

What's in a Publication: The Bleeding Edge of Computing Education Research

Arnold Pears
CeTUSS



Presentation

- ♦ Defining CER
 - ♦ Views and discourse
 - ♦ Towards a common understanding?
- ♦ Valuing CER
 - ♦ What to we value?
 - ♦ How and why do we value it?
 - ♦ Implications?
- ♦ Trends and Stratification



What is Comp. Ed. Research?

- ♦ Who is it who defines CER?
- ♦ Can the disciplinary discourse help us?



Goldweber et al. [1]

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



Valuing the Literature

- ♦ How do we discern the key aspects of a contribution?
- ♦ Taxonomies are one approach
 - ♦ Separate and illustrate diversity based on key characteristics
 - ♦ Provide a mechanism for evaluation and interpretation of contributions
 - ♦ Stimulate and guide a structured meta-discourse



Fincher and Petre [2]

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.



Exploring "contribution" [4]

- ♦ Classify on two dimensions related to "contribution to the field".
 - ♦ Focus – the intent behind the investigation
 - ♦ Nature – what type of contribution is made
- ♦ What values might we define along these dimensions?



Investigative Focus

- A) Teaching, Learning and Assessment
- B) Educational Settings
- C) Problems and Solutions
- D) Discipline of CER



Nature

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



A Classification

	Nature		
Focus	Influential	Seminal	Synthesis
Teach/learn/assess			
Institution			
Problem			
CER			



The Need for a Literary Corpus

- ♦ Illustrates the application of a set of accepted values
- ♦ Provides an annotated general reading resource for people entering the field of CER
- ♦ Engenders discussion on the merits of individual publications
- ♦ Is a vital stage towards establishing the common understanding central to a "community of practice"[7].

