PostdocTraining

Eclass 12

How to run the perfect project (and be first in line for future projects!)

In the last eclass we covered the many ways you can find funding for your project. Once you've secured the money, however, how do you actually run a successful project - one that produces optimal outcomes and runs on time and on budget?

As you'll gather from what follows in this eclass, it's actually not that hard to impress employers, funders and collaborators, and get the job done, with an organised, structured approach to project management. However, few researchers get the training to develop the necessary capability. This eclass is designed to help give you the edge you need.

Project management is a key skill for any researcher, but it's rare to find postdocs who have actually been taught how to run projects successfully.

Why are good project management practices important? In essence, they are what you need if you're going to complete each project

- ➡ as close to your initial plan as possible;
- ➡ on time and on budget;
- ➡ at low stress levels, with increased pleasure in your work and job satisfaction;
- ➡ with relationships, collaborations and your sanity still intact; and
- ➡ with funders and project partners impressed and keen to work with you again.

You'll quickly discover that the principles of excellent project management are mainly just common sense. They *are* simple; but they are also critical to the smooth running and successful completion of projects of all kinds.

A key component of the 'gold standard' for project management practices is the principle of 'no surprises'. This does not mean, of course, that good projects and the approach to managing them stick rigidly to the same plan from start to finish. In fact, nearly every project of any length does change direction in some way, loses or gains staff, or encounters budget or resource issues that alter the project's course. However, the essence of good project management is to anticipate these changes, plan for them to some degree, detect them early and adjust the project accordingly.

The main aim of this eclass is to give you enough grounding and confidence in the basics of project management to make a success of any of the projects you might typically expect to run, now and in the future. These principles are relevant for literally any project you might take on such as:

- a research program funded through a direct government grant;
- a partnership project with outside collaborators, including industry, charitable foundations and government agencies;
- a consultancy;
- development and purchase of an experimental set-up;
- running seminars and events, such as a conference;

- your teaching load for the year; or
- a student project you are supervising.

The best practice principles of effective project management relate to:

1. **Goal setting**
2. **Identifying and allocating resources**
3. **Project planning**
4. **Finances and budgeting**
5. **Managing risks**
6. **Managing progress, monitoring and reporting**
7. **Reviewing projects and capturing lessons**

This eclass goes through each of these 7 categories in some detail, giving you practices to follow and examples of issues to consider for the type of projects you are likely to run.

The main point to remember is that, to manage a project well, you need to revisit the principles at regular intervals during the project's life, to assess any changes that might have occurred and respond to them. This way, you pick up on any activities that may have crept in that aren't part of the project 'story' that you set out in your original goals, components that weren't allowed for in the budget, or a timeline that has somehow started to blow out when you weren't looking.

This process of revisiting the principles is the best way of reaching the 'no surprises' ideal and managing a project really successfully. We have created a very simple **Project Management Tool** (see the online version of this eclass for the download link) to help with this, as a framework for structuring your projects and assessing their progress in line with the best practice principles. We also provide low-tech versions of a timeline planner for individual project components (like a simple Gantt chart - more on this later) and a basic budget management tool (which are linked from the relevant sections of the online version of this eclass).

1. Goal setting

One of the great pitfalls of project management is not establishing a clear and agreed goal, or set of project aims. Everyone involved in the project needs to understand and agree to its objectives, and know where the project is heading at all times. They also need to know how the project is going to reach its objectives, which is the subject of Principle 3.

For those engaged in doing the work with you, such as your collaborators or students, these questions are the central theme, or 'story', of the project. Being clear about the story from the outset means all your project team members know to avoid - or at least question - anything that does not relate to this story. It guides the team's effort, helps avoid tangents and contributes to making project activities as productive as possible.

For projects that involve a funding body such as a grant or a consultancy, setting out a clear story and aims crystallises the funders' expectations about the project. You will have identified the aims of the project in your funding application or proposal for a

consultancy. As you go through the project, put yourself in your funders' or partners' shoes: they know the goals - now, how would they want to be treated in terms of milestone reports, information about achievements, communication about project changes or sharing of results? What will work best for them? Make sure you ask yourself how you are going to provide what they expect from you, and that you cater for this in your project plan.

