A Short Guide to Supervising Interdisciplinary PhDs

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Reflecting on aptitudes for interdisciplinary research

It takes extra time and effort to supervise students who are undertaking interdisciplinary doctoral research. Good interdisciplinary supervisors are likely to be open-minded, willing to learn from other disciplines and have a broad appreciation for the languages, research methods and cultures of different disciplines. In many ways, personality may be more significant than discipline base: interdisciplinary supervisors are likely to have a high degree of curiosity beyond the boundaries of their own discipline so there is little point in taking on an interdisciplinary student if you have no interest in the other contributing discipline(s).

- Do be open to new methods from other disciplines
- Do take the opportunity to read some interdisciplinary papers if this is a new area
- Do be alive to epistemological differences between the contributing disciplines
- Do be prepared to question assumptions of your own discipline

Exploring the nature of interdisciplinarity

Interdisciplinary research is not a single, homogeneous entity but takes different forms depending on the research question. Interdisciplinary research can be within the social sciences, within the natural sciences or between the social and natural sciences. It can be sub-divided into:

- Research which aims to further the expertise and competence of academic disciplines themselves, e.g. through developments in methodology which enable new issues to be addressed or new disciplines or sub-disciplines to be formed

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- Research which is problem focused and addresses issues of social, technical and/or policy relevance with less emphasis on discipline-related academic outcomes

These two models of interdisciplinary research are appropriate to different types of research questions and the criteria for the choice of disciplines to be involved in a project will also differ in each case. The research may even represent a mix of the two modes.

If you are new to interdisciplinary supervision then you may wish to learn more about the different modes of interdisciplinary research and decide which mode of interdisciplinarity applies to your student's research.

- Do reflect on which mode of interdisciplinarity is appropriate for the particular project
- Don't assume that there is only one way to conduct interdisciplinary research
- Don't assume that different approaches are complementary or mutually exclusive

Developing and maintaining a committed supervisory team

Close supervision and guidance are particularly important for interdisciplinary students in order, for example, to encourage genuine integration and prevent students from slipping back into monodisciplinary comfort zones.

Supervisors need to develop strong team-working with co-supervisors if students are to benefit rather than suffer. Supervisors, co-supervisors and students need to meet regularly, with sufficient clarity and continuity of communication, that such issues as methodologies, format and focus of the thesis, are agreed mutually and explicitly at an early stage and that inevitable fine-tuning of the developing thesis takes place through ongoing dialogue.

Care needs to be given to the selection of co-supervisors in terms of collaborative compatibility as well as ability to commit to regular meetings with the whole team. More so than mono-disciplinary supervision, the commitment of the secondary supervisor(s) is crucial: they are not simply nominal appointments but should bring complementary discipline-based expertise and networks to the project.

The lead supervisor should facilitate an initial meeting between all parties. It may be helpful to ask each supervisor to bring copies of their key publications and for the student to bring a summary of their Masters thesis and outline PhD proposal to begin to foster some shared understandings of each other's work. It may be helpful for the supervisors to hold occasional "pre-meetings" to discuss their common response before key meetings with the student.

- Do initiate and maintain dialogue within the supervisory team (including your student)
- Do set and adhere to a timetable for regular, future meetings
- Do formalise the involvement of each supervisor, reviewing as necessary as your student's requirement for inputs from each specialist may vary as the thesis progresses

Building foundations and setting boundaries

Disciplines have survived for so long in the academic world in part because they serve the very useful function of constraining what the researcher has to think about. They set a boundary on the parameters of interest (what to include and what to leave out) and dictate the range of methodological approaches that are relevant. They thus provide a clearly defined starting point for a project. In interdisciplinary research where this framework is partially or wholly removed, students can be overwhelmed by the resulting complexity. A key role for supervisors is therefore to help the student set some boundaries to their research while achieving an appropriate balance between breadth and depth. By definition, interdisciplinary students will not be specialists – and they should not feel as if they are failing because this is true; they cannot try to become experts in all fields involved.

More than monodisciplinary projects, interdisciplinary research has to initially test out a range of possible boundaries to the problem to see which gives the best 'fit'. This should be part of the process of developing a research proposal. It should be clear that the outcome represents a justifiable decision on the project's boundaries. An interdisciplinary student may require particular help in framing a research question that is manageable, suitable, and reflects their interests. This will require discussion with all supervisor(s) to agree the level and scope of the research and, in particular, realistic timescales.

