

‘Speed Ph.D.’ – An Enquiry-Based Learning ‘Induction’ Workshop for Postgraduate Research Students

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Abstract

The early days of any research degree programme are challenging, particularly in transitioning from a structured undergraduate degree programme to what can appear to be a far less structured research programme or, for example, in coming back into higher education (HE) after many years in employment. There is also a great deal of information disseminated to researchers during the induction period, a proportion of which is inevitably lost through ‘information overload’. The aim of this work was to apply an Enquiry-Based Learning approach to develop an interactive, engaging and memorable induction, which also raises and addresses further issues than the typical approach of multiple presentations accompanied by hard copy information. The ‘Speed Ph.D.’ workshop that emerged from this aim and is described here was developed at the University of Manchester and first used in June 2004. Speed Ph.D. has subsequently been adopted and adapted by the University of Leeds, Durham University and other UK HE institutions.

Background

The Faculty of Engineering and Physical Sciences at the University of Manchester has a diverse research student body, particularly in terms of nationality and age range. This results in a wide range of undergraduate degree experiences and work experiences and expectations for a Ph.D. programme. The Faculty has approximately 300 – 400 research students starting their studies in a given academic year, with the majority of these registering in October. The Speed Ph.D. programme is positioned as a first workshop out of a range of training and development

opportunities available to researchers throughout their research degree. Full details of the Manchester and Leeds programmes are available at <http://www.manchester.ac.uk/eps/grads> and <http://www.leeds.ac.uk/rtd>. Nationally, training and development activity for research students has grown significantly in response to government investment following the 2002 'Roberts' report. Further details are available at <http://www.vitae.ac.uk/policy>. Training and development activity has also been heavily guided by the Research Council's (RCUK) Joint Statement of Skills (JSS)¹. The JSS sets out the RCUK view of the skills that should be acquired by a research student during a Ph.D. in the UK.

Rationale

New research students are faced with many sources of information and a multitude of formal and informal presentations. Alongside the 'information overload', how does a new researcher begin to understand the nature of a research degree? What is the student to expect? What are the best methods to work with a supervisor? What support is on offer and who is the person to see about it? Where can those seemingly 'daft' but important questions be asked without embarrassing oneself with a new supervisor? How do you manage a research degree? What about the isolation? How can you save time for a researcher by working through some common 'pitfalls' researchers can fall into in the initial stages of their research? We suggest that it is difficult to provide the forum for addressing such questions through a process of simply handing out information and giving multiple presentations. The challenge was to put together an induction workshop that addressed the points above. The approach chosen was an EBL approach.

Approach

The Speed Ph.D. is a two-day workshop based on a very straightforward idea: do a Ph.D. in two days! In a typical workshop with, ideally, 16 to 20 research students, participants are split into four groups. Each group takes on the role of a fictional research student. The groups are each given a research project, and they take the project through every stage of the Ph.D., ultimately producing a 'mini-thesis' which is subject to a viva at the end of day two. The two-day programme consists of a mix of group work on a research project, with the structural stages of the research degree woven through, and presentations on areas such as managing your research degree and careers. Table 2.1 illustrate a typical schedule. The mix of group work and

¹ Available at <http://www.vitae.ac.uk/jss>

presentation sessions can be tailored to the needs of the particular school or faculty for which the programme is targeted.

The key elements of the Speed Ph.D. include:

- Participants are in groups of 4 to 6;
- Each group plays the role of a single 'fictional' research student;
- Each group is allocated a supervisor, a role played by the workshop facilitator (the role play is designed to present common supervisory styles. Groups have to ascertain how best to work with their particular supervisor's style);
- The workshop progresses using the structure of the Ph.D., e.g. day one finishes with a summary report of the group's research to date and plans going forward (analogous to the 'transfer' or 'upgrade' report);
- There is a points system associated with the research exercise that reflects good Ph.D. practice. Fifteen points must be achieved to pass, these and can be gained simply by turning in a thesis, as is true for a real Ph.D. Points are also awarded for completing tasks on time and for 'publishing' research papers; however, if no 'thesis' is produced at the end of day two, the exercise is failed;
- The workshop is the first step in a programme of training and development provision and introduces concepts of needs analysis and personal development planning;
- The workshop introduces research students to staff from across the institution who support personal and professional development. The aim is to start developing relationships with the research student cohort by associating a face to the literature on training and development.

To understand how the Speed Ph.D. works, it is worth working through a typical schedule (Table 2.1). Each section of the schedule has a focus on a particular aspect of skills development indicated in the Development Needs Analysis (DNA) column on the schedule. DNA is a competency model developed for research students based on the UK Research Council's Joint Statement of Skills. The DNA is discussed in detail in Bromley *et al.* 2007. Skills for research students are divided into seven general categories, each consisting of a number of sub-divided skills.

Category	Description
A	Research skills and techniques
B	Research environment
C	Research management
D	Personal effectiveness
E	Communication skills
F	Team working and networking skills
G	Career management

Table 1. DNA competencies for research students.