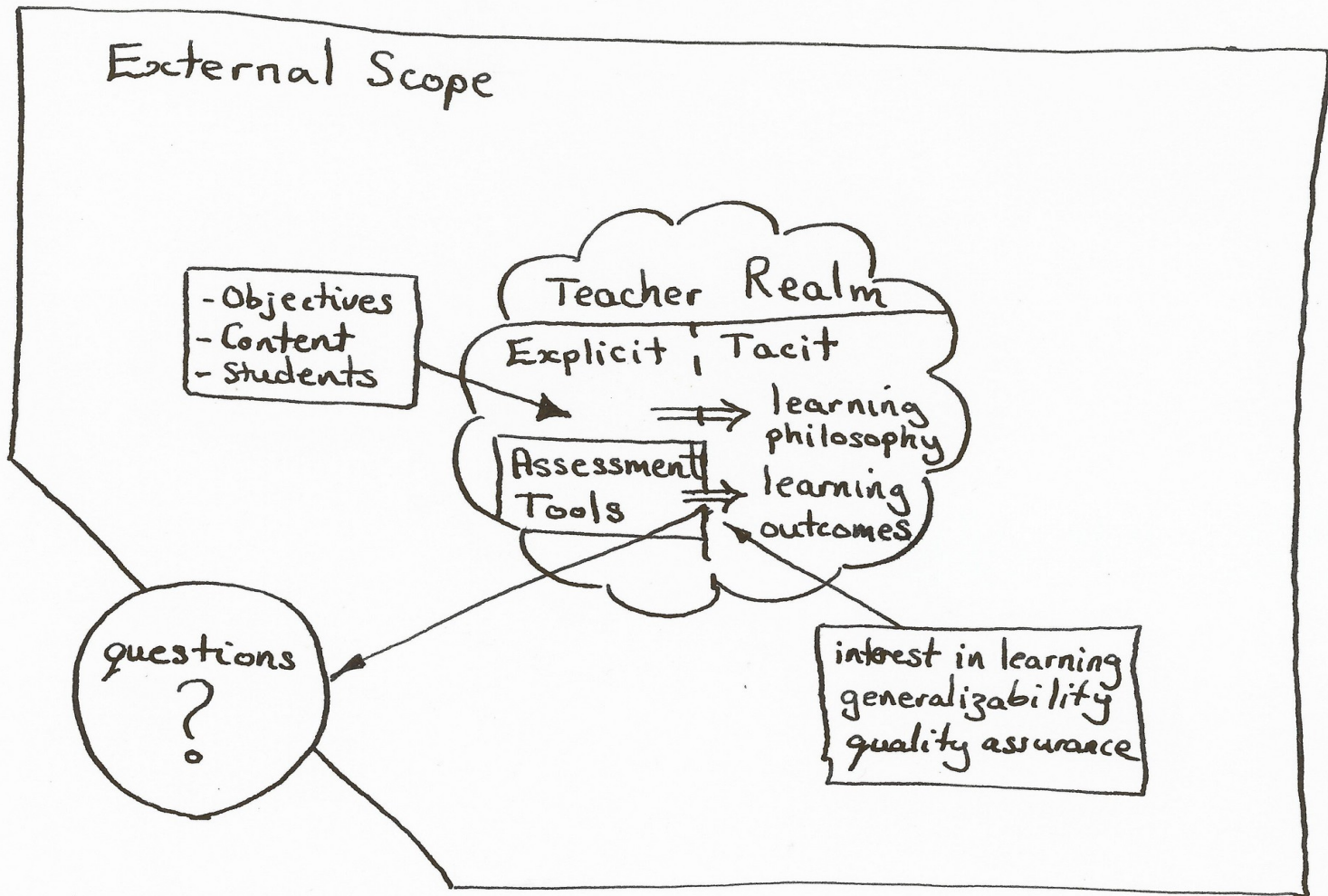


Research Method and CER

- ♦ CER as an emerging discipline has no implicitly accepted research tradition
- ♦ One has a concomittantly increased responsibility for full disclosure both in research approach and analysis methodology

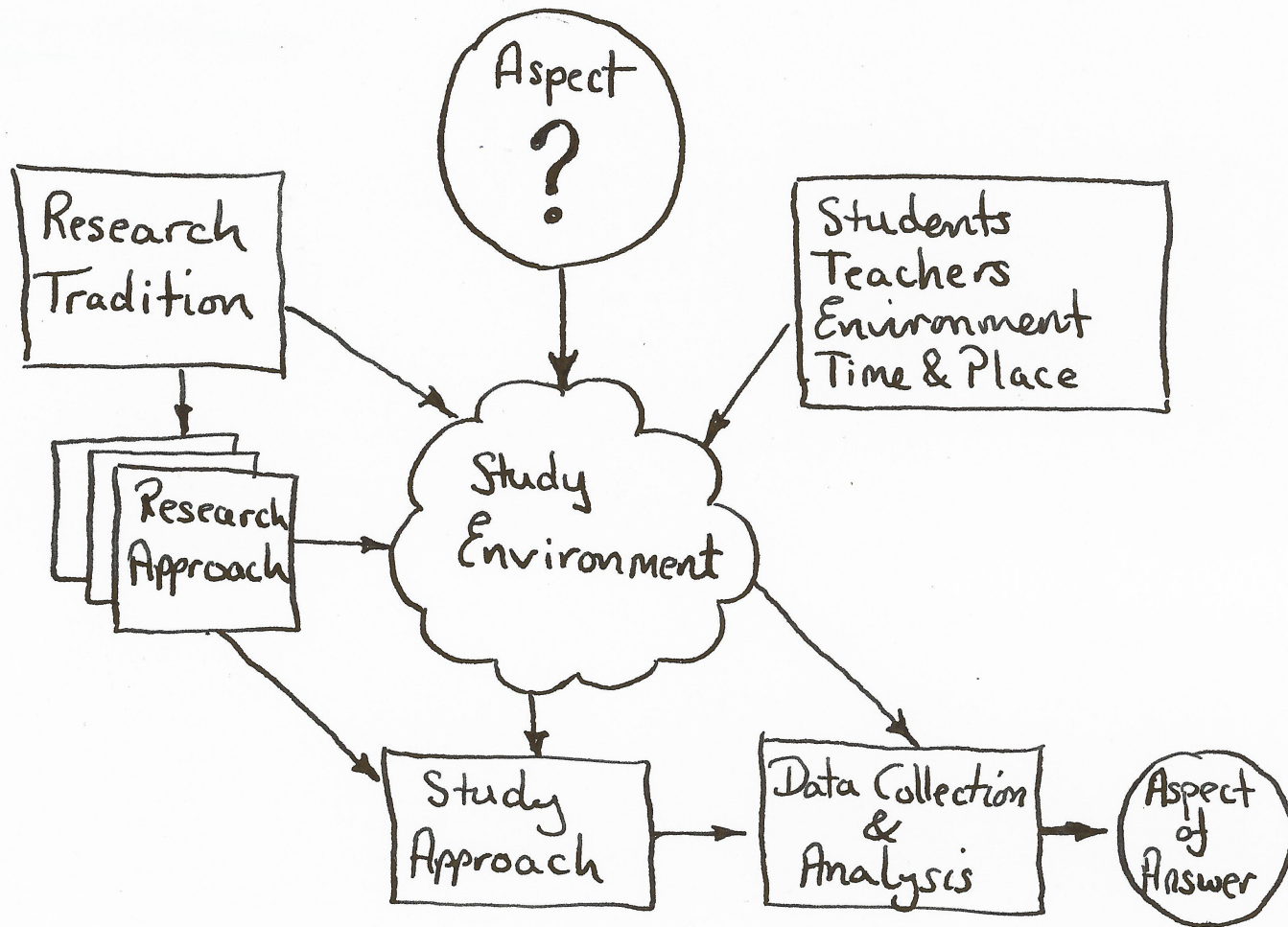


Who does the research?





