

# Postgraduate Certificate for Teaching in Higher Education (PGCTHE)

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## Preface

This portfolio summarises my studies toward the Postgraduate Certificate for Teaching in Higher Education (PGCTHE) at Aberystwyth University. The work was carried out during the period between September 2011 and April 2014, whilst I was a probationary lecturer in IMPACS. I submit this portfolio with the intention and belief that it engages with the Areas of Activity, Core Knowledge and Professional Values set out in the UK Professional Standards Framework for Teaching in Higher Education.

I would like to dedicate this submission to my friends from the Ship & Castle pub's Wednesday night crew (Su, Edwin, Rudi, Adil and others). Many thanks for your camaraderie, humour, and support during my undertaking of the PGCTHE course.

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# Chapter 1

## Contents Matrix

	Learning Outcomes: "Demonstrate development of professional ability to..."	Induction Assignments	Teaching Cycle 1	Teaching Cycle 2	Teaching Cycle 3	CPD Commentary	Teaching Observation Records	Personal Commentary
1.	Design and plan effective learning opportunities, resources and/or programmes of study.	p8-9	p10-12	p13-15	p16-18	p23, p23-24, p25-26	p32-34, p35-37, p38-40, p41-43, p44-46, p47-49	p54-57
2.	Select and perform a range of teaching methods to support learning.	p8-9	p10-12			p20-21, P23-24, p29-30	p32-34, p35-37, p38-40, p41-43, p44-46, p47-49	p54-57
3.	Design and implement effective assessment schemes, and provide feedback to learners.		p10-12	p13-15		p21, p23-24, p28-29	p50-52	p54-57
4.	Develop environments for learning that offer effective student support and guidance.			p13-15	p16-18	p20, p28-29, p30	p32-34, p35-37, p38-40, p41-43, p44-46, p47-49	p54-57
5.	Integrate scholarly, research based knowledge of learning with the practices of teaching and supporting learning.		p10-12		p16-18	p20, p27, p30-31		p54-57
6.	Evaluate the impact of teaching using a range of monitoring methods, and use to plan the development of professional practices.		p10-12		p16-18	p23-24, p25-26	p50-52	p54-57

Table 1.1; Matrix



# Chapter 2

## Induction Workshop

This chapter is a report on the residential PGCTHE induction workshop, which was held at the Metropole Hotel, Llandrindod Wells in September 2011, and the subsequent follow-up day held at Aberystwyth University. The induction was attended by a cohort of staff and students with a wide range of academic disciplines and teaching experience.

### **2.1 Personal Statement on Learning and Teaching in Higher Education**

This is the personal statement, which I prepared for the induction workshop. We had been pre-instructed to *“Reflect on your experience as a learner and discuss how this will influence your approach to teaching and supporting learning in your discipline”*

#### **My Experiences**

With my school, like many, being strongly geared-up to an “exam factory” mode, I had a very passive learning experience in secondary education. My higher education journey was filled with the usual mixture of mostly good and (occasionally) bad lecturing. Whilst many staff were evidently “pro-student”, others clearly viewed teaching as a distraction from their research. Many of the poorer experiences were due to deficiencies in, or failure of, presentational clarity. I recall one 3rd year physics lecture where a whole vast series of equations were being scribbled onto a blackboard and it was impossible to gauge where one ended and the next began! Such instances, of the students being little more than primitive “photocopiers” to obtain their notes, were also widely prevalent.

Many of my university tutors proved quite inspirational and pivotal in my career choices, especially those whom I got to know personally in small group or one-to-one situations. Often, these were older academics that had many years of service, perhaps leading me to think that some good practices in university teaching take many years of know-how and experience to fully master.

Most, perhaps nearly all, university lecturers and academic staff are now appointed based upon research record and potential, rather than their abilities as a teacher. Whilst at first this might not seem to be a system ideally suited to the advancement of university teaching, it is also the case that such teaching has to be mutually entwined with the current research activities and knowledge. This is particularly true of final year and advanced-level courses. In

that sense, the training framework of the PCGTHE would appear to be a logical means of reconciling the elements of academic research and teaching.

