



Faculty of Science



Challenges and opportunities in cross-disciplinary education

- *Preliminary findings from the framework project*

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April 16, 2015
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The student perspective

Data from

- 3 cross-disciplinary bachelor programs – interviews, survey, and workshops
- 3 cross-disciplinary master programs – workshops

Main preliminary results

- Students choose the cross-disciplinary programs because they see many new possibilities
- They generally become disappointed when they experience courses not promoting cross-disciplinary thinking and learning
- Teachers expect the students to be cross-disciplinary but they do not teach in a cross-disciplinary fashion
- Students ask for more cross-disciplinary examples in the teaching where they can apply their knowledge, work with case studies, and work in groups
- Students in master programs ask for more coordination of courses and teaching elements



A teacher perspective

Preliminary findings show:

- Weak institutional support for interdisciplinary teaching.
- A lack of coordination among teachers and topics covered in the curricula.
- No coordinated support for teachers on how to teach students with uneven competencies and mixed cultural backgrounds.
- A tendency to stick together mono-disciplinary topics/courses without any integration.

When worst, teaching becomes a kind of serial – or ‘parallel disciplinarity’ - where modularly formatted perspectives produce mutually incomprehensible monologues.

When best, lead instructors use a variety of inductive teaching methods and provide an impartial overview of the conceptual schemes involved.



A teacher perspective

Interdisciplinarity requires teachers to possess a broad range of competencies and to apply alternating teaching methods, bringing into play the skills and knowledge of the whole classroom. If one defines interdisciplinary learning as the ability to know and coordinate a growing number of perspectives, it becomes the teacher's primary task to support students in their explorative and coordinative efforts.



A teacher perspective

Learning points:

- Teachers need to learn to adapt their teaching to the mixed competencies and cultural backgrounds of students.
- Teachers should go beyond the default solution of 'serial disciplinary teaching' when they want to be truly interdisciplinary and integrate disciplinary approaches.
- Teachers need to learn to collaborate more across disciplines and faculties.
- Home institutions should be better at allowing and helping teachers to do things a little bit different, when needed.
- Home institutions need to acknowledge interdisciplinarity even more by supporting the development of interdisciplinary research environments and promoting success stories.



Researcher perspective

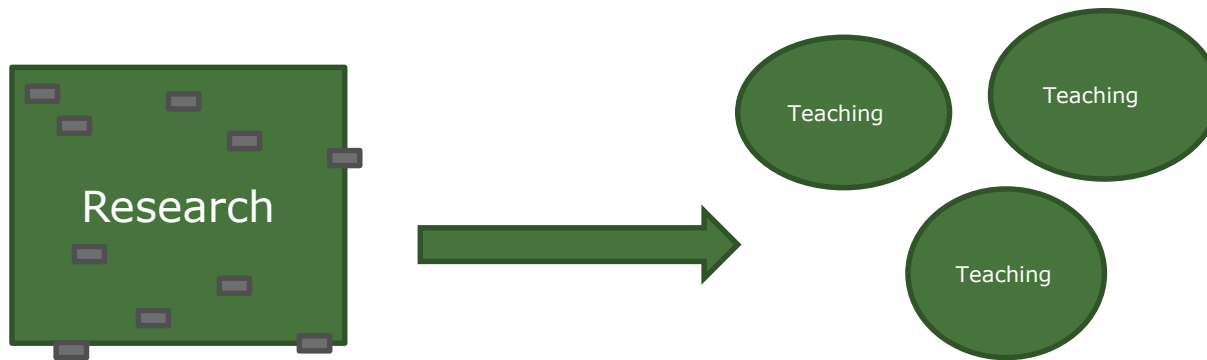
(Interdisciplinary) research based teaching – what makes it difficult?

- Teaching is not first priority
- Lack of teaching experience
- Guest lecturers instead of teachers
- Lack of institutional structures
- Diverse student mass
- Lack of integration between subjects
- Black boxes in research makes teaching difficult
- Front stage/back stage research



Black boxes in research

- or how to transfer cutting edge research into teaching, when the research is loaded with unknowns?



Backstage/frontstage research

- messy in the back/excellent in the front



Researcher perspective – considerations

Ambition

- the purpose of the course?

Time

- how quickly should the research be transformed into teaching?

Disciplinary linkages

- teamteaching, serial lectures, multi-, inter-, transdisciplinary?

Level

- basic or specialist?

Roles

- guest Lecturer, facilitator, teacher?