Reminding yourself regularly of the project story and its aims will help ensure that your project does not veer off course, that you manage the risk of misunderstandings developing, and that you deliver what you have agreed on, at all times!

2. Identifying and allocating resources

In the context of managing a project, your 'resources' encompass everything and everyone you need for reaching the project goal and fulfilling the aims. The more detail you include in this planning process - both at the beginning of the project and during your regular project reviews - the less likely you are to find you are short of an essential resource.

There will be many questions you'll need to ask yourself about each particular project you run, but as a minimum, issues you'll need to consider in your planning include:

- **People**
  - Who will be involved and what is each person's role in the project?
  - What is each person's availability? Will this change over the course of the project and how will this affect progress?
  - Do you need to employ someone and how long will this process take?
  - Do you need help from students and how will you find suitable candidates?
  - Who will manage each of the people directly engaged in the project, and the collaborators or funders who are indirectly involved?

- **Equipment, facilities and locations**
  - Do you need to buy or book critical equipment?
  - When do you need equipment by and will it be available at various key points in the project?
  - If you need to build a set-up, what are the steps in designing, buying the parts and building it?
  - Do you need to outsource some services and/or labour and what is the timeline for securing this support?
  - Does the availability of key facilities or accessibility of investigation sites align with your intended project timeframes and activity milestones?

- **Supplies and data inputs**
  - These supplies may be chemicals, animals, molecular kits, and so on, or sources of essential data. Which supplies are readily available and which ones require specialist inputs for which you still need to find a source?
  - Do you need special permits, approvals or facilities for your supplies? This is particularly important if you need permits where the application process will extend the timeframe before you can access a critical resource.

3. Project planning

Having gone through Principle 1 (Goal Setting) and Principle 2 (Identifying and Allocating Resources), you are in a good position to draw up an overarching project plan. The key to a good plan is that everyone in the team agrees on the:

- **structure**: what are we doing? (these are your agreed goals and aims).
- **timeframes**: when are we doing it? (and what milestones do we want to reach, at what point?)
- **process**: how will we do it?

Some government-funded grants may not require you to come up with a detailed timeframe or milestones. If this is the case, make sure you set your own. Projects without timeframes and milestones are bound to be less productive and successful than those that have clear timelines to work with (it's the old chestnut, "what gets measured, gets done").

Given the imperatives of most other types of project partners - whether these are commercial, logistical, social or political priorities - you will probably have had to identify the structure, timeframe and milestones when you prepared your funding proposal for them. Make sure you stick to these and do whatever you can to deliver what you promised, by the time you promised it!

Clear project deadlines are a great way to focus everyone's minds - yours and those of your collaborators and students. They allow you to manage your project team according to an agreed framework, around the tasks they agreed to complete.

At the project planning stage you also want to agree on how you will communicate and what processes you will use. Options here are the type of meetings you want to have (in person, via telephone, Skype or other platforms - there's more on this in section 6); how often you want to meet and/or communicate with each other (weekly; monthly; on demand...); and how you will share project information.

An excellent tool to start using for planning is a Gantt chart - essentially a type of bar chart that provides a handy visual illustration of the project schedule. It's a valuable companion to an over-arching project plan along the lines of the template project management tool provided with this eclass.

The real power of a Gantt chart is the visual display of task timelines and how these timelines depend on each other. For instance, if you are planning a set of experiments that relies on a custom-built set-up, or data collection requiring a specially designed survey, you can plan and monitor in detail how timelines for design, ordering, assembly and trouble-shooting affect the timeline for the experiments or data collection.

How to start?

- Use our template **Gantt-type Chart Tool** (see the online version of eclass for download link) to create your first chart. It's low-tech but will do the job for most projects that are typical of academic research.
- For more complex projects try http://gantter.com which allows you to create tailored Gantt charts that are more sophisticated.

4. Finances and budgeting

Research projects don't usually require complicated budgeting or finance procedures. The essentials are to record in advance what revenue you expect to receive and how much you expect to spend on each aspect of the project; and then, how much you actually receive and spend as the project proceeds.