### **My Teaching Outlook**

As both a graduate student and as a post-doctoral researcher, I have an extensive track record of university-level teaching. These teaching roles have varied from smaller group tuition (tutorials/supervisions) up to larger groups (“problems classes”, post-graduate lectures), and have also encompassed supervision of undergraduate project work and of Ph.D. students. Much of this has been undertaken on a voluntary basis and I have taken my roles within teaching very seriously. At a fundamental level, I believe it to be right that I contribute some my acquired knowledge and skills back “into the system”, hopefully to the future benefit of my academic field.

A very dry teaching approach with a passive learning experience is likely to be a turn-off, in my experience. Rote learning or memorising of facts and equations for examinations doesn’t necessarily aid longer term intuition, even if some knowledge is essential. Giving students the tools to expand their own learning and understanding offers an alternative. Ideally, these two should be balanced in any educational process; with the latter becoming more dominant in the realm of higher education.

Also, the available methods and media have changed greatly since my time as a university student, some 15 years ago. “Chalk & talk” and acetate overhead slides have been predominantly replaced by PC-driven presentations in PowerPoint, for example. This has some disadvantages, as well as the more obvious benefits of better legibility and the improved multi-media capabilities. In particular, 50-60 minutes of PowerPoint slides can contain previously untold amounts of information, leaving students unsure of the key points of the lecture, or which details are examinable. I would anticipate heavy use of PowerPoint in my lecturing, and see these issues as a big challenge.

Finally, one important aspect of my job role as Lecturer, and also related to teaching, is outreach. This involves a range of activities from public/press liaisons to open-days and admissions events. I have always thought that understanding a topic is a very different matter to being able to teach it effectively, and these kinds of scenarios serve to illustrate that. To my mind, there are many public misperceptions of science and the role of scientists which make the understanding barrier that bit more difficult. I have been involved with events such as Physics at Work (for 13-15 year old school pupils) before and found it a useful experience.

## **2.2 Poster**

Ideas for PGCTHE “Teaching Cycles” were discussed with colleagues in break-out groups during the Induction Day follow-up at Aberystwyth. Amongst my group were Dr Carina Fearnley (IGES) and Dr Kim Knowles (Theatre, Film and Television); fellow newly-appointed lecturers at a very similar career stage. This made for some highly stimulating discussions about potential cycles.

A digital image of my resulting poster, which discussed the topic of “Central concepts in Physics”, is shown overleaf. In transcript, the main ideas, points and conclusions from the poster were-

- The poster is focussed on ideas of how to promote a better qualitative understanding of the so-called “central concepts” studied by undergraduate physics students; these might include topics such as quantum-mechanics, relativity, the 4 fundamental forces, and thermodynamics/entropy. There is some link here with the idea of “threshold concepts” [Cou06], which was presented by numerous speakers at the workshop.
- Some key battlegrounds between qualitative vs. formulaic teaching, and also mathematical vs. conceptual understanding, were identified.
- The format of such a teaching cycle was discussed. In addition to possibly moving away from conventional numerical problems and “problem sheets” towards essay- and presentation-type assignments, the use of communication exercises towards peer groups and lay groups was also proposed.
- It was suggested that assessment of such a cycle might not be straight-forward. Possible solutions ranged from simple feedback evaluation, to using participation and attainment metrics (e.g. module marks).

The ideas collated in this poster eventually formed the basis of one of the Teaching Cycles in this thesis (*Qualitative appreciation of central concepts in physics*), as described in Chapter 3.