What comprises a study?





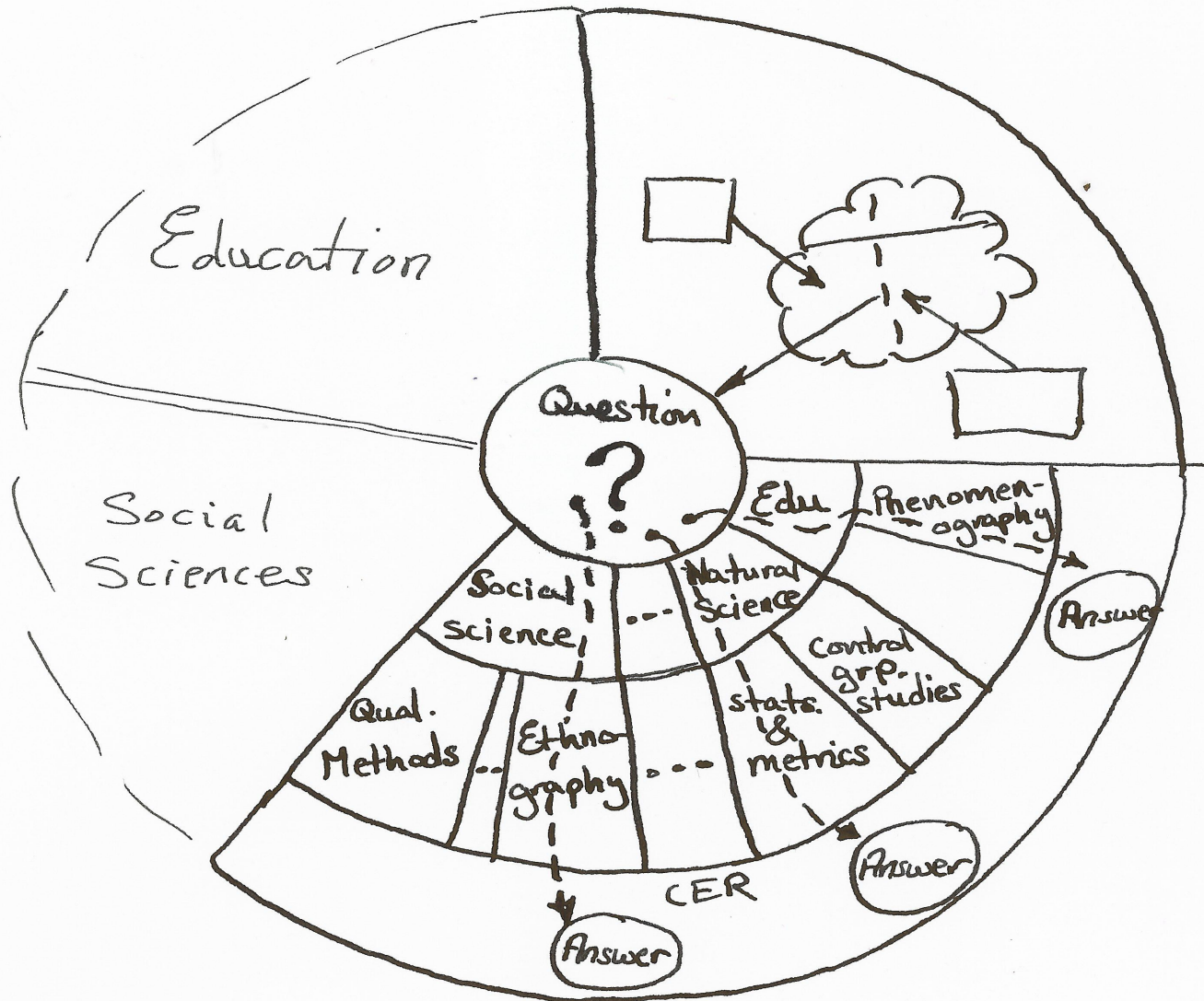
Relevance and Validity

- ♦ What are appropriate approaches to conducting CER studies then?
 - ♦ Lister[8], mixed methods
 - ♦ Ben-Ari et al.[9], action research, cognitive theory, phenomenography, socio-cultural
- ♦ Can we formulate a more general framework?



