Building on higher education research

Taking a scholarly approach to teaching and learning

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Overview

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3. A study of teaching and learning.
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Discipline-based education research

“investigates learning and teaching in a discipline using a range of methods with deep grounding in the discipline’s priorities, worldview, knowledge and practices”.

Long-term goal: “to understand the nature of expertise in a discipline”.

US National Research Council (2012, p 9)
Research interests

Language in university physics

Disciplinary use of semiotic resources

Disciplinary literacy
e.g. Airey (2011a,b; 2013), Linder et al (2014).

How people become physics teachers
e.g. Airey & Larsson (2018).
My background

Undergraduate degree in physics.
Trained physics teacher.
Retrained as a language teacher.
Taught ESP for 10 years.
PhD in physics:

Science, Language and Literacy (2009)

Reader (docent) in physics
Senior lecturer (lektor) English
Senior lecturer in (lektor) science education
You are special

You went to university.

You were successful in your studies.

You carried on studying.

You understand the nature of research in your discipline.

You ended up being a university teacher.
Your students are special

Your students are special too...

But usually not in the same way as you.

And that’s the problem!

Leads to a mismatch in expectations.
Voices you may have heard...

“The quality of students we get has declined.”

“Some students don’t seem to be able to grasp simple concepts.”

“I explained that concept in the last lecture—don’t they listen?”
Are most students just weaker nowadays?

Or is there another, more plausible answer?
They’re not dumb, they’re different...
I am neither a physicist nor a mathematician, but, rather, a feminist who, ten years ago, became interested in why otherwise intelligent college students, many of them women, underenroll in mathematics and science. My research eventually led to the establishment of a “Math Anxiety Clinic” at Wesleyan University, used as a model in other settings, and, in 1978, in a book, *Overcoming Math Anxiety*, which attempted to answer the question: what makes math difficult for some? As is obvious from its title, math anxiety is the emotional level: early trauma in elementary school; poor self-confidence; tensions having to do with timed testing; the notion that math is a “male domain”; and so on. But once students are taught to get beyond these emotional blocks, there are conceptual difficulties as well that, as an outsider to the field, I was very often able to observe and articulate on behalf of the younger, less confident learners I was trying to help.

What if, I began to speculate, other people like myself, i.e., teachers in the humanities, the social sciences, law, theology—even fine arts—were to attend classes in mathematics and science for the express purpose of providing feedback to the instructor? How better to find out what really makes physics difficult, for example, than to remove all barriers to learning physics—namely youth, lack of confidence, unsophistication, inability to concentrate—except for the one barrier, newness to the field.

What if humanities teachers were to attend classes in mathematics and science to provide feedback to the non-humanities instructor?

My idea was to set up short-term learning experiences for non-science professors during which they would be taught science by their colleagues. In addition to having them interrupt the proceedings with questions and comments, I would have them log their reactions—both their cognitive and emotional responses—on a page divided vertically down the middle, an exercise used in treating math anxiety. On one side of their pages of notes they would record the material, as well as they could. On the other, they would deal with the twin questions: What is making this subject difficult for me? What could I, or the instructor, do to make it come clear?

What I had in mind was a teacher-learner laboratory where the only difference between the teacher and the learner would be naïveté about the subject. In all other respects—age, intelligence, confidence, maturity, and self-image—the students would be peers of the instructors.

I carried “Peer Perspectives” around for some time. Many people thought the idea had merit, but no one moved to implement it until Helmut Fritzche, chairman of the department of physics at the University of Chicago, called me one day and said, “Let’s do it, and let’s do it here.”

Fritzche took upon himself the selection of the instructors, in this case, two master teachers of physics, one an experimentalist, one a theorist, and the selection, by way of personal invitation, of the nonscientists who would participate as learners. The time was set for March 1985, the location, Ryerson, Chicago’s historic physics classroom building, and the timeframe, two days of intense lecture presentations with discussion.
A study of teaching and learning

Best first-year physics lecturers, University of Chicago

Would teach introductory physics to professors from the humanities.

Only difference between teacher and learner would be knowledge of the subject.

How would these highly-qualified “students” cope?
A study of teaching and learning

The “students” complained they couldn’t “see” what they were supposed to see.

“I could follow what was being described, but I could not grasp what was actually happening in what was being described. It was like seeing without any faculty of intelligent perception”.

The instructors were unaware that their “students” were confused.
What’s going on?

If professors of other disciplines can’t understand first year lectures given by our best lecturers, what chance do undergraduate students have?

Conclusion:

It takes a long time to see things like a disciplinary insider.
What’s going on?

“[University teachers] thoughts are so deeply rooted in specialist discourse that they are unaware that meanings that they take for granted are simply not construable from outside the discourse”.

Northedge (2002:256)

As lecturers we have forgotten what it’s like to not know our discipline.
Houston. We have a problem...

Need to understand how our efforts are perceived by our students.

Otherwise we are wasting our time teaching.

To do this we need to take a *scholarly approach* to our teaching.
What is Scholarship?