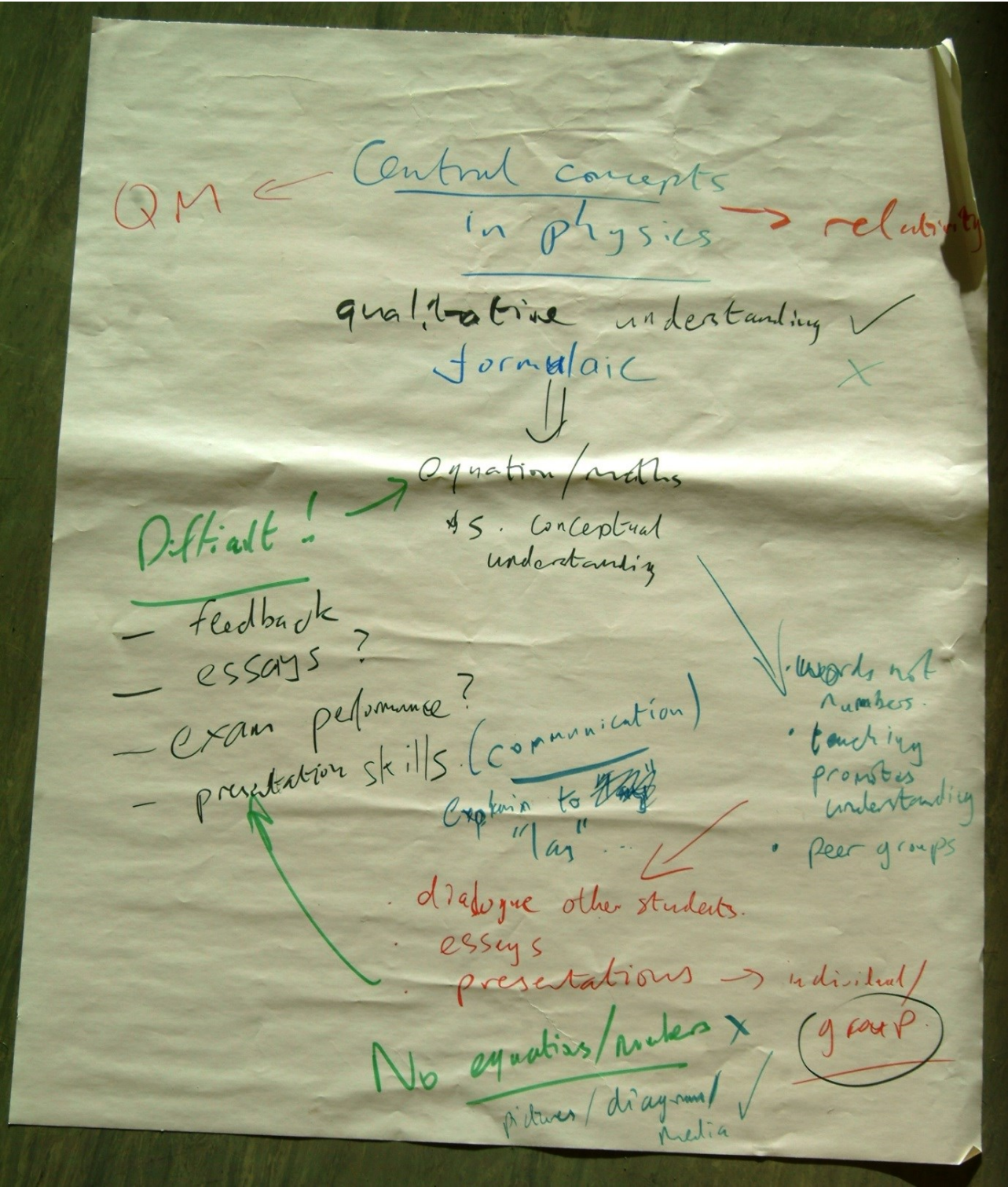


Figure 2.1; PGCTHE Induction Day poster from September 2011.

# Chapter 3

## Teaching Cycles

### **3.1 Qualitative Appreciation of Central Concepts in Physics**

#### **3.1.1 Introduction and Context**

As described in Chapter 2, the conception of this teaching cycle dates back to the PGCTHE *Induction Day* in September 2011. The idea of “threshold concepts” was presented by numerous speakers at the workshop. In the context of higher education, threshold concepts are "core concepts that once understood, transform perception of a given subject", as described in the work of Meyer and Land.[M+L05]

In the following small group break-out sessions, I created a poster (Figure 2.1) which focussed on ideas of how to promote a better qualitative understanding of the so-called “central concepts” studied by undergraduate physics students; to give some broad examples, these might include topics such as quantum-mechanics, relativity, the four fundamental forces, and thermodynamics/entropy. The group considered how formulaic and mathematical teaching of physics was the perceived norm, and the potential value of an improved conceptual/qualitative understanding of these topics.[Ang04, Mil 11] To be clear, the former approach is clearly an integral and essential part of this academic discipline, but ways of *additionally* enhancing the latter is the aim.

