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ASTRONOMY & PHYSICS EDUCATION

Lab demonstrating in the School of Physics & Astronomy

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Teaching in P&A Moodle
https://moodle.gla.ac.uk/course/view.php?id=35450

Introduction

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The

LAB HEAD

is the

MOST IMPORTANT PERSON

for you to contact with

ANY QUESTIONS

you have about your responsibilities!

Being a demonstrator

This session gives you an overview of the roles and responsibilities associated with being a demonstrator in our undergraduate laboratories.

In addition to this you must also:

- Complete your Lab Demonstrator Training at https://moodle.gla.ac.uk/course/view.php?id=35301
- Attend the lab-specific training provided by your own lab head

Other training you must engage with …

- Mandatory GTA training for all UofG GTAs
- Equality & Diversity Training
- Safety & Environmental Protection Service safety training

All linked from the Lab Demonstrator Training Moodle

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In this session …

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- The duties of laboratory demonstrators
- The expectations on laboratory demonstrators
- The benefits of being a laboratory demonstrator
- Good practice for teaching in the laboratories
- Good practice for providing feedback to students
- Reflecting on your demonstrating

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The duties of a laboratory demonstrator

The structures of our labs

Majority of P&A courses have a practical component – our teaching labs

- These are run by a Lab Head (and Deputy) supported by a Team of Demonstrators and Technical Staff
- ”Demonstrators” – Academics, RFs, RAs, Postgraduates and Undergraduates*
- Format, length, etc, etc vary from class to class, but basic roles of the demonstrators are common across all.
  - As are our expectations on those demonstrators.

* From January 2025

Basic demonstrator roles

- Actively engage with students in the lab
- Answer student questions
- Provide feedback on progress
- Make sure everyone is working safely
- Help identify problems with equipment
- Assess the students' work. →

Lab books/records
Lab reports
In class oral presentations
Viva-like interviews

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The expectations on demonstrators

Basic demonstrator expectations

- Actively engage with students in the lab
- Answer student questions
- Provide feedback on progress
- Make sure everyone is working safely
- Help identify problems with equipment
- Assess the students' work.

Fulfil these to the best of your abilities

Basic demonstrator expectations

- Demonstrators are often the staff students interact with the most in their courses
- So your interactions with those students are vital to the student experience, and how they view this School and University.
- You must NEVER give the students the impression that you don't want to be there, or that being a demonstrator is somehow a burden on you and your time.
  - You are expected to approach demonstrating with the same level of professionalism you bring to all other aspects of your role here in the School.

Code of professional conduct

At the core of everything we do is the School's Code of Professional conduct.

- Whilst this Code is directed to the students it applies equally to all staff at all levels.
- The full Code can be found on the Training Moodle – what follows here are some key points.

Our aim is to provide a **safe and enjoyable learning and working experience** for all students and staff (including student demonstrators) – all have an important role here.

Code of professional conduct

This is a **professional working and studying environment**.

- We therefore expect **everyone to behave in a professional** manner towards one another, whether they be students or staff.

Follow all safety instructions, both of general good practice, and of experiment-specific points.

- This is critical both for your own health and that of others you are working with.
- Specifically, safety instructions given by lab staff must be adhered to.

Code of professional conduct

We **value the diversity of our students and staff** and recognise that this contributes to our work by allowing people to bring together a full range of skills and viewpoints into their collective achievements.

- We expect that **all** will work productively and professionally together **in an atmosphere of mutual respect**.

Any form of harassment, bullying or discriminatory behaviour is unacceptable.

- This includes: physical acts or assault, **spoken comments**, social media or other electronic forms of communication, or graffiti or other written comments.
- This could be on the basis of any personal characteristic, sexuality, appearance, or age, including all the protected characteristics of the Equality Act, 2010.
- Any reports of such will be taken very seriously by the School of Physics and Astronomy and the University.

Code of professional conduct

"Banter" is not an excuse for offensive behaviour and is not a defence.

- Being friendly to students is encouraged, but remember you are not their friends.
- Interact with them as fellow professionals and treat every single one of them the same way.
- You may have impressions of the students, but those must never become apparent to the students.

If you encounter or witness any untoward behaviour, speech or written communication from any person or group of people in the laboratory, please report the incident to your lab head.

Personal relationships policy

UofG has a **duty of care to protect students and staff from inappropriate behaviour** which may include violence, abuse of power and trust, controlling/coercive and predatory behaviour, and sexual harassment.

