Effective supervision of interdisciplinary PhD projects across multiple schools

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Outline

- introduction
- existing interdisciplinary practice
- methodology
- findings
- recommendations
Interdisciplinarity

- integrating multiple academic disciplines, professions and technologies in the pursuit of a common task
- focus on complex problems that cannot be tackled effectively with knowledge & techniques from a single discipline
- http://www.cardiff.ac.uk/ir/

*Cardiff’s University is committed to be a world-leading, research-led university where interdisciplinary themes facilitate research & teaching excellence.*

Current practice

- Dean of Interdisciplinary Studies
- administrative support
  - Interdisciplinary Support Officer
  - Research & Commercial Development Division
- 9 interdisciplinary research networks
- external resources
  - EPSRC: A guide to managing large grant activities
  - ISSTI: A short guide to supervising interdisciplinary PhDs
  - ISSTI: A short guide to building & managing interdisciplinary research teams
Methodology

- two types of stakeholders:
  - students
  - supervisors
- two questionnaires designed to obtain their views & suggestions regarding the supervision process
- 15 questions in each questionnaire
  - multiple choice
  - open ended
Focus group

- interdisciplinary projects supervised partly in the School of Computer Science & Informatics
- 9 PhD students
- 17 [identifiable] supervisors

Cross-school collaboration
Survey for supervisors

- home school
- academic position
- PhD supervision
  - track record
  - current workload
  - interdisciplinary projects
- activities
  - meetings
  - decision making
  - performance management
- information sharing
  - current practice
  - preferences
- SWOT analysis
  - Strength
  - Weakness
  - Opportunity
  - Threat
- suggestions

Survey for students

- year of study
- previous background
- school
  - lead supervisor
  - registration %
  - time spent in each school
  - working conditions
- meetings
  - frequency
  - arrangements
  - chairing
  - minutes
- information sharing
  - current practice
  - preferences
Q1: School

- response rate: 9 / 17 = 53%
- poorer response from the Schools collaborating with COMSC
Q2: Academic position

- most of the co-supervisors (64%) hold a senior position (i.e. Reader or above)
- typically makes them more experienced in PhD supervision
- I am the only co-supervisor in the Lecturer position

Q3: Successfully completed PhDs

- surprisingly, $\frac{2}{3}$ of co-supervisors have not supervised a single student to successful completion of a PhD
- slightly contradicting Q2
- the lack of experience may be compensated with the expertise available from other co-supervisors
Q4: PhD students currently supervised

- the majority are supervising at most 5 students, which is the University recommendation

Q5: Interdisciplinary PhD students currently supervised

- most co-supervisors are supervising ≤3 interdisciplinary students
- supervising >3 may create unsustainable workload & result in poor supervision
- depends on their role in the PhD projects
- acceptable if they have a "consultancy" role, but not if they are lead supervisors
Q6: Frequency of meetings

- from weekly to once every two months
- team meetings
  - difficult to organise them on a month for month basis
  - recommendation: set out a yearly schedule
- meeting venue
  - should be alternated between Schools or held somewhere where it is equally accessible
  - web technology (e.g. Skype) should be used to support more uniform frequency

Q7: Decision making policy

- no standardised decision making policy
- some general guidance is required at the University level
- reassuring to see that most of the key decisions are team decisions
- clarify what constitutes "key decisions" & less fundamental ones should be delegated to the lead supervisor when appropriate
Q8: Performance monitoring

- heavy reliance on the existing School procedures
- inappropriate for short-term performance monitoring
- SMART objectives: Specific, Measurable, Achievable, Realistic & Timed
- delegate the responsibility for time & project management to a PhD student ...
- ... but make it transparent to all
- e.g. protected Tweets to share daily milestones & ensure the continuity of progress

Q9–10: Information sharing

- not much difference between the practice & preferences
- unfortunately, e-mailing seems to prevail, but it is the least efficient medium for information sharing
- ¡ shift in culture ! is needed to ensure the best use of the current technology, e.g. social networks
Q11–14: SWOT analysis

Strength
1. New scientific challenges & interesting problems
2. Excellent training/learning opportunities for both students & their supervisors
3. Collaborations based on different expertise

Weakness
1. Communication & understanding
2. Unclear expectations
3. Administration
4. Publication venues

Opportunity
1. Increased collaboration
2. Funding opportunities
3. Innovation

Threat
1. CS perceived as "service" not a science
2. Competition between Schools
3. Increased stress
4. Poor performance
Q15: Any suggestions?