I have also been inspired by the work of Richard Feynman, whose lecture series on topics in physics is legendary for its conceptual insights.[Fey68] I recall reading an excellent account of the operation of gyroscopes in one of these lectures, which helped me a great deal as an undergraduate student.

#### **3.1.2 Details of the Teaching Cycle**

The intended development of this cycle is a change in the way a level 1 physics course is assessed. The module will be changed to now carry a 10% written (essay style) assignment, rather than being focused entirely on numerical problems. Ideally, students will have to do some independent reading/study for the material they use for their essays.

This strategy aims to address the issue of the predominantly formulaic/mathematical nature of physics courses, leading to potential lack of deeper understanding of and insight into important concepts. The intended outcome will be to improve appreciation of one such central concept, without reliance on mathematical/numerical analyses, in a way which might also continue at some level in the future learning strategies of the students.

The teaching cycle was implemented in the 2013/14 session, using the foundation year physics (“Year 0”) class, as part of their *Newtonian Mechanics* module. I started teaching this module at very short notice in 2011/12, having since devised the complete syllabus and produced all the lecture material. As part of the module, some pointers are given to students to arouse their interests in the non-Newtonian physics they will study in future years. My idea was thus to expand upon this to give them the chance to read around these “sexy” topics and to gain an understanding in an appropriate qualitative context.

The class chosen is also atypical, as the foundation year represents a broad spectrum, in terms of educational experience and attainment, with many mature students and others with non-standard entry routes into a physics degree. Suitable instructive support and tuition was given to students, with the goals of the cycle in mind.

It was noted that the cycle gave little room for manoeuvre and modification along the way, although the planned assignment topics (e.g. “The four fundamental forces”) were quite open-ended in nature and could be tackled in various ways by the students. It was also intended that the success of the cycle would be gauged against- i) participation rates, ii) attainment, as the assignment will be formally graded, and iii) feedback from students via the familiar module questionnaires.

The assignment was set to the class in the following context, with the additional idea of improving student use of bibliographic resources (and citing these sources as such)-

#### PH010/PH101 *Introduction to Physical Forces*; Essay Assignment

- Whilst the assignment may be considered “open-ended”, a submission of around 1000 words in length would be considered satisfactory. You are actively encouraged to include figures, diagrams, pictures etc., to enhance your work.
- The best marks will be given if there is evidence of some wider reading around the topic, not just relying on lecture notes and text-books!
- Any significant portions of text quoted verbatim from another source should be cited as such; please include a list of sources (bibliography).

In common with themes from the course, the topic of the assignment should be *one* of the following options-

- ✓ “The Four Fundamental Forces”
- ✓ “Newtonian Gravitation and the Tides”
- ✓ “Playing Golf on the Moon; similarities and differences to back home on Earth”

### **3.1.3 Feedback and Evaluation**

After a standard two week period over which to complete their work, out of a class of 32 students, I received 23 submissions for the *essay assignment*. The submissions were marked out of ten, with marks given for content (4), presentation (3), and research (3). The average mark attained was 8.0/10, with a standard deviation of 2.7. This might usefully be compared with a conventional *problems sheet* assignment from later in the term, where only 18/32 submissions were received, with an average of 6.9/10 (s.d. of 3.2).

