

‘Look who’s talking’: the place of educational research in promoting interdisciplinarity

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Overview

- Disciplines, definitions and debates
- Success in interdisciplinary research
- Educational and interdisciplinary research
- Doing interdisciplinary research
- Some future predictions

Disciplines, definitions and debates

The problem

- As researchers we 'see the world differently'
- Epistemological and ontological assumptions vary hugely
- Methods differ from one discipline to another
- We don't always speak the same language
- We use the same language to mean different things
- We have strong disciplinary allegiance

01 Dave: We could actually do the analysis of variance of the time series
02 (if the xxxx are good)
03 Joan: Yeah!
04 Dave: (xxx) make any difference
05 Doug: No
06 (4.0)
07 Joan: As [long as it's not] a problem when we publish it that's=
08 Dave: [(It'd be good.)]
09 Joan: =what- [(we'd need.)
10 Lucy: [They're unlikely to read it back.
11 (1.0)
12 Joan: Exactly. I mean [certainly] if a biologist reads it they won't=
13 Lucy: [It's okay]
14 Joan: =even think about it. But (2.0) if a statistician reads [it
15 Doug: [If a
16 statistician reads it they'll (.) tell you it's wrong to the analysis
17 (and xxxxx) theory
18 (0.5)
19 Dave: Mm
20 Joan: Well it is [a standard] (xxx) condition [(xx xxxxx)
21 Doug: [It assume-] [It assumes that the
22 time question...

Defining interdisciplinarity

‘Interdisciplinary research is any study or group of studies undertaken by scholars from two or more **distinct scientific disciplines**.

The research is based upon a **conceptual model** that **links or integrates theoretical frameworks** from those disciplines, uses study design and **methodology that is not limited to any one field**, and requires the use of perspectives and skills of the involved disciplines throughout multiple phases of the research process.’

(Aboelela et al 2007:341)

‘Interdisciplinary research is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice.’

(National Academy of Sciences 2005: 2)

‘Within the broadest possible sense of the term, I take interdisciplinarity to mean any form of **dialogue or interaction between two or more disciplines**: the level, type, purpose and effect of this interaction remain to be examined.’

(Moran 2010: 14)

‘Transdisciplinarity’

‘Using a culinary metaphor, a disciplinary dish consists of only one food—a potato, for example. If we add steamed carrots and sautéed peas to the potato, we have a multidisciplinary or cross-disciplinary dish. For the dish to be interdisciplinary, the vegetables have to be integrated, cooked together into a soup or tossed into a salad. To become transdisciplinary, the individual ingredients would have to be no longer identifiable; for example, if all of the cooked ingredients for a soup were put through a blender, we would have a transdisciplinary soup.’

(Strober 2011: 16)

Broad v. Narrow

‘narrow interdisciplinarity’, where the disciplines involved have compatible methods, epistemologies etc.

‘broad interdisciplinarity’, where there is no such compatibility (e.g. sciences and humanities).

Klein (2005: 63)

Why interdisciplinary?

- To solve 'real world problems' (c.f. C-19)
- To investigate old problems in a new way
- 'Hot topics' are often interdisciplinary: nanotechnology, AI, neuroscience, conflict, terrorism, etc
- Funders often prioritise interdisciplinary research
- To advance theory, knowledge or method

**Success in interdisciplinary
research**

Common factors

(Choi and Richards 2017)

Contextual:	• Adequate economic and symbolic capital (Klein 2005: 78) • Institutional support structures • Availability of external funding • Adequate career opportunities
Intellectual:	• Conceptual foundations for developing new knowledge • Basis for establishing common ground • Complementarity of skills and knowledge • Ability to assess quality of outputs
(Inter)Personal:	• Group-centred orientation • Ability to establish a common language • Mutual respect • Willingness to engage with different perspectives

‘respect for the scientific process and importance of collaborative research; identifying interesting topics; management, focus, and editing of work; and the ability to make mistakes gracefully.’

Aboelela et al. (2007: 334)

...each participant in interdisciplinary collaborations must value diversity, develop the capacity for self-assessment, work towards understanding one's own disciplinary culture, and be sensitive to the dynamics inherent when cultures interact. Additionally, members of any interdisciplinary endeavour must be cognizant of power dynamics at play and avoid such things as tokenism, informal hierarchies, and disciplinary policing. Through awareness of one's own disciplinary culture and sensitivity to others, interdisciplinary research and practice may provide creative solutions to important problems.