If your project is the result of a successful grant application, it is likely you will have had to prepare at least an outline budget as part of the application, which will get you started. If your project doesn't already have a budget, your institution may well have a grant support team including a finance specialist who can offer advice and a budget template to help you on your way. If not, we have designed a simple **Budget Tool** (in Microsoft Excel; see the online version of the eclass for the download link) for recording the financial details of each project you manage.

While the actual finance procedures are simple, regular updates and checks of your budget situation are the keys to making sure you remain within your financial means and optimise use of the funds you have.

You need to have a clear overview of your budget at all times by establishing the following simple procedures:

- have detailed records for incomings, outgoings and running totals;
- give each key item or activity its own budget total. This way you make sure you do not overspend in one area, leaving you short in another. Our **Budget Tool** gives you an easy way of creating budget totals for key items;
- consider cashflow over the life of the project as a whole. For example, many granting agencies and other financial partners stage their funding over several set periods, or do not allow you to carry forward funds for more than 12 months. Establish whether this is the case with your funds and schedule purchases for when you'll have sufficient money;
- allow for exchange rate risks (if you purchase equipment or need travel funds in a different currency); consider inflation (especially for projects of longer duration); and include at least some provision for contingencies (e.g. 5%), for example to cover equipment failure or loss, or an unexpected additional field trip.

A common problem with research institution-based project management is that most institutions' finance systems are designed for the finance staff, not researchers. This can cause issues if you cannot readily access financial records tracking your income and outgoings, such as salaries, purchase orders and payment for services. If your institution makes it hard for you to track income and expenditure, do ask your finance staff to send you transaction reports on a monthly or quarterly basis (set yourself a reminder in your calendar) so you can verify and reconcile financial transactions against your own project budget.

5. Managing risks

Identifying and proactively managing your risks is the key to delivering a project without surprises. It means that you are always at least half a step ahead of a problem developing, which allows you to react early and minimise damage.

Having a process for managing risks lets you live in the healthy middle ground between constantly fretting that the project may collapse at any moment and having your head in the sand, ostrich-style, ignoring all looming problems!

Risks that are typical of most projects in research include:
- loss of research 'arms and legs', through collaborators or students leaving;
- loss of some funding and/or a project partner;
- IP or contract issues delaying or hindering the project;
- a flawed project design;
- failure of experiments or equipment; or
- being scooped by another group.

You can manage risks by using the following steps, A to D:

A. At the beginning of your project identify a list of possible risks to your project. Be creative without panicking and be prepared to consider worst-case scenarios. Go through the list of risks you have identified and give them each a likelihood score out of 10, where:
   - 10/10 means it will definitely happen;
   - 1/10 means there is next to no chance it will happen.

B. For risks with a score of 5 or above, think about a Plan B. For example, who could replace a core researcher in your team; or what could be salvaged if another group published a key result before you? You will have allowed for a basic financial contingency in line with the principles in section 4.

C. Go through this risk assessment process at regular intervals during your project, think about new risks and re-assess the likelihood scores of the risks you have already identified. For example, at the beginning of the project you might consider delays due to IP or contract issues to be a high risk, but as you start working you may find your industry partner is comfortable with these issues. That means you can reduce the score you gave to the risk of the project stalling from this cause and concentrate on other potential risks.

D. Communicate with your project team and partners about any risks that look like becoming reality, show them that you've already considered the possibility and work with them to preempt or resolve emerging situations, if appropriate.

Remember, there are positive risks to plan for as well as potential disasters, and it's a good idea to consider some of these too. For example, what would you do if another industry partner wanted to 'buy in' to your project, or you completed your first series of experiments in half the time you expected? Some risks are more fun to plan for than others!

6. Managing progress, monitoring and reporting

Given the project focus of this eclass, we don't aim here to help you hone your people management skills (a big topic, for another time!) but instead to focus on how to put a simple system together to structure, guide and keep on top of project progress, and share the results. The framework has two major components:

A. Guiding and monitoring progress
B. Communication

Component A. - Guiding and monitoring progress

There are a couple of aspects and support tools to consider in relation to structuring and assessing progress.

