

Postgraduate Demonstrators and Teachers

During your time as a postgraduate you may get the opportunity to demonstrate to, or teach, undergraduate students. Demonstrating or teaching can help you to fill in some of the gaps in your own knowledge, better understand your subject through teaching it, give you a break from your research, add something different to your CV and give you the chance to earn some extra cash.

This guide focuses on demonstrating in practical sessions, but also briefly considers tutorials, lectures and demonstrating on field trips.

Top tips

- Think back to the teaching and support you received as an undergraduate and identify good and poor practice;
- Attend any and all briefing sessions or meetings before the practical;
- Talk to other demonstrators about their experiences;
- Ask for feedback on your demonstrating and reflect on how you could improve;
- Encourage questions and make sure students are aware they can ask for further explanations;
- Arrive early for any practicals and teaching sessions;
- Meet the deadlines for marking and returning work to students;
- If you have the opportunity, go on a training course, perhaps with your institution's graduate or staff training unit, before you start;
- Read up on the topic before you go to the practical and make sure you can explain the relevance and theory behind any practical work;
- Try to distribute your time equally between groups or individual students;
- Be confident enough to say that you don't know the answer to a student's question, but you can point them towards where they can find out; and
- Have a look through the Centre for Bioscience New Lecturers Resource Folder, it has hints and tips on tutorials, practicals, fieldtrips and lectures for new teaching staff.

“Exploit the knowledge of your demonstrators – they will all have been in your position at some point” Freya Holland-Maxwell, bioscience student

What else could you consider?

Demonstrating in practical sessions

- Read the practical schedule before you get to the session, and make sure you understand what students are being asked to do, how to do all of the calculations and how to calibrate and operate the equipment;
- Make sure you know who and where the technicians are and where the glassware, equipment etc students will need during a practical is stored;
- Technicians are very valuable people to know, they may be able to identify problems with protocols and answer questions frequently asked by students if they have worked on the practical previously;
- Be prepared to explain techniques and instructions given at the start of the practical, e.g. pipette use and how to turn on or calibrate equipment. In large lab groups students may have found it difficult to hear, or equally may not have been paying attention;
- If an experiment produces unexpected results, talk to the students, go through the protocol with them and check they have completed every step. See if this is an isolated incident or if the whole class has a similar problem, in which case, talk to the academic leading the practical;
- If there is a disabled student in the group ask them what works best for them in terms of support. Make sure you talk to the student and not the helper or support worker; and
- Be aware some students will be more enthusiastic than others and in groups there may be some who sit on the sidelines and watch; encourage them to take part. If one member of a group is trying to do all the work encourage the whole group to take an active role in experiments.

Health and Safety

Make sure you know about health and safety issues associated with any equipment and chemicals, can explain them to students and know how to clear up hazardous spillages. Check students are wearing safety or protective clothing, e.g. lab coat, gloves, safety glasses and you are wearing them too. Before you start the practical, check where the first-aid box and fire exits are and who the first-aiders are.

Encouraging thinking and questions

- Students may find it easier to talk to you and ask you questions than the academic leading the practical. You are closer to them in age and experience and were probably in their position recently;
- Some will be more interested in “getting the right answer” than understanding what they are doing and why they are doing it. Try to relate a practical exercise to “real life” examples, what students are learning about in lectures or as an example of the scientific process;
- When discussing work or results with students, ask open questions, e.g. “Tell me what happened”, or “What might you do next” rather than yes / no answer questions and avoid leading questions, such as “I’d have thought ..., wouldn’t you?”;
- Reflective questions, such as “Can you tell me more about it” or “Why do you think that might have happened?” could encourage students to think about the practical, why they are doing it and why certain steps in a protocol are important; and
- If students complain that something is too hard and they can’t do it, don’t just provide them with an answer. Work with them to break down a protocol or calculation into smaller steps.



“It is worth asking the demonstrators lots of questions so you can understand why certain methods are used. Demonstrators are usually PhD students, who were in the same situation as you as little as three years ago, so they tend to be very approachable.” Michelle Edwards, bioscience student

Marking write-ups

- Make sure you have the mark scheme and discuss with the academic leading the practical and the other demonstrators, how marks will be awarded (if it isn't clear) so everyone is consistent;
- Giving feedback? Try to make it constructive, writing “Wrong” or “No” won't help students improve; and
- If you come across identical write-ups, check to see how much collaboration the practical asked for (a group might be required to submit identical write-ups) if the concern remains, bring it to the attention of the academic leading the practical.

Final year project students

You may be asked to supervise final year project students undertaking work in the lab.