Definition of SCHOLARSHIP

1 : a grant-in-aid to a student (as by a college or foundation)

2 : the character, qualities, activity, or attainments of a scholar : LEARNING

3 : a fund of knowledge and learning • drawing on the scholarship of the ancients

Websters online dictionary
Scholarship Reconsidered: Priorities of the Professoriate

Ernest L. Boyer

The Carnegie Foundation for the Advancement of Teaching
Four scholarly practices

Discovery
Integration
Application
Teaching

The last scholarship quickly became known as the Scholarship of Teaching and Learning (SoTL)
Descriptions of SoTL

“systematic reflection on teaching and learning made public.”

McKinney (2006:39)

“Composing […] a manuscript to be submitted to an appropriate journal or conference venue.”

Richlin (2001)
Descriptions of SoTL

“Engagement with the existing knowledge on teaching and learning, self-reflection on teaching and learning in ones discipline, and public sharing of ideas about teaching and learning within the discipline.”


“Treat your teaching like you treat your research.”

Airey (2018)
What do we do in our research?

Find out about what has been done.

Carry out new work building on past experiences.

Discuss with colleagues.

Present at conferences.

Publish.
The apprenticeship of observation

What we are trying to get past with SoTL is the apprenticeship of observation.

Lortie (1977)

Lecturers teach courses in the same way they themselves were taught.

The system has no facility for change or growth.
Read

Research always builds on earlier work in some way.

Scholarly teaching does the same.
Avoid re-inventing the wheel
Or re-inventing the flat tyre...
Research

This is an area most of us know a lot about.

Beginning SoTL researchers tend to use the research tools from their discipline.

May not be the most appropriate tools for researching teaching and learning.
Research only works as an enterprise if we share.

Scholarly teaching needs us to do the same.
August 1664
Laws governing attraction between objects
Solved problem four years earlier!
Couldn’t find it!
Promised to re-do
Led to one of the most important publications in
the history of physics and mathematics
For Newton sharing his work didn’t seem that important

“I seem to have been only like a boy, playing on the seashore and diverting myself, in now and then finding a smoother pebble, or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me.”
Share

Even Newton eventually shared his work.

Not popular in Sweden in educational settings.

Everyone responsible for their own course.

Scholarship requires that we open up and share.

How did you make learning possible?
Things you can do locally

Try team teaching.

Start up a departmental educational seminar series.
Conferences

Large number of general education conferences.

Specific, discipline-based teaching conferences.

University-wide.

National.

International.
Discipline-based education journals

People often claim there are no journals in their discipline where they can publish educational work.

I say they probably haven’t looked 😊
Discipline-based education journals

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I say they probably haven’t looked 😊

If there isn’t a journal start one!
Operationalising SoTL

Inform yourself. Journal sign up.

Research what is happening in your teaching.

Team teaching.

Local sharing.

Conferences.

Publish papers.
What do we do in our research?

Find out about what has been done.

Apply for funding!

Carry out new work building on past experiences.

Discuss with colleagues.

Present at conferences.

Publish.

Read

Research

Share

Repeat
Centre for the Advancement of University Teaching (CeUL)

Educational ambassadors
Högskolepedagogisk temadag: Pedagogiska ambassadörsprojekt 2017

Välkommen till högskolepedagogisk temadag då arbetet med 2017-års pedagogiska ambassadörsprojekt presenteras. En dag för dig som vill veta mer om utveckling av undervisning i kollegial samverkan.

Pedagogiska utvecklingsprojekt redovisas

2017 års pedagogiska ambassadörer är igång

Pedagogiska ambassadörer är speciellt utvalda universitetslärare med uppdraget attdra ett pedagogiskt utvecklingsprojekt vid sin egen institution.

Åtta nya utvecklingsprojekt har startat

Pedagogiska ambassadörer bygger pedagogisk kompetens direkt i sin undervisningsmiljö

Centrum för universitetslärarutbildning inledd 2015 projektet med pedagogiska ambassadörer i syfte att stimulera pedagogisk utveckling vid universitetets institutioner. Tanken är att bygga pedagogisk kompetens genom att fokusera på de olika pedagogiska miljöer som universitetslärare verkar inom.

Pedagogiskt utvecklingsprojekt för dig och dina kollegor

Pedagogisk ambassadör hjälper lärare stötta studenter


Pedagogiskt utvecklingsprojekt vid egna institutionen i samarbete med CeUL
Centre for the Advancement of University Teaching (CeUL)

Educational ambassadors

Swedish Research Council
Utbildningsvetenskap

Utbildningsvetenskap handlar om forskning om lärande, kunskapsbildning, utbildning och undervisning.

Vetenskapsrådet stödjer forskning om bland annat utbildningssystemets sociala, ekonomiska och politiska villkor, lärande, kunskapsbildning och kunskapsanvändning samt vägar till att öka mångfalden inom utbildning och undervisning.

Öppna utlysningar

Vetenskapsrådets öppna utlysningar inom utbildningsvetenskap:

- Konsolideringsbidrag
  Sista dag för ansökande: 2018-02-27

- Konferensbidrag
  Sista dag för ansökande: 2018-02-27

- Internationell postdoc
  Sista dag för ansökande: 2018-02-27

- Forskningsinriktning för utbildningsvetenskap

Forsknings propositionen 2016


- Vetenskapsrådets eget inspel inför forsknings- och innovations propositionen
Conclusions

Read what’s been done
Research your own classroom
Share your findings
Conclusions

“Treat your teaching like you treat your research.”

Airey (2018)
Thanks for listening!
References


References