In the schedule (Table 2.1), the concept of needs analysis is introduced from the beginning. This encourages participants to self-assess their skills at each stage as the workshop progresses or, in effect, self-assess with a view to the stages of their Ph.D. ahead. This approach is designed to provide a supported introduction to needs analysis and self-assessment as oppose to simply providing the DNA tool 'cold' and asking research students to fill it in.

The rest of the morning consists of presentations interspersed with interactive exercises to get researchers to start thinking about how they will approach their Ph.D. in terms of methodology and management. The section also raises and debates simple questions such as, 'What is research?'. In the context of the workshop, the morning section is designed to make researchers think about how they will go on to approach the group research exercise that follows.

Just before lunch, the first part of the research exercise starts with the prompt, 'we have had a chat about how we all intend to approach our research, now let's put that into practice and see what happens'. It is crucial that the facilitator frames this part of the workshop well. The research exercise is about how research is approached, but it is also about methodology and management. Some participants focus on the content of the research project rather than the process of research. In this workshop, it is the research process that has the emphasis rather than the content of the research project, as would be the case during their Ph.D. The key point is that process is important. Neglect of this process during a Ph.D. is common, and it is not unusual for this neglect to lead subsequently to significant problems with the Ph.D.

Day 1		
Time	Session	DNA**
9:15	Coffee and Registration	---
9:30	Introduction	F1
10:00	Development Needs Analysis - Competence Models	D4
10:15	Research Philosophy and Methodology	A1, A2, A4, A5
10:45	COFFEE	
11:00	Research Management	C1
11:30	Health and Safety for Research	B4
12:00	Group Work I - Introduction and Choosing the Research problem	D1, D2, D3, F2
12:30	LUNCH	
13:15	Introduction to Computing Services	C3
13:30	Introduction to the Library	C3
13:45	Group Work II - Literature Review and Project Start-up Initial Research	C3, D1
15:00	Academic Writing	A6
16:00	Group work III - Research Proposal	C1
16:30	Deadline for Second Day Proposal Closes – CLOSE	D2

General Overview

Facilities

Research

Day 2		
Time	Session	DNA**
9:15	Coffee	
9:30	Research Ethics/IPR	B2, B3
10:00	Science Enterprise	B7
10:30	Group Work IV – Further Research	E2,
10:45	COFFEE	
11:00	Group Work V - Further Research	E4
12:00	Careers Service	G2, G4
12:30	LUNCH	
13:15	The Graduate Resource Book	G3
13:45	Group Work VI - Final Research / Writing up	E1
15:15	Thesis Submission Open	
15:30	Thesis Submission Closed	
15:30	Complete - DNA	D4
16:00	VIVA	E3
16:15	CLOSE	

Research

Research

Table 2.1. Typical Speed Ph.D. workshop schedule. This workshop highlights specifically the DNA (Development Needs Analysis) competencies listed in the Table 1. However, you should also consider the remaining DNA competencies – A3, B1, B5, B6, C2, D1, D2, D5, D7, E5, F2, G1, G2 (Bromley *et al.* 2007).

The research projects used are designed to be of general interest to a range of subject areas, accessible to participants and engaging. They also need substance and academic relevance so that genuine and relevant research papers can be found in the institutions' library databases. Participants are given one 'research project pack' folder per group. The folder contains a synopsis of the research problem, one or two relevant references as a starting point and various pro-formas relating to the Ph.D. process, such as the end-of-the-day-one report, which the group needs to manage and use throughout the two-day workshop.

Two example research project synopses are given below:

- **Project Title: 'Fooling the Brain - an investigation into visualisation in the brain considering why optical illusions work and the development of new illusions'**
Hallucination, where the brain adds information to a viewed image, can be the result of specific medical conditions. However, in 'normal' function the brain will add information to an image or make incorrect interpretations. Consider the example optical illusions provided. Carry out a literature review to consider the theory behind brain function that allows such optical illusions. Also search for further examples of illusions. From your research attempt to categorise different types of illusion and create further optical illusions. Test the existing illusions and any created illusions on group and course members. Collect data and comment on how each illusion is interpreted.
- **Project Title: 'An Energy Efficient, Environmentally Sympathetic Building Design and Construction Process for an Integrated University of Leeds Student Services Facility'**
The University wishes to build an energy efficient environmentally friendly Student Services building with a full life cycle approach. The building is to include a range of leisure and welfare support facilities for students. This project should carry out a literature review covering possibilities for renewable energy sources for the building and should also cover building materials and the construction process. An external survey of on campus buildings should be carried out with a view to identifying a suitable location for the new building and any associated energy generation facilities with consideration of the impact of the new building on the other buildings in its proposed location. Based on your research, recommendations should be made for the design of the energy system for the building, the materials of construction and the construction process.