UofG believes that the **professional relationship of trust and confidence that exists between a student and a member of staff is a central and essential part** of a student's educational development and pastoral care.

Staff are **required to disclose** any type of close personal relationship with a student, which could be perceived as presenting a conflict of interest to the University.

- This does not mean they are automatically forbidden and that any relationships must be stopped.

https://www.gla.ac.uk/myglasgow/equalitydiversity/policy/prp/

Personal relationships policy

Those who work for UofG **must not abuse their position in any way**, including by making any form of sexual advance towards students, pressurising students into intimate relationships, or through any form of sexual harassment, coercive/controlling or predatory behaviour

Intimate relationships between staff and students under the age of 18 are **prohibited**; where students are over the age of 18, intimate relationships between staff and students are **strongly discouraged.**

If a member of **staff becomes aware** of an intimate relationship between a member of staff and a student, **and has concerns** that this relationship might involve coercion, predatory behaviour or constitute an abuse of power, **they should report their concerns** to the Director of Research Institute or Head of School/Service who will liaise with HR to determine whether to initiate an independent investigation.

https://www.gla.ac.uk/myglasgow/equalitydiversity/policy/prp/

Personal relationships policy

The exchange of gifts from staff to students is strongly discouraged.

- If a staff member wants to give gifts to students, these should be consistent (i.e. all students should be treated in the same way), of modest value and appropriate.
- If a student gives a gift to a member of staff, the staff member should demonstrate sound professional judgement when deciding to accept the gift. If the gift is inappropriate or of significant value then they should not accept the gift, and/or suggest an appropriate form of showing appreciation.
- If a student or staff member is concerned about a gift offered to them, they can seek guidance from their Lab Head or Head of School.

https://www.gla.ac.uk/myglasgow/equalitydiversity/policy/prp/

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The benefits of being a demonstrator

These are just some examples …

Improving …

Communication skills

Practical skills

Teamwork skills

Teaching skills

Understanding of relevant physics

Getting …

To know our undergraduate population better

To know your fellow PhD students and staff better

A break from your research for a while

Paid

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Good practice for teaching in laboratories

Best practice for teaching in labs

Characteristics of an effective demonstrator

- Organisation
  - Is well prepared
  - Arrives on time
- Clarity
  - Explains things clearly
  - Makes difficult topics/concepts easier to understand
  - Makes the outcomes of the lab clear
- Knowledge and understanding
  - Has a sound understanding of the material
  - Gives the student a greater understanding of the work to be tackled
  - Admits when they don’t know answers

Best practice for teaching in labs

Characteristics of an effective demonstrator

- Dynamism and enthusiasm
  - Is enthusiastic about the work
  - Is enthusiastic about demonstrating
  - Inspires confidence in the students they help

- Demonstrator-group interaction
  - Can stimulate, direct and pace interaction with the class
  - Encourages independent thought and accepts criticism
  - Is an effective communicator
  - Can monitor whether the students are following work
  - Is sensitive to students' motivation
  - Care about the quality of their own demonstrating

Best practice for teaching in labs

Characteristics of an effective demonstrator

- Demonstrator-individual interaction
  - Treats all students fairly and equitably
  - Gives a mix of positive and developmental feedback
  - Is seen as approachable and a valuable source of advice

- This last point is vital - *think* about how you behave in the lab.
  - It MIGHT be permissible to bring some of your own work to the lab
    - This is very much something you must discuss with your lab head – they will determine what is appropriate in your lab
    - *If* permitted you must NEVER give the impression that your own work is more important
  - Make it clear you will stop that work the moment anyone needs you
    - E.g. don't sit with your back to the class

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Good practice for providing feedback to students

Providing feedback

You will give formal feedback as part of the assessment of the lab, but even more importantly you will give formative feedback whilst the students are working.

Since that feedback will directly affect the marks they will receive, the feedback you give them must therefore

- Be meaningful
- Be understandable
- Relate to the mark they are awarded.

Providing useful feedback

Traditional view of feedback is that staff "transmit" feedback messages to students

- "This is wrong", "this is right", "doing this will make things better", etc etc
- Students then simply apply this feedback.

But this staff-centric model has many problems

- Larger lab sizes make it difficult to give personalised feedback
- Assumes students understand the feedback
- Doesn't allow for student motivation/beliefs

We want to make students capable of self-regulation – be able to give themselves feedback

- Good feedback from us can lead to this.

Model for self-regulation

Figure presents a conceptual model of self-regulation and feedback, derived by Nicol & Macfarlane (2006) from work by Butler & Winne (1995).

