**Project Management**

In this exercise, we will use a scenario to explore the development of project management skills in doctoral students. Many employers will expect that doctoral graduates will possess the skills required to manage projects in the workplace, while graduates who are contemplating a career that entails independent or self-starting activity (in research or other fields) will need project management skills. However, project management is also a key element in the successful conduct of a doctorate, and students can struggle if they do not co-ordinate the range of different elements that contribute to a research programme and a successful thesis.

We will look at how an emphasis on developing project management skills can overcome some of the problems that students face when co-ordinating their research. This scenario takes the form of extracts from the diary of Jacob, a doctoral student. It is entirely fictional and has been written especially for this training pack. Please read the diary, and then consider the questions that follow. When you have done this, click ‘Read Comments’ to compare your reflections with our own thoughts on this topic.
Jacob’s Diary:

1 October

It’s the start of the second year of my doctorate (comparing clinical care in sickle cell sufferers and carriers) and the next 12 months is going to be busy, as I shall be collecting data and doing the analysis this year. My first year laid the ground work, with the literature review and research design all written up for my confirmation meeting and signed off. One outstanding task is the ethics approval, which has to be handled through an NHS ethics committee as it entails a questionnaire survey of patients. I’ve submitted the form and will have to go for an interview at the ethics committee in a few weeks.

14 October

A good meeting with my supervisors Dr Martin and Dr Faisal today. We discussed my protocol for the research and have agreed the sample size needed to achieve sufficient power for the study. It looks OK: a sample size of 50 in each group will be sufficient, and that should be feasible in the time I’ve got. The consultant I’d agreed the study with at the hospital said I should be able to get 12 patients per clinic, so that’s 10 weekly clinics max, so I’ll be finished by the end of January.

30 October

Just had a scary time at the ethics committee: ten people sitting round a table interrogating me! And not the best outcome: they think some of my questions about inheritance of sickle-cell could be distressing and I have to sort out a way to offer counselling. Dr Martin was with me and says he knows how to sort this out. I hope so.

1 December

We did sort out the counselling issue and the chair of the ethics committee signed it off today.

8 January

My first day at the sickle cell clinic and so much went wrong I can’t believe it. The consultant wasn’t there and the doctor running the clinic hadn’t been told I’d be present to administer the questionnaire. He said he was too busy to check it, so I couldn’t use it with the patients in the clinic. Eventually I managed to persuade him it had been agreed by the consultant and even signed off by the ethics committee. However, I wasn’t then able to ask about half of the patients any questions, as they were whisked straight into the consulting room and then left immediately afterwards. Also, of the four to whom I did talk, all were carriers and none have the disease. At this rate, this is going to take a lot longer than I thought.

15 March

Twenty carriers and ten with disease so far. I was supposed to be finished with data collection by now. Had a meeting with my supervisors and they look worried, but there’s
nothing I can do about it, at all. I gather data in the clinic one day each week and waste the other four, with nothing to do. I should have been doing three clinics a week in different cities, but that would mean three ethics committees, loads of negotiation of access, so it’s far too late now.

20 August

Today I got the last of my sample. Now I have to analyse my huge pile of questionnaire data! Trouble is, a lot of it is free text that can’t just be turned into numbers and fed into a computer. I’ve missed my summer holiday and am desperate for a break, but I’m beginning to panic as I am now way behind schedule. My third year starts in five weeks!
Reflective Questions

Now read the following questions, and use them to reflect upon issues of project management that have been raised when reading the scenario. There are no right or wrong responses: this is an opportunity to think more deeply about the issues, and perhaps relate it to your own ideas and experiences. After you have written your thoughts, you can see our comments on each question.

Please answer these questions before reading on in this task.

Q1. What were the root causes of Jacob’s difficulties in the second year of his doctorate?

Q2. Were you his supervisor, what would you have done to help Jacob plan his research project?

Q3. What are the key skills that a student requires to manage doctoral research?

Q4. How would you de-brief Jacob at the end of his second year of his doctorate, to support the development of his skills in project management for the rest of his studies and his future career?
Our Comments on the reflective questions

Compare what you have written with our thoughts on the questions.

**Q1. What were the root causes of Jacob's difficulties in the second year of his doctorate?**

What happened to Jacob can beset all kinds of project: one task takes longer than expected, so that delays the next and so forth. Hanging around for nine months collecting data with no other useful task to perform four days a week was hugely wasteful. One might conclude that the main issue is therefore poor time management and that Jacob needed a clearer estimate of how long each task would take (for instance, by the use of a tool such as a Gantt chart).

