

The pros and cons of supervising interdisciplinary projects

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What is meant by a multidisciplinary project?

Students focus on a realistic (real-world) multidisciplinary problem that may be posed by a research group or industry.

The main characteristics:

- team work with a project oriented approach
- multidisciplinary: across the borders of own discipline (with respect to contents and team members)
- focus on (re)design in order to solve research problem

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Why organise them?

- Provide an opportunity for students to:
 - Experience a different domain
 - Apply their computing knowledge
 - Combine knowledge and skills from different disciplines
 - Work as a member of a team
 - Solve research problems

Objectives

(School of Computing, University of Leeds)

- **To exercise and extend academic skills.**
It should thus in normal circumstances clearly be associated with the appropriate programme, and should provide the student with a view of the context of (a part of) the discipline. This may be achieved by explicitly exploiting particular (and named) skills or appropriate information acquired from taught modules. The academic aim here is to achieve understanding by doing.
- **To exercise and extend professional and transferable skills.**
It should test a student's ability to schedule, research, organise, report and present within the context of a specialist area. Thus it is assessed, major (compared to coursework), individual and (often/usually) without a set answer.

Learning goals

(Department of Biomedical Engineering Technische Universiteit Eindhoven (TU/e))

- the self-employed project oriented approach (*time scheduling, task planning, project meeting, communication, evaluation*) and multidisciplinary, multi-cultural team work
- integrating and applying multidisciplinary technological and biological knowledge
- Combining theory and practice in order to (re)design a system, a model, an experimental set-up, a software programme, a measurement procedure, etc.
- Innovation and (re)design with the help of advanced BME research facilities

Why do students choose them?

- Want to gain knowledge in new area
- Want to apply computing knowledge to a "real" problem
- Trying to avoid computing

When it works (pros for the students)

"This project has been a great learning phase for me where I learned more than my expectation, set before starting this project. The experience of learning clinical terms and working with clinical applications for protocol flows was really enjoyable and fascinating."

"Academically, the project has shed some light on the use of data mining techniques for the clinical decision support, whilst also providing the unique personal experience of completing an in depth project from within the healthcare field."

"This allowed me to work outside the normal abstract constraints of fictional projects, and apply the knowledge gained from four years of academic study to a real life situation, one with real application."

When it doesn't (cons for the student)

"The project has not been without its problems – far from it. The nature of interdisciplinary work brings the implicit need for harmony between the disciplines involved; in that there is a need for synchrony in terms of arranging meetings etc. The sort of harmony needed is something simply not achievable when working with extremely busy clinicians in the Accident and Emergency department, and I would imagine that these sorts of problems will hinder the progress of the NPfIT as a whole."

"Overall I am happy with the work that I have completed, and the knowledge that I have gained from completing the project from within the NHS. However, in complete honesty the experience as a whole has led me to relieve my interest in working in the area of Health Informatics."

What can go wrong?

The first signs

"I'm going to discover a new a gene"

"The system will be able to diagnose cancer"

"But I don't know any Astrophysics"

"xxx has not replied to any of my emails"

What can go wrong?

"The project required co-operation from experts from four different fields, with myself as a lynchpin, guiding the project and completing the work. This simply meant that I had to understand the project from the standpoint of these different stakeholders, whilst also understanding and explaining the techniques needed to address the actual problems.."

"This is something not often present with pure 'systems design' projects that I have completed previously, and as such, offered a unique experience that taught me about the value of clear, concise and frequent communication throughout the course of the project. Only through this could the project truly progress."

"Coming from a predominantly technical background, I had to further develop my interpersonal and communication skills that allowed me to communicate technical ideas to some non-technical individuals."

What can go wrong?

Everything that can normally go wrong

PLUS

For students:

- find themselves being pulled in two directions
- cannot find their domain supervisor
- may be left in the "safe" hands of other students or postdocs
- have high expectations of domain supervisor
- cannot get to grips with the material / required skills
- spend too long researching the new material
- domain supervisor wants more and more or is satisfied with very little

What can go wrong?

For supervisors:

- may not appreciate the challenge of learning the new material
- may not appreciate the challenge of the computing task
- different expectations from other supervisors
- different supervisory styles
- have no time
- forgot to mention they will be away most of the year
- make promises of data which cannot delivered
- extra workload on project coordinator
- can be a full time job for both supervisors

How are they marked?

- **Who?**
 - All
 - Only computing supervisor
 - How should the domain supervisor's view be taken into account?
 - Does the supervisor and /or assessor have sufficient knowledge of the domain?
- **How?**
 - Does the existing mark scheme work for multidisciplinary projects?

How can we reduce risk?

Project selection

- selection of supervisors?
- assessment of suitability of project

Supervision

- formal arrangements in each department?
- Risk analysis?

Marking

- Are interdisciplinary projects equivalent to other projects?

Pros for a supervisor

- Projects can help to establish new research links
- Projects can lead on to new research projects
- Projects can solve research problems
- Projects can lead to employment for student
- New projects can be fun!

Any more questions ?