The feedback questionnaire, specific to this teaching cycle, was posed as follows; *Do you have any comments/feedback about the “essay assignment” that was introduced into this module?*

- ✓ Enjoyable, but difficult.
- ✓ It’s a good way to learn new topics as you can learn at your own pace and can learn as in depth as possible.
- ✓ I don’t like essays generally, so a more equation based essay was helpful.
- ✓ Would have like a second essay assignment earlier in the module.
- ✓ I enjoyed the change of pace and style of questions. It helped break up the standard set of equations you get in most lectures.
- ✓ Useful.
- ✗ Essays are boring.
- ✓ Overall, I felt that the assignment was a nice step away from the turgid “maths” based worksheets which are very common...
- ✓ Interesting and helpful in gaining deeper insight.
- ✓ Very good. Good to have to look into a subject with qualitative understanding.
- ✓ Writing the essay was fun, but I feel we could have been given more guidance regarding format, common practices etc.
- ✓ Found it an interesting challenge.
- ✓ Interesting change to the problem sheets; very worthwhile

### 3.1.4 Conclusions

In my evaluation, student participation and reaction was fairly good to this teaching cycle, which instigated quite a significant change in the assessment of the module. I had been slightly apprehensive as to how well the idea of an essay assignment would be received by this class. Furthermore, I was very pleased with the levels of engagement and attainment for the exercise. A number of students had clearly made quite an effort with the assignment and their submissions made for a pleasurable and entertaining read. Many had also used my advice about pictures, figures and diagrams to very good effect.

Whilst clearly not everyone was happy(!), the feedback received was predominantly positive and supportive. Some comments also suggest a partial success in the delivery of the aims of the cycle; there are students who feel they benefited from this change-of-pace from the standard numerical/mathematical problems sheets, and others who had enjoyed the opportunity to tackle more conceptually advanced topics through this qualitative medium.

At the very least, this cycle has helped develop a number of wider transferable skills within the foundation year cohort, such as prose-writing, independent researching of a topic, and the use of bibliography/citations. This is invaluable practice for the dissertations and project/lab reports which will inevitably feature later in the physics degree course. Even on this basis alone, I feel it was a worthwhile exercise, which I intend to retain for this module in the 2014/15 academic year.



## **3.2 Use of Student Projects in Peer-group Learning and Development**

### **3.2.1 Introduction and Context**

Final year physics students in IMPACS undertake major research-based projects, working in groups of one or two. These projects count for 40 credits, or 1/3<sup>rd</sup> of the overall Y3 assessment. Projects are assessed by a combination of literature reviews, oral presentation and final reports. In a typical academic year, I would have to propose approximately 6 different experimental projects, and then supervise and assess 3-4 project groups (6-8 students in total). Whilst working in pairs is the norm for these projects, little in the way of wider sharing of problems and ideas usually occurs.

The ideas behind this cycle are reinforced in a number of research articles and studies into higher educational practices; e.g. [Col80]. I became interested in a paper by David Boud *et al.* [Bou99] and particularly in the pretext to this paper- *“Various forms of peer, collaborative or cooperative learning, particularly small group activities, are increasingly used within university courses to assist students meet a variety of learning outcomes. These include working collaboratively with others, taking responsibility for their own learning and deepening their understanding of specific course content. The potential benefits of peer learning have long been recognised and are especially relevant today.*

*However many existing assessment practices act to undermine the goals of peer learning and lead students to reject learning cooperatively. If assessment gives students the message that only individual achievement is valued, and that collaborative effort is akin to cheating, then the potential of peer learning will not be realised. Inappropriate assessment practices may also lead to unhelpful forms of competition within and between groups that prevent groups functioning effectively”.*

This outlines the potential rewards of such group-study approaches, but also the pitfalls. Negative student perception/attitude, and the inertia of teaching practices, also seem to be possible impediments.

### **3.2.2 Details of the Teaching Cycle**

This cycle aims to generate an atmosphere akin to a mini “research group”, by holding regular meetings for all the students I supervise, where ideas and issues can be shared with peers and with the supervisor. In terms of the educational issues addressed, it is hoped to facilitate-

- Improved feedback and accrued knowledge for students.
- Better engagement with, and learning from, peer groups.
- Crucially, a better appreciation of how post-graduate research works. A significant fraction of our final year students may be considering such further-educational/career options.
- Experience also shows that student engagement in their projects tends to drift if there are long periods without supervisory contact. These meetings will provide a means of “touching-base” regularly.

As an outcome, students will benefit from the mutual sharing of information, and tackling of problems, within a relevant peer-group. This will also be an excellent insight into the workings of academic research groups and the sphere of post-graduate study.