But Jacob’ difficulty ran deeper than that: he did not have a clear *oversight* of the project and how it needed to unfold in order to keep on target, meeting specific objectives in order to achieve the overall aim. He had no contingency plans to address problems, and without this, he became the victim of events, rather than their master.

**Q2. Were you his supervisor, what would you have done to help Jacob plan his research project?**

Jacob needs to see himself as a project manager, initiating and conducting a clear plan of action.

The first step is to help Jacob to identify the objectives (concrete actions) that are needed in order to achieve the aim of the research. These would include: agreeing a feasible research design and methods of data collection and analysis; gaining ethical approval; selecting a sample; developing research instruments, gathering data, and so forth.

These objectives should be set out clearly, and can be the basis for a project plan, using a Gantt or equivalent chart to identify how the project will progress and what kinds of time scales are needed to achieve each objective, with start and end dates, and some contingency for the inevitable glitches that occur in research. Mark out milestones (for instance, data collection initiation and completion), with projected dates for attainment.

However Jacob also needs:

-- A controlled and organised start, middle and end to each phase. Planning ahead can ensure that unpredictable preparatory elements like gaining ethics approval or ensuring access to subjects are completed and confirmed in advance of initiating the phase of data collection.

-- Flexible decision points to address deviations from the plan. When the data collection unravelled, could the research design have been adapted? A meeting scheduled for one month into data collection could review problems and seamlessly move to a ‘plan B’.
-- Clear plans for appropriate utilisation and management of resources. In this case, the main resource was Jacob’s own time, and this could have been used far more effectively by attending multiple clinics.

-- A risk management strategy, to predict possible problems such as slow recruitment of subjects into the study or failure to gain ethical approval, and pre-plan solutions.

Rather than trying to micro-manage Jacob, your role as supervisor is as a mentor, giving him the skills to help Jacob become an effective project manager. With regular project meetings, you become the project manager’s advisor, supporting his key decision-making as the research progresses. Developing Jacob in this way needs to start early in the doctoral research process.

**Q3. What are the key skills that a student requires to manage doctoral research?**

Effective and efficient project management involved a range of skills that together enable students to organise and plan their work. These include:

- Analytical and strategic thinking;

- Decision-making;

- Resource management: resource estimation; costing and budgeting; and appropriate deployment;

- Time management;

- Risk minimisation and risk management;

- Evaluation (of outcomes against objectives);

- Reflexivity about performance against targets.

Doctoral students will possess these skills to varying extents, but a doctorate is a learning experience, and can be used to develop these skills. The supervisors can help to make this a productive rather than a nerve-wracking experience, by working with students to develop these skills and use them to manage their research project.

**Q4. How would you de-brief Jacob at the end of his second year of his doctorate, to support the development of his skills in project management for the rest of his studies and his future career?**
Jacob has had a tough time and may have lost confidence in his capacity to complete his doctorate. He is also now under a lot of time pressure.

Your de-briefing needs to focus on the lessons learnt from the problems has faced, and encourage him to identify where and why things went wrong. This can be the basis for introducing the techniques of project management, to show how project management skills and techniques can be used to take control of a project and not become the victim of events.

With Jacob, work together to use the techniques outlined above to plan the rest of the study period, including analysis, writing up and preparation for the viva.

Some Final Thoughts

As we have seen, project management brings together a range of skills and competencies, and supervisors can be tempted to assume that doctoral students have the capacity to draw upon these to manage their project. However, as evidence shows from many walks of life (from planning a wedding to delivering the London Olympic venues and facilities on time), effective and efficient project management makes the difference between a project that achieves its aims and one that descends into chaos, over-running and escalating resource costs, or potentially failing altogether.

You will probably prefer to introduce project management to students as a generalised approach to planning and co-ordinating activity. However, some more formalised approaches to project management do exist, such as the ‘PRINCE2’ methodology. PRINCE (PRojects IN Controlled Environments) takes as a fundamental that a project is driven by its business case (roughly equivalent to a full-costed research proposal) and covers project initiation, controlling stages of the project, and closing a project. All stages in a PRINCE project have to be fully documented, to provide an audit trail, which serves both to ensure a project is on track, and to assess where problems arose in a project that does not achieve its objectives. You may be interested to look at this approach, so we provide a reference to the PRINCE web site below, which also gives information about courses.

In conclusion, the skills of project management, which can be gained and refined during a doctoral programme, supply a competency that will be of huge value to graduates in their subsequent careers, and also an asset that most employers require in their professional workforce.

Further Reading