(Reich and Reich 2006: 51)

Educational and interdisciplinary research

Why educational research?

- Long tradition in understanding difference and diversity
- Process is often seen as being as important as product in educational research
- Wide range of ontological and epistemological traditions make it flexible and adaptable
- Issues relating identity, agency, context and so on are central to our field
- To raise the visibility of our work

Collaboration depends on interaction

‘I have sort of been driven outside of my department to look for people to interact with because my colleagues are not interested in interacting. [That] is my perception. . . . If I came into a department where people were interested in interactions among biologists, I may never have set foot outside the department. It’s hard for me to tell. But this is—of departments—one of the worst in terms of people interacting with the rest of the campus. Most of my colleagues are not known—even people who have been here for thirty years aren’t known to the rest of the campus.’

(Lattuca 2001: 174)

By its very nature, an interdisciplinary project is collaborative, bringing together representatives of different disciplines and depending for its success on their ability to work together. The importance of this is brought out clearly in the description of interdisciplinary research proposed by Bridle et al. (2013: 23):

Bridle et al 2013

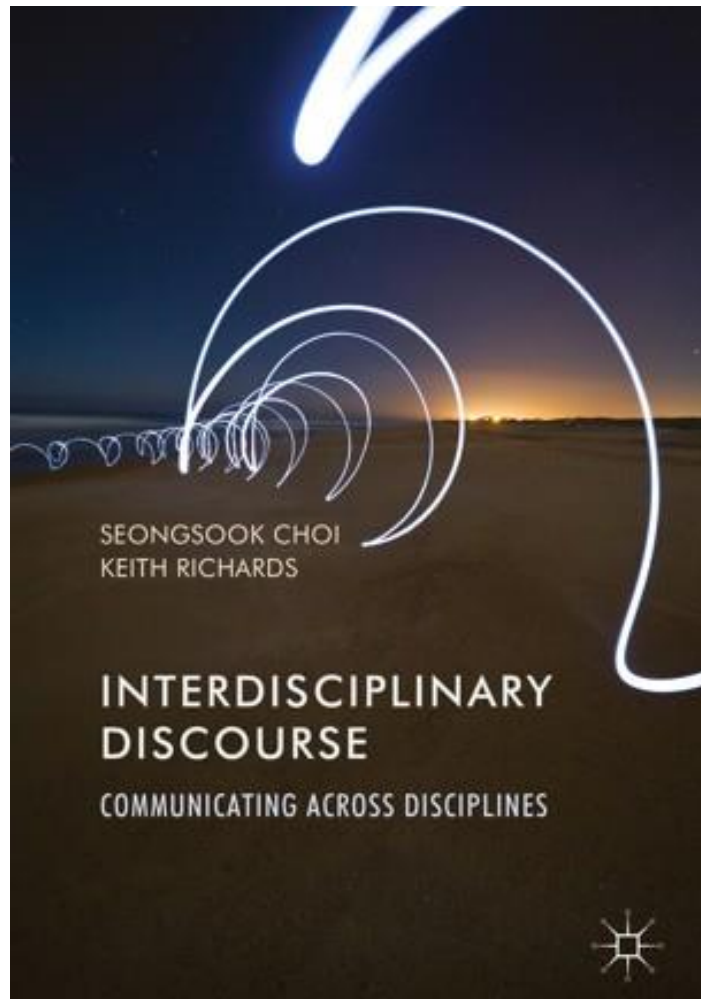
‘a common view is to consider interdisciplinarity as a means to address complex problems that cannot be dealt with from a single disciplinary perspective alone. Such problems require people from different disciplinary perspectives to work together, sharing ideas, theories and practice to reach appropriate solutions. For interdisciplinary research to be effective in addressing these problems, therefore, the conditions must be created in which appropriate interactions can be fostered between researchers’

‘Appropriate interactions’

- Communication across disciplines involves far more than learning to ‘talk the talk’ of a new discipline
- It requires closer understandings of interaction, communication, co-construction etc....
- Educational research has much more sophisticated understandings of these concepts

Choi and Richards (2019)

- Focus on interdisciplinary discourse
- Look at how interdisciplinary research gets done
- Study the interactions of researchers from interdisciplinary research meetings



‘Making connections’

- Epistemic differences need to be negotiated.
- Robertson et al. (2003: 9): ‘a commonly understood language and set of methods are key to overcoming the ontological and epistemological challenges of interdisciplinary research.’
- These interactions need to be understood more fully.