- **Software**: There's a whole range of formal project management tools available with sophisticated progress tracking, though much of it is too elaborate for typical projects in research, whether at the early career stage or later. Our basic **Project Management Tool** (linked from the online version of this eclass) may be sufficient for you. Some software can be helpful, though, if your project includes many email conversations, a number of collaborators working on different aspects of the project and tight deadlines. A few suggestions for easily accessible options, in order of complexity and cost, are:
  - **Outlook (Microsoft)**: if you use Outlook as your email program, you can also use it as a basic project management support tool. Its main strengths are to set reminders for tasks, manage your appointments and order your emails into projects.
  - **dooster.net**: this cloud-based project management tool is extensive and for three projects or fewer, it's free (at the time of writing). This is a good entry-level project management tool if you want to see whether such software suits your situation.
  - **basecamp.com**: this is one of the most successful project management platforms used by many businesses, but it's also quite expensive for research group use. It has 'to-do' lists, milestones, project overviews, file sharing, message boards and commenting functions. If you are running a project or managing a large group with many international collaborators, this may be something to make your life easier.
  - **Microsoft Project**: very extensive and expensive project management software. It may be worthwhile to check whether your institution has a site licence if you think the program may be of use to you.

Whatever tool or framework you choose to help guide and structure progress, you'll need to put in place a process that allows you regularly to review how your project is travelling. This involves setting review timeframes that are appropriate to the type of project (anything from weekly to every 3 months), and being clear about what progress you want to achieve and how you'll know you have achieved it (e.g by setting SMARTER goals - see eclass 5).

Depending on the size and complexity of the project, you may want to nominate someone to be the guardian of the project plan, responsible for recording information and producing reports for project meetings and milestone statements. You may even

want to consider making familiarity with project management software tools a criterion for recruiting that team member to the role.

- **Procedures for managing information**: from correct naming of files to directing and categorising email flows, effective management of information associated with the project will save you a huge amount of time and allow you to assess your progress more easily. We covered this in eclass 7, with many good ideas and practices also suggested in the bonus session by information specialist, Loani Prior.
- **Research group management**: try out quartzy, a free inventory database and facility manager. It's also a good place to keep protocols and instructions for facility users.

Component B. - Communication

As part of just about any project, you'll have two main groups to communicate with:
- **the project team**: the co-workers who help you with the project, such as collaborators or students; and
- **other stakeholders**: those who have an interest in the project such as your funding agency or an external sponsor.

Your communication with each group takes different forms.

Project team

With the project team you'll need to have regular catch-up meetings, whether in-person or virtual, to focus on the practical, operational aspects of the project. These are essential to make sure everyone is aware of progress towards milestones and against the timelines you set yourself, and knows about delays or risks that might effect work flow - very much in line with the 'no surprises' principle. With the whole team together, you will have agreed on the frequency and form of meetings that works for everyone (see Principle 3 - Project Planning).

As the project manager, you will be the one keeping track of all the strings being pulled. It is also your job to provide feedback and encouragement and make sure everyone in the team, including slower learners and those who are less easily motivated, are encouraged to keep the work on track. How do you stay in touch?
- Traditional: in person - face-to-face, by email or phone.
- If you cannot meet in person but would like to find a platform that is more interactive than email or standard phone for involving a group of people based in different locations, try these free resources:
  - Skype conference calls;
  - Facetime (for Apple users);
  - www.freeconferencecalling.com - free platform for conducting conference calls on the phone with recording options;
  - Google+ hangouts for free video group chats; or
  - a private LinkedIn group for your project. Obviously you have to consider any privacy issues when using these 3rd party platforms. Another platform for creating a free group is Facebook, but LinkedIn might be more appropriate in a work environment.