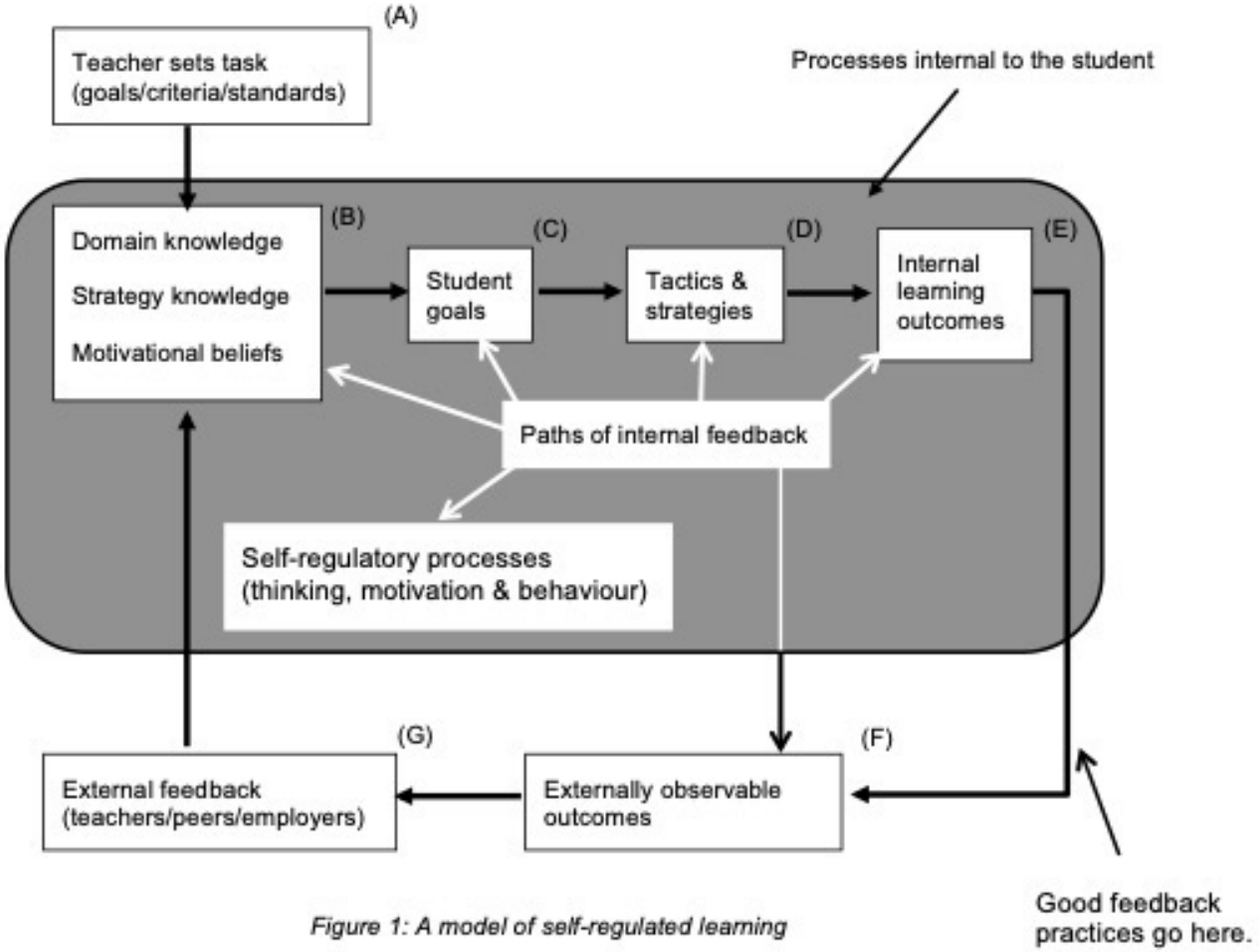

Figure 1: A model of self-regulated learning

Butler, D. L. and Winne, P. H. (1995) Feedback and self-regulated learning: a theoretical synthesis, *Review of Educational Research*, 65(3), 245-281

Nicol, D. J. and MacFarlane-Dick, D. (2006) Formative assessment and self-regulated learning: a model and seven principles of good feedback practice, *Studies in Higher Education*, 31(2), 199-218

Good feedback practices

Three key things feedback must have if a student is to benefit from it:

i. **student must know what good performance** is – i.e. the student must have a concept of the goal or standard being aimed for;

ii. **student must know how current performance relates to good performance;**

iii. **student must know how to act to close the gap** between current and good performance.