- all co-supervisors need to meet regularly & touch base
- explore new technology (e.g. Skype, Google conference, etc).
- administration needs to be standardised & centralised
- ensure transparency of work in both long & short terms
- facilitate the decision making process by agreeing on different types of decisions & how they should be made

Survey for students
Q1: Year of study

- response rate: 3 / 9 = 33%

Q2 – Q8

- Q2: Previous background
- Q3: Which Schools?
- Q4: How many supervisors?
- Q5: Lead school
- Q5: Time physically spent in each School
- Q7: Working conditions
- Q8: Lead supervisor
Q2 – Q8

- 2 students with a BSc in Computer Science
- each with an MSc degree: Computer Science & Mathematics
- registered: COMSC 50% + MEDIC 50%
- time spent: COMSC 60% + MEDIC 40%
- well qualified for at least one area of their PhD
- 2 supervisors in each school
- desk space + computer in both schools

Q2 – Q8

- BSc in Mathematics
- registered: MEDIC 50% + COMSC 50%
- time spent: MEDIC 100% + COMSC 0%
- 2 supervisors in each school
- no desk space/computer in COMSC
- interesting to explore the relationship between the lack of formal education in either area of the PhD & its success
Q9: Meeting frequency

- varies across supervisors
- frequent meetings necessary early in the PhD & when intensively working in the non-native area of their PhD
- monthly team meetings are recommended
- anything more frequent is unsustainable with >2 co-supervisors, while anything less frequent creates a serious risk of not balancing the two disciplines out

<table>
<thead>
<tr>
<th>Supervisor</th>
<th>Student #1</th>
<th>Student #2</th>
<th>Student #3</th>
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<tbody>
<tr>
<td>#1</td>
<td>weekly</td>
<td>weekly</td>
<td>weekly</td>
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<tr>
<td>#2</td>
<td>monthly</td>
<td>weekly</td>
<td>weekly</td>
</tr>
<tr>
<td>#3</td>
<td>monthly</td>
<td>fortnightly</td>
<td>every 6 months</td>
</tr>
<tr>
<td>#4</td>
<td>monthly</td>
<td>monthly</td>
<td>every 6 months</td>
</tr>
</tbody>
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Q10–Q 12: Meeting arrangements

Q10: Scheduling
- using polls
- not sure
- via e-mail

Q11: Chairing
- I do
- no noticeable lead

Q12: Minutes
- I do
- me
- no one officially, but generally we all make notes
- myself & lead supervisor
Q10–Q 12: Meeting arrangements

- meeting arrangements should be **fully delegated to students**
- they should set the **agenda** & distribute it timely to all co-supervisors
- **brief presentation slides** should be used to facilitate discussion
- crucial for the student to take & distribute **minutes**
- minutes should be kept in one centralised document easily accessible to all co-supervisors at any one point in time (e.g. **Google documents**)

Q13–Q14: Information sharing

- references & reading lists are also shared using social bibliography services such as CiteULike & Mendeley
Q15: Any suggestions?

- some structure to the meetings
- there was no agenda written or otherwise
- no explanation of the format, aims/objectives & responsibilities/expectations of the attendees
- informal nature was good but without structure leaving me a little vague as to how these meetings are to benefit the research and what my role/responsibilities are

Conclusion & recommendations
Categories

1. supervisory arrangement
2. administrative & managerial aspects
3. meeting arrangements
4. effective communication

1. Supervisory arrangement

- **Minimise** the number of co-supervisors on interdisciplinary PhD projects.
- Give more **authority** to the lead supervisor.
- Share **responsibility** equally.
- Provide interdisciplinary **induction** to supervisors.
- Support membership in **professional organisations** such as the Association for Integrative Studies.
2. Administrative & managerial aspects

- Centralise PhD administration across the University.
- Create a decision making policy.
- Delegate some decision making authority to the co-supervisors.
- Remove administrative obstacles to facilitate work across Schools.
- Set clear milestones to monitor long-term progress & SMART objectives to monitor short-term progress.

3. Meeting arrangements

- Recommend weekly/fortnightly meetings with the [lead] supervisor.
- Recommend monthly interdisciplinary team meetings.
- Provide induction to interdisciplinary PhD students regarding their responsibilities in meeting organisation.
4. Effective communication

- Ensure the **transparency** of student's work in both long & short terms.
- Maximise the use of **web technology** (but minimise the use of different platforms) to facilitate communication.
- Raise awareness of a potentially **breakthrough** rather than **continuous progress** in one of the collaborating disciplines.
- Students should have continuous **exposure to both disciplines** through seminars & present to both communities for feedback.

## Web technology

<table>
<thead>
<tr>
<th>Activity</th>
<th>Platform</th>
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<tbody>
<tr>
<td>Share documents</td>
<td>Google Documents, Blackboard</td>
</tr>
<tr>
<td>Share code</td>
<td>Google Code, SourceForge, shared folders</td>
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<tr>
<td>Share citations</td>
<td>CiteULike, Mendeley</td>
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<tr>
<td>Schedule meetings</td>
<td>Doodle, Facebook Events</td>
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<tr>
<td>Hold meetings</td>
<td>Skype, Google+ Hangout</td>
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<tr>
<td>Have discussions</td>
<td>Google+ Circles, Facebook Groups</td>
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<tr>
<td>Monitor short-term progress</td>
<td>Twitter</td>
</tr>
<tr>
<td>Surveying</td>
<td>Google Forms, SurveyMonkey, Facebook Opinion polls</td>
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<tr>
<td>Notification</td>
<td>E-mail</td>
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Questions?