When the research project pack is handed out each group is also allocated a supervisor. The supervisors names are: Professor Myway; Professor Neverhere, Dr Helpful and Dr Dolittle. The names contain strong hints to their supervisory style which are caricatures (but any resemblance to real-life supervisors is completely intentional!)

After receiving the research pack, groups then have some time to consider how they will approach the project and how they will organise themselves throughout and ahead of the first task after lunch--the literature search.

After lunch, groups are introduced to University computing systems and library services and databases. They then have the opportunity to immediately use the resource to search for published material relevant to the research project they have been given for the Speed Ph.D. workshop. Library staff support this session providing participants with a real opportunity to look at their searching skills, for example, and to consider any support they may require.

By the end of day one, groups must provide the workshop facilitator with a completed 'Day One' pro forma from their research project pack. This represents the Ph.D. 'transfer' or 'upgrade' stage. The group are asked to comment briefly on what they have found from their literature search and also to provide some plans for research on their given topic for day two of the workshop. Their 'supervisor' (the facilitator) reads the day one reports and feeds back to the group on day two. This is an opportunity for the facilitator to offer genuine critique in respect of, for example, the relevance of research papers found or simply the quality of how participants have cited a paper.

Day two starts with presentations and exercises around ethics, intellectual property and enterprise before groups return to their research projects. This stage of the research project is very much about the project management process, going from the early stages of research to completion. At this stage, both an opportunity to attend a conference and submit a paper to a journal are offered, for which groups will gain points. The submissions are all done via the pro formas provided, but groups must decide which aspects of their research to include in these 'mock' publications, write abstracts and subsequently write the publications (papers, posters, presentations) if their abstracts are accepted. At this stage their 'supervisor' will also feedback comments on the group's day one form. It is intentional that there are many potential tasks ongoing at this stage in the workshop and groups must manage the process and decide what they are going to do. They may decide they have no time to submit a publication as well as complete the 'thesis' by the end of the day. The aim here in the design of the workshop is to raise real scenarios that happen in Ph.D.s and get participants to think about what they would do in the situation posed.

On day two, researchers are also introduced to careers support and encouraged to think forward about the next steps in their career and at an early stage in their research. The afternoon is about completing the research and reflecting on the workshop with respect to personal development needs.

Groups hand in a 'thesis' based on the pro-forma provided, which they have to submit by the deadline. The 'thesis' is then passed to another group to look at and suggest a few viva questions. Each group then has a viva in turn during the plenary. The viva consists of questions asked by the group who looked at the 'thesis' and a couple of questions from the facilitator, drawing upon a selection of common viva questions gathered from discussions with academic members of staff.

Throughout the two-day workshop the facilitator awards group points for completing various tasks and for the quality of the final 'thesis'. The final act of the workshop is to reveal the points for each group. Some will have done many varied activities and collected significant points. Others may have stuck rigidly to the 'thesis' only and merely obtained the minimum to pass. A final salient point, therefore, can be that all groups have actually passed, but who gets the best next career step? Is it the student who only did the thesis or the student who did the thesis, attended the conference and published papers?

Assessment

As a postgraduate research student induction programme there is no formal assessment in the case of the Speed Ph.D. workshop.

Evaluation

Evaluation has been conducted through end-of-workshop feedback forms; discussions with participants during- and post- course; and discussions with supervisors. Speed Ph.D. workshops have run many times at a number of universities in recent years (in the order of 100s of sessions). Common key observations and feedback include:

- Around 70 to 80% of participants are positive about the workshop, finding it valuable. However, it is not uncommon for around 20% of participants simply not to embrace the experiential nature of the workshop;
- We have received supervisor feedback that students are easier to supervise subsequent to the Speed Ph.D. workshop as students understand better the process and nature of the Ph.D. For example, they are more aware of the 'transfer' or 'upgrade' process;

- Participants from countries overseas with a different Ph.D. process have been very positive in that they understand the nature and expectations of a UK Ph.D. significantly better following the Speed Ph.D. workshop;
- The timing of attendance at the Speed Ph.D. workshop, in the Ph.D. life cycle, is very important. Participants should aim to attend within 4 to 6 weeks of registration. If they attend several months after registration, they may have found out a number of the aspects highlighted by the Speed Ph.D. albeit in a more informal, unstructured and potentially misleading manner.

Further Development

The Speed Ph.D. format is a very flexible framework. Institutions have altered timings of sessions and have added, for example, different presentations dependent upon their specific needs. As long as the core idea of the schedule, following the process stages of a Ph.D., is adhered to the format appears to continue to work.

Future ideas have included running Speed Ph.D.s with final year undergraduates or Master students to introduce them to research and the Ph.D. with a view to recruiting them onto Ph.D. programmes. The format may also work as an outreach activity introducing high school sixth formers to research as a potential future career option.

References

Bromley, A. P., Boran, J. R. and Myddelton, W. A. , 2007. Investigating the baseline skills of research students using a competency-based self-assessment method. *Active Learning in Higher Education*, 8 (2), 117-137.