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Designing Investigations





Trends

- ♦ Qualitative methods
- ♦ Increasing acceptance
- ♦ Increasing activity
 - ♦ PhiCER I and II
 - ♦ Workshops on qualitative methods

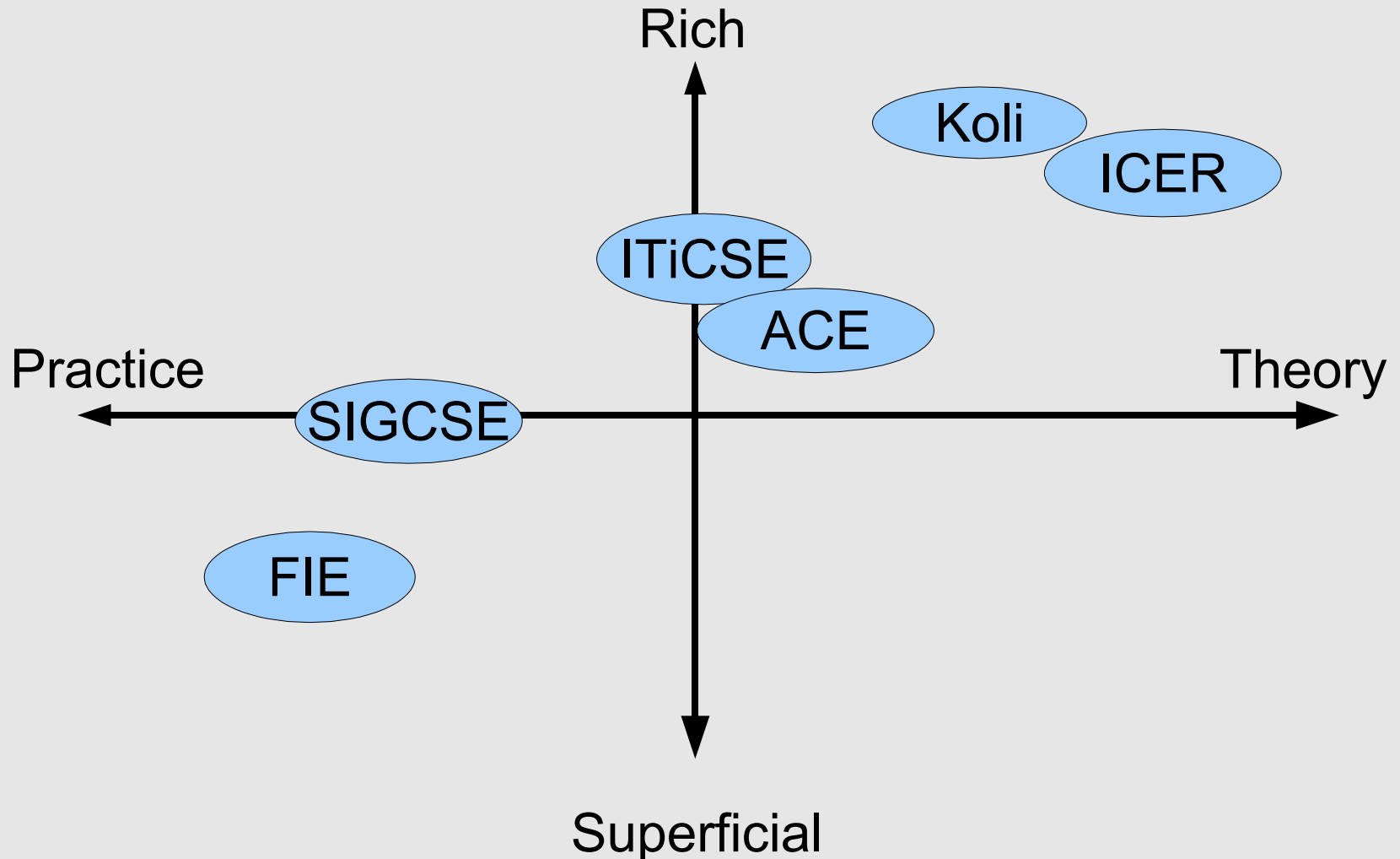


Stratification

- ♦ ACM
 - ♦ SIGCSE, ITiCSE, ICER
- ♦ IEEE
 - ♦ FIE
- ♦ ASEE conferences
- ♦ National
 - ♦ Koli Calling, ACE, NCCAQ



Choosing a forum





So what is our mission?

- ♦ as individuals?
- ♦ as a community?



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- [8] Lister, R. 2005. Mixed methods: positivists are from Mars, constructivists are from Venus. *SIGCSE Bull.* 37, 4 (Dec. 2005), 18-19. DOI= <http://doi.acm.org/10.1145/1113847.1113857>
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Conferences

- ♦ Axis 1= Practice – Theory
- ♦ Axis 2= Superficial – Rich
- ♦ Colour = exclusivity?