Implementation will be through weekly project meetings, to be held throughout the duration of the experimental phase of the Year 3 student projects (roughly late February until mid-April 2013). An hour will be set aside for meetings and each group will be encouraged to give a short resume of their work and results in the last week. This will be expended into peer/group discussion. An important element will be to discuss plans for the following week and the remainder of the project, allowing some overall perspective of progress to be maintained.

The assessment of the cycle will involve informal student feedback (possibly involving a questionnaire by e-mail), and also a careful monitoring of attendance/input levels. The timings (length) of sessions and the agendas will be student led. At the outset, I was resolute that poor feedback and/or lack of engagement would result in the sessions being abandoned.

### 3.2.3 Evaluation and Feedback

In all, five weekly sessions were held at 11pm on Fridays during the March and April period in 2013. There were six project supervisees who were asked to attend, them being told well in advance and with the timing designed to fit in with other commitments, such as lectures. My office was used as the venue, enabling the use of a whiteboard and PC, but not OHPs.

I had tried to encourage students to come prepared with a page or two of notes/data/graphs, but this only occasionally happened in practice. The atmosphere was usually supportive and positive, with the expected mixture of scientific and practical questions and issues. The projects the students were working on were broadly similar scientifically, which certainly helped; some of them seemed genuinely interested in the “wider picture” and to what their friends and peers were doing. In some of the later meetings, the discussion moved towards advice and help for the write-up phase of the projects. This, in turn, meant that these sessions were shorter in length (perhaps only 20-30 minutes).

Following the oral presentations and project reports in May 2013, I asked the students for feedback about the meetings, via e-mail using the question posed below. Evidently, I received 3 responses out of possible 6.

*If you have any comments or feedback about the weekly meetings that we held (such as the overall usefulness of the sessions, or if you got anything out of them), I'd be very grateful if you could spend a moment to send me these.*

- ✓ I felt that the weekly meeting session were very useful. I think that it was a good opportunity to voice any concerns also see where other groups are in relation to you. So from a student stand-point, it can put an ease to those who are stressed, thinking they are the only ones struggling.

- ✓ The meetings were a good idea. It allowed us to compare where we were with our work with others, as well as getting any direction from you, ready for the next week.
- ✓ I think the session were a really good idea, especially at the end of the week, as this gave us time to come across new problems to ask about. Having the sessions with the other groups was also a good judge to see where they were in the write-up process as it's hard to tell if you are behind in the amount of work you should have done.

### 3.2.4 Conclusions

In addition to the feedback above, I should also make mention of the student engagement/attendance level. The first three weekly meetings held in March were well attended (5/6 on each occasion), however, as the term moved on into April this declined to 3/6 and 4/6 for the two meetings held then. There was one student who never attended a weekly meeting, and whose time commitment to the project as a whole was very poor. I suspect that, later in the term, other assignment commitments and deadlines might also have had a bearing on the dwindling attendances.

I was surprised at the student feedback, in that responders had found the project meetings useful in ways which I had not anticipated. This drawing together of disparate and diverse project groups at fixed points in time had seemingly acted as a “yardstick” by which students could gauge their overall progress and attainment. I am unsure as to whether my higher aims of giving an insight into post-graduate research really reached an engaged target audience; I was not in control of which students were allocated to my projects, and am therefore uncertain as to whether any of the six students were considering such career options.

Overall, whilst there were clearly some elements that students found beneficial, I am unconvinced that this teaching cycle fully achieved its stated aims, and attendance/participation was not at the kind of levels hoped for. In this light, I did not re-run the exercise during the subsequent academic year (2013/14).

### **3.3 Using Well-defined “Learning Outcomes” in Lecturing**

#### **3.3.1 Introduction and Context**

This teaching cycle was planned in direct response to a CDSAP workshop which I attended in February 2013, “*Writing Learning Outcomes and Alignment with Assessment*” (see Chapter 4.6), by Dr Kate Exley.[Ex199]

This cycle aims to address issues of how to present clear learning outcomes to the students, both as an on-going aid to a lecture/module, and also as an integral element of the planning, design, and assessment.[But06] The challenges, as identified, are to make the learning outcomes understandable to a student before they have studied the module, to clarify the boundaries/constraints, and to give the necessary conditions. As a particular “running-theme” of the cycles and workshops from the PGCTHE programme, Bloom’s Taxonomy and the hierarchy in the alignment of assessment, [Blo58] is an instructive concept here. As an example, the use of verbs is very important to student perception and attitude (i.e. “should” or “will”, active or passive), and also the level of activity.