‘Collaborative contexts’

‘It also seems to us that the material culture objects on the move can only be understood in these kinds collaborative contexts, so we need people with different and varied disciplinary ... em, but also linguistic expertise, em and ... we need ... multicultural and multilingual er collaborations, um combined with some kind of watertight method of object analysis.’

‘Revisiting old territory’

I think there's a grave risk, especially when you're kind of bringing people together, that of sailing around certain buoys again, and and you know, there there's a whole ocean that we don't know anything about and it's not that there isn't stuff that that one can do. [...] in fact it's the same story. ...We keep telling it under different under different headings. And I just feel there might be some newer stories out there. (H3110413-00:24:50)

‘Hard and soft science’

‘I wonder if a sci- the scientists who are here could tell us maybe what they think is missing er ... that we could use er short of actually retraining ourselves.’ (Evan, CS4/5090429-01:30:04)

What would you like? I mean what- what what would you like the softies ((brief laugh)) to give you? (Mike, CS4/5090429-01:33:50)

'So'

Extract

01 Tim: ...**So** I've got (...) very briefly (...) mention for Laura, **so** she's now
02 (...) basically run the first, first few iterations of the dataset
03 **so** that should start to improve (...) shortly I guess
04 Joan: **So** when you say the first few iterations
05 Tim: **So** w- we're going to run the (...) first (...) hundred odd genes
06 then we're going to use the (xxxx) for the [(xxx xxx bits)]
07 Lucy: [Oh yeah with] one
08 there
09 Tim: **So** she's
10 Lucy: Yeah
11 Tim: she's running the first batch so now we can (...) next time she
12 runs it we can move faster.
13 (1.5)
14 Tim: **So** it should
15 Joan: **So** you know what the ideal (xxx) is.

Doing interdisciplinary research

Possible stages?

Stage one: Single-discipline orientated – information exchange but no integration. Disciplines and individuals considered to be competing.

Stage two: Work still single-discipline focused, but within overall co-ordination. Individuals have more understanding of other disciplines. Competition is replaced by coexistence.

Stage three: Shared understanding and decision-making occurring in an adaptive team, with increased communication at all levels. Individuals listen and reflect, and are motivated by learning as much as task completion. Coexistence is replaced by integration.

(Hamilton et al. 2009: 166)

Centre for excellence in inter-professional education (CEIPE)

- 2005. DEL, N. Ireland £1.25m
- Interprofessional education research project with doctors, dentists, nurses, pharmacists
- Both QUANT and QUAL data used
- Focus on the interactions between different discipline groups
- Main findings: importance of interaction and collaboration; making subject knowledge explicit.

NUCASE (2014)

- ‘Characterising interactional competence (IC) in higher education small group talk’
- 1m word corpus of academic spoken English across three faculties
- Used corpus linguistics and conversation analysis
- IC varies hugely according to discipline
- Implications for teaching and learning in small groups

ADEA/ADEE (Brescia 2019)

- What can dentistry learn from other disciplines?
- Applied Linguistics/Education/Dentistry/Law
- Focus on transprofessional education
- <https://onlinelibrary.wiley.com/doi/full/10.1002/jdd.12023>
- Huge potential for education to link with other disciplines

Judicial Review

- Education/Applied Linguistics/Law
- How has judicial review changed over time?
What is the role of language in the process?
- Using a large corpus of published cases over a 30-year time period
- Corpus linguistics and CDA (critical discourse analysis)

EMI and CLIL

- Potential for research to look at the ways in which different school subjects are ‘talked into being’
- Discourse from one subject to another varies hugely (c.f. James Paul Gee 2007)
- Learning operates on both everyday and more scientific levels

Some future predictions

- Emergence of new disciplines; merging of old ones
- Opening up of new methodologies which allow 'old' issues to be studied in a different way
- Greater collaboration across disciplines: researchers will need to make their research accessible to a range of stakeholders
- Big data juxtaposed with smaller case studies

- New understandings of what constitutes ‘evidence’ in research across disciplines
- Important societal challenges and decisions will be addressed from a range of perspectives: c.f. C-19; also HKU’s creation of a space to promote interdisciplinarity
- As the impact agenda increases, so too will the need for working across disciplines
- PhDs from more than one discipline – supervisory issues

- More detailed understandings of the processes of interdisciplinarity – especially at the levels of interaction, communication and integration
- Redefining ‘Education’ to include professional development, transprofessional learning, etc