- Do probe (sensitively) your student's understanding of the foundations of your discipline
- Do provide your student with introductory and essential references
- Do help your student to identify any training needs, e.g. research methods
- Do encourage your student to seek advice from other relevant experts
- Don't expect an interdisciplinary student to read everything

Structuring and writing an interdisciplinary thesis

Students must for their survival (and successful completion) stay focused, knowing what part of which disciplines they will use to answer which research questions. More planning is likely to be needed for interdisciplinary projects than for disciplinary projects.

There are different conceptions of what constitutes a PhD thesis - the natural sciences have a much greater focus on publishing papers, so that each thesis chapter may correspond to a paper, whereas a social science thesis more usually resembles a monograph. Students need to be given early guidance as to which approach to follow.

Interdisciplinary research does not occur automatically by bringing together several disciplines in a research project. Extra effort is needed to promote the formation of a cohesive thesis that combines inputs from several knowledge domains. An active strategy is thus needed to integrate the different disciplines and different models in an interdisciplinary project. To this end, supervisors need to encourage integrated rather than 'compartmental' writing. In order to achieve this, at least one member of the supervisory team needs to commit to reading everything that the student writes and ensuring that the student is writing in a way that is accessible to readers (especially examiners) from all contributing disciplines.

- Do help your student develop an integrated strategy for structuring the thesis
- Do ensure that your student's writing style will not be an obstacle for examiners and other readers coming to the work from different perspectives

Building an interdisciplinary network

An important success factor for an interdisciplinary student is the development of an interdisciplinary research network. Cross-discipline meetings, seminars, etc will help the student to build such networks. An interdisciplinary supervisor has an important role to play in helping the student to identify appropriate workshops, conferences and other networking opportunities both within and beyond their own institution.

A vital part of this process is the early identification of appropriate examiners, who will be sympathetic to the interdisciplinary approach. This may require more careful consideration and may need to be started at an earlier stage than for a monodisciplinary student.

- Do facilitate networking experiences for your student
- Don't wait till the end to choose examiners, and don't select examiners based solely on outstanding strength in (only) one of your student's disciplines – try to find someone with a track record showing sympathy with interdisciplinarity

Developing a publications strategy

The challenges presented by the UK Research Assessment Exercise to interdisciplinary researchers in terms of high quality publication outlets are well-rehearsed. This means that interdisciplinary researchers – and especially those at the early stages of their career – need a publications strategy that encompasses both interdisciplinary and more conventionally esteemed mono-discipline journals. This may mean that interdisciplinary students have to be more creative in order to publish in a range of well-regarded journals. Supervisors therefore need to encourage interdisciplinary students to plan a strategic portfolio of different types of articles: theoretical, interdisciplinary, policy, etc. Moreover, interdisciplinary work may require more time to reflect on the potential connections between different aspects of the research so it may be harder for interdisciplinary students to publish during their doctoral studies than, say, monodisciplinary students in the natural sciences.

- Do discuss realistic expectations about when and what publications to produce
- Do impart an understanding of different audiences and writing styles

Mentoring and career guidance

Part of any supervisor's role is to encourage and promote the student's personal and academic growth so as to facilitate their development into a mature and independent researcher. This may involve guiding and assisting the student in structuring their own research ideas and exploring interdisciplinary career opportunities. Increasingly, the UK Research Councils are offering postdoctoral funding for interdisciplinary research opportunities but students who ultimately wish to pursue an academic career should be aware that such a career trajectory is not without risks.

It may be appropriate to encourage activities that can be useful in terms of career development (e.g. teaching experience) provided that this does not interfere with the student's ability to complete their PhD thesis in a timely fashion. Interdisciplinary students may need particular guidance with time-management: interdisciplinary theses may typically take longer to complete given that students need to read across different bodies of literature, possibly learn multiple research methods and wrestle with the issues of integration.

- Do promote your student's growth into an independent researcher
- Do help your student identify and position themselves for interdisciplinary career opportunities

Participants at the ESRC-funded ISSTI Interdisciplinary Masterclass for Postgraduates, University of Edinburgh, 3-5 December 2007 contributed to the preparation of this note.

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