- Discuss with their supervisor what exactly your role will be in supporting or working with them; are you going to be teaching techniques and supervising in the lab, or will you also be commenting on report drafts and recommending relevant papers?
- Students may expect experiments to “work”, make sure they know, if experiments don't produce the expected results, that science doesn't always work as you might want and an unexpected result is still a result;
- As with demonstrating make sure you know about any health and safety implications of the chemicals and equipment students are using, and encourage them to ask questions if they are unsure about anything; and
- Arrange specific times for project students to be in the lab, so both you and they know when they should arrive and you have time to undertake your own work.

Below are a few pointers on tutorials, lectures and fieldtrips, for more information see the New Lecturers Resource Folder at: www.bioscience.heacademy.ac.uk/resources/resourcepack.aspx

Tutorials and small groups

If you have a tutorial group to supervise:

- Have some short ice breaker activities so everyone can get to know each other's name during the first tutorial;
- Find out how many students are in the group, make sure you have enough chairs, handouts etc; and
- Make sure you understand the procedure for booking rooms and have rooms booked well in advance.

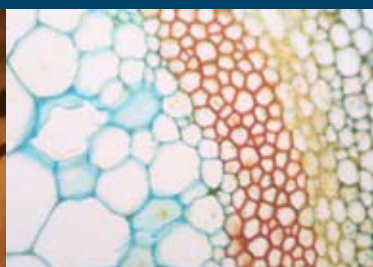
Giving lectures?

- Can you use the technology? Do you know how to turn the data projector and PC on and who to call if they aren't working?
- Can your students read your PowerPoint slides from the back of the lecture theatre?
- If you're showing a DVD, have you turned the subtitles on?
- Can everyone hear you?
- Do you have enough handouts?

Demonstrating on a field trip

As with demonstrating in practical sessions you should;

- Think about health and safety issues;
- Understand what students are meant to be doing;
- Be able to explain techniques;
- Encourage students to question and think about their work;
- Relate practice and theory; and
- Check with the academic leading the field trip who the first-aiders are and what to do in an emergency.



Resources for students

These websites may be of interest to students you teach or demonstrate to:

- Engage - a website intended to support students with the key aspects of planning and carrying out a research project from literature reviews, to step-by-step statistics and scientific writing. www.engageinresearch.ac.uk/
- The STARS (Scientific Training by Assignment for Research Students) project, has a useful tips section with information on oral and poster presentations as well as a guide to scientific writing. www.stars.rdg.ac.uk/stars.html
- Bioscience Horizons is a free online journal from Oxford University Press publishing the best undergraduate bioscience research from the UK. www.oxfordjournals.org/our_journals/biohorizons/
- Centre for Bioscience student pages bring together a variety of resources for bioscience students, including the guide *Advice for Students Starting Their Bioscience Course*. www.bioscience.heacademy.ac.uk/network/students.aspx

Further resources

Teaching / Demonstrating

Resources from the Centre for Bioscience including Postgraduate pages: www.bioscience.heacademy.ac.uk/network/postgrad.aspx and New Lecturers webpages. www.bioscience.heacademy.ac.uk/network/newlecturer.aspx

The Centre for Teaching Learning and Assessment at the University of Edinburgh online handbook for tutoring and demonstrating includes chapters on demonstrating and supporting and advising students. www.tla.ed.ac.uk/services/tutdems/handbook.htm

The Handbook for Economics Teaching Assistants from the Economics Network, although intended for economics students, contains useful pointers and tips, including effective questioning skills and teaching diverse classes. www.economicsnetwork.ac.uk/handbook/gta/

Higher Education Academy SNAS (Supporting New Academic Staff) database is a searchable database of resources and information about teaching intended for new teaching staff. www.heacademy.ac.uk/ourwork/professional/snas

Teaching matters and resources, for use in small group teaching and tutorials, from the University of Otago, New Zealand. <http://hedc.otago.ac.nz/hedc/asd/Tutoring-Demonstrating/For-Tutors-Demonstrators/Teaching-matters-and-resources.html>

Postgraduate sites

From the UK Grad Programme, *Just for Postgrads* aims to help you manage your PhD effectively with advice on common research management challenges, overcoming hurdles and links to a variety of resources. www.gradschools.ac.uk/cms/ShowPage/Home_page/Resources/Just_for_Postgrads/p!edceLii

Writing Skills for Postgrads from the University of Leicester. www.le.ac.uk/biology/gat/writing/writintro.html

Educational resources for Postgraduate research. www.postgrad_resources.btinternet.co.uk

Postgraduate Statistics Centre - statistics resources for students. www.maths.lancs.ac.uk/departments/specialistGroups/psc/resources/studentresources/student-resources