While we're on the topic... a note on how to hold good progress meetings

An effective project meeting is one where, at the end, each team member knows what his or her next steps are and the timeframes for these steps. It shouldn't be 'death by PowerPoint' and you also don't want to waste your or other people's time with meetings that end without agreed actions. The following are the key steps (a. to f.) to stick to when planning your meetings:

a. ***Make sure all the essential participants will be involved*** *- or if they can't be, that you have the necessary input from absentees in advance of the meeting so the group can still move ahead.*
b. ***Decide on the most efficient way of having an effective meeting*** *- can it be a phone call followed by an email or do you need to get the key people into one room?*
c. ***Send an agenda beforehand - always!*** *It doesn't need to be overly detailed but the invitation email should say what the meeting will be about and what you want to achieve, so participants come forewarned and forearmed with the right information to share with the group;*
d. ***Stick to the agenda*** *during the meeting, and tick off each point as you go.*
e. ***Decide on actions then and there, and agree on the person who should complete each task, and by when****;*
f. ***Send an email to all attendees after the meeting identifying the agreed actions, team members responsible for them and their timelines****. It's a good idea to send this email also to team members who didn't need to be at the meeting but who should be kept in the loop about how the project is progressing.*

This may sound a little formal, but your team members and collaborators will thank you for not wasting their time and moving the project forward efficiently - which is in everyone's interest!

Stakeholders

Your communication with your other stakeholders, such as funders, is less about operational issues and more about how the project is progressing at the 'strategic' level - milestones met, key findings, and aspects of progress that they might be able to use in their own marketing and communication, such as annual reports. It is essential that you keep them up-to-date on the project 'story' and report at the points agreed with them in advance. As we've mentioned elsewhere, academic researchers have a reputation for being terrible at fulfilling milestones and providing timely reports, so by simply doing what you promised to do, you will stand out!

It is remarkable how quickly a project's credibility and the confidence of stakeholders can be lost in the absence of communication. Even if progress isn't very good, or there has been some specific set-back, it is far better to get in touch with stakeholders to explain this and what you are doing about it, than to miss a milestone reporting date and hope nobody notices. Here too, the principle of 'no surprises' is the best policy.

Equally, don't underestimate the kudos and goodwill you can generate by keeping your funders and other stakeholders well informed. With regular, focused updates you can give your partners the tools and opportunities to show off with your achievements, and help them in turn to justify the wisdom of their investment in you. You will leave an

impression of professionalism and reliability, and give yourself the best chance of being asked back to do more work for them.

Actual formats of reporting vary widely, so if stakeholders have not specified any requirements, just ask them what would work best for them in terms of level of detail, frequency, format and preferred method of delivery.

Note: Projects become more challenging to manage the more people there are involved in the work, and the more diverse their situations, locations, needs and inputs. Effective communication is *the* principal skill you need, to enable you to run such projects successfully. We therefore dedicate the next eclass (13) to effective communication and the negotiation skills that are also essential for good project management.

7. Reviewing projects and capturing lessons

It is surprising how frequently this last principle gets left out of considerations about good project management: simply learning from your successes and mistakes!

As you monitor the progress of your projects you should always introduce regular 'post-mortem' reflections to identify what has worked well and what has not. Don't wait until the end of a project, but use natural milestone moments in the project such as the completion of an experimental section, submission of a paper or the completion of an interim report, as the 'peg' for a stock-taking session. Simply ask yourself and your project team the questions:

- What has worked well?
- What has worked better than expected and why?
- What were the problems and why did they occur?
- What could we have done to avoid these problems?
- What did we do that resolved any problems?
- What can we learn from successes and problems we've encountered, and put into practice to speed the project's completion and get a better final outcome?

Action Plan for eclass 12:

A. Download the **Project Management Tool**, **Gantt-type Chart Tool** and **Budget Sheet** (see the online version of this eclass for the download links).

B. Identify one project you currently manage and populate the tools by going through the best practice principles discussed in the 7 sections of this eclass.

C. Pick a time in future to review how you're applying the best practice principles to this project and put that date in your calendar now, as a reminder.

D. When time permits, repeat step A-C with each of the substantial projects you are currently managing.

The next eclass is all about effective communication and negotiation - skills that you'll need for success in every part of your career, wherever it takes you.