Sadler, D. R. (1989) Evaluation and the improvement of academic learning, *Journal of Higher Education*, 28(2), 147-164

Good feedback practices

7 principles of good feedback that facilitates self-regulation of a student's learning:

1) **helps clarify what good performance** is (goals, criteria, expected standards);

2) **facilitates the development of self-assessment** (reflection in learning);

3) **delivers high quality information** to students about their learning;

4) **encourages teacher and peer dialogue** around learning;

5) **encourages positive motivational beliefs and self-esteem**;

6) **provides opportunities to close the gap** between current and desired performance;

7) **provides information to teachers** that can be used to help shape teaching.

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Reflecting on your demonstrating

Reflecting “on” and “in”

“Professional practice is characterised by the capacity to reflect on one’s own practice in order that one might learn and develop that practice”

Donald Schön – The Reflective Practitioner

Reflection-*in*-action:
While doing something

↓

Happens all the time.
Quick, transient, often forgotten.

Reflection-*on*-action:
After you have done it

↓

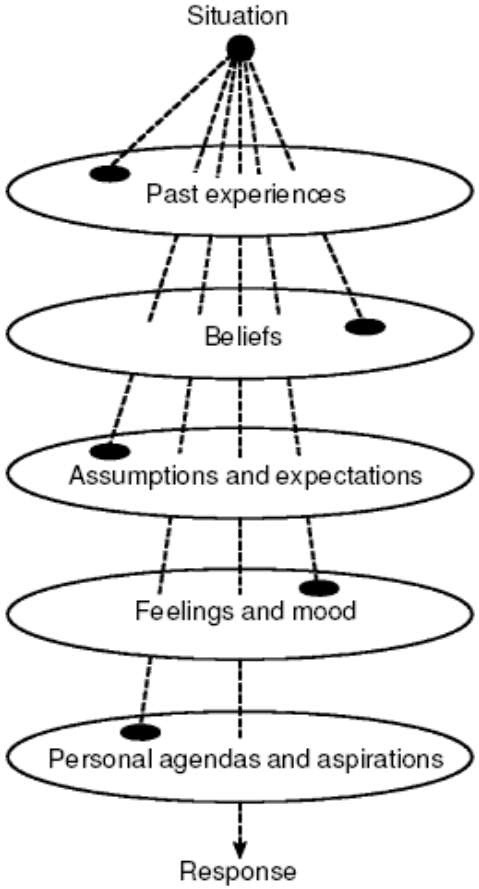
Needs to be scheduled.
Allows deep thought on what happened.

Schön, D.A. (1983) *The Reflective Practitioner: how professionals think in action* London: Temple Smith

Reflecting-on-action

You will have a unique perspective on how a demonstrating session went.

Your perspective is based on “interpretive filters”



Reflecting on your actions and what you experienced can provide an invaluable learning tool when it comes to improving your skills and practice.

One way to do this is to maintain a reflective journal/diary.

When such reflection is rigorous, systematic and ongoing, teachers are acting as *reflective practitioners*.

Good for you as demonstrators – and good for the students too!

How to reflect

Barbara Larrivee (2000) states that there are 3 essential practices in becoming a critically reflective teacher:

- making time for (daily?) solitary reflection;
- becoming a (perpetual?) problem solver;
- questioning the status quo …..always?

Larrivee, B. (2000). Transforming Teaching Practice: becoming the critically reflective teacher. Reflective Practice ,1, 293-307.

Explore your expectations and experiences

When faced with unfamiliar situations we cannot help but imagine what is going to happen and what the experience is going to feel like:

- What expectations did you have before the lab?
- Had you visualised yourself in the role of a demonstrator? What did that feel like?

As soon after a lab session as possible, address the following questions and note down your responses.

- What worked well in this lab? *Why*?
- What did not work well? *Why*?

Without asking *why* you are simply *narrating*.

You are not alone

Help is available to you …

You are never alone when demonstrating.

If you run into trouble you can call on …

- Fellow demonstrators
- Lab Leads
- Lab Heads
- Technicians

Just as we always encourage students to ask if they have questions, remember the same applies to you!

Summary

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Summary

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The role of demonstrator is vital to the School, the education of our students, and to you.

The role should be approached the same way you approach your research … professionally and with 100 % commitment.

Act professionally at all time to students and each other.

Prepare properly for your duties and give thought to your actions.

And remember that help is available to you just as much as it is to the students.

And finally …

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And remember …

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LAB HEAD

is the

MOST IMPORTANT PERSON

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