonomization
  - Why?
  - How?
  - Implications?
- Important literature

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What is Comp. Ed. Research?

- Not an easy question to answer!
- A number of competing definitions.
- Hints in the disciplinary discourse?

Goldweber et al. [1]

- Four disparate views
- CER as:
  - Practitioner's practice (Goldweber)
  - Related to Education (Clarke)
  - Diversity of endeavour (Pears)
  - Noticing phenomena (Fincher)

Fincher and Petre [2]

A classification based on investigative focus

1. Student understanding
2. Animation, visualization and simulation
3. Teaching methods
4. Assessment
5. Educational technology
6. Transferring professional practice into the classroom
7. Incorporating new developments and new technologies
8. Transferring from campus-based teaching to distance education
9. Recruitment and retention
10. Construction of the discipline

Valentine [3]

- CER as type of endeavour
  - Marco Polo: Focus on describing experiences and observations related to applying a method, tool, or language in a specific institution or course.
  - Tools: Focus on new software and/or hardware for assisting learning. Typical examples include visualization and assessment tools, as well as learning environments.
  - Experimental: A "scientific" approach to evaluating the effect of "treatments" on students.
  - Nifty: Novel ideas for teaching or supporting learning in a specific (usually small) context.
  - Philosophy: Addressing a general issue in computing education intending to stimulate further debate.

Simon [4]

- 4-dimensional scale
  - Topic (Ability, Research, Assessment, Cheating, ...)
  - Context (Broad, Capstone, Hardware ...)
  - Nature (Position, Report, Analysis, Expt.)
  - Scope (Subject, Prog./Dept., Inst., Multi-Inst., N/A)

Aims of a Literary Taxonomy

- Separates and illustrates diversity based on key characteristics

- Provides a mechanism for evaluation and interpretation of contributions

- Stimulates discussion

Dimensions [4]

- Classify on two dimensions related to "contribution to the field".

    - Scope
    - Nature

Scope

A) Teaching, Learning and Assessment

B) Educational Settings

C) Problems and Solutions

D) Discipline of CER

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Nature

- Influential – widely recognised as significant
- Seminal – helps to define a new area or topic
- Synthesis – analyses/syntheses in areas of CER

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A Classification

Area	Category		
	Influential	Seminal	Synthesis
Indiv. Study			
Institution			
Problem			
CER			

A Literary Corpus

- To illustrate the application of the classification system

- Provides an annotated general reading resource for people entering the field of CER

- Engenders discussion on the merits of individual publications

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2. S. Fincher and M. Petre. Computer Science Education Research. Routledge Falmer, January 2004

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