#### **3.3.2 Details of the Teaching Cycle**

The intended development of this cycle is that, for an entire lecture module, a number of stated “learning outcomes” will be used for each lecture. These will be introduced and highlighted at the start of each lecture, and reviewed at the end of each session.

The aims/issues being addressed are to present a clearer picture of the knowledge/skills students need to develop (e.g. “at the end of the class...students will be able to apply the law of conservation of momentum to predict the behaviour of collisions between bodies in motion”). The intended outcomes are:- i) to make the context of the module syllabus clearer, and ii) to leave the students with a clearer idea of the most important/relevant elements of each lecture.

The proposed class for this teaching cycle was the Physics foundation year, *Newtonian Mechanics* (PH010-10) class. This cohort of around 30 in number forms a broad spectrum, in terms of educational experience and attainment, with many mature students and others with non-standard entry routes into a physics degree. I lecture this class in 2-hour weekly slots during semester 1, with the session intended to have some seminar/workshop elements to it, in addition to being a traditional lecture. This class naturally presents some difficulties with regards to this diversity of background and in meeting the needs of all students, as described by Grace and Gravestock [G+G09]. In that sense, I would characterise the group as being a particularly interesting one to work with on such a developmental teaching cycle.

In the event, each lecture during the 2013/14 edition of this module was introduced with a single PowerPoint slide, with 3-4 bullet-point style learning outcomes. An example of such a slide is shown in Figure 3.1. These slides were re-displayed at the end of the lecture, with outcomes now being “ticked-off” sequentially and demonstrably against what had been covered during the session. All lecture slide material is subsequently available for download in the university’s *Blackboard* system.



Finally, the intention was for levels of student participation to be qualitatively assessed, with specific feedback to be sought via the end-of-module questionnaires. The number and scope of defined outcomes were also to be continuously assessed and reviewed, and the success of the cycle was to be evaluated simply by the extent of positive feedback (or otherwise).

### 3.3.3 Feedback and Evaluation

Feedback from the students was sought by means of an end-of-module questionnaire (see below); students were not told explicitly that this element of their module has been devised with a “teaching cycle” in mind. A number of students completed the questionnaire for the module generally, without leaving specific feedback regarding the “Learning outcomes”.

*Do you have any comments/feedback about the use of “Learning Outcomes” at the start/end of each lecture?*

- ✓ Seemed kind of irrelevant, but could come in handy for revision purposes.
- ✓ (This was) effective and helps organisation of lectures.
- ✓ Used to “Learning Outcomes” as such; no real feedback.
- ✓ The learning outcomes were especially useful when going back over work at home and for quick referencing.
- ✓ Useful
- ✓ They’re very pretty. Should use pink text though...
- ✓ Good in theory. Helped to know what we were supposed to be taking form the lecture.
- ✓ I believe them to be well covered in lectures.
- ✓ Helpful to summarise the work learnt.

**Lecture 2; learning outcomes**

- To be able to define what a *Force* is, and to distinguish between *mass* and *weight*
- To be able to categorise physical quantities as being either *vectors* & *scalars*
- To be able to calculate the resultant of two or more vectors by addition of vertical and horizontal components
- To make basic calculations of forces in equilibrium, using methods such as *Triangle of Forces*, and by resolving vertical and horizontal components

PH010 Lecture 2 3

**Figure 3.1;** An example of “Learning Outcomes” as applied, via PowerPoint slide, to a lecture during the PH010-10 *Newtonian Mechanics* module.

### 3.3.4 Conclusions

The cycle was enacted and assessed pretty much according to plan, although only receiving nine feedback responses from a class of around 30 students makes a complete/representative judgement of the success of the exercise difficult. Indeed, a few of those received were quite apathetic, rather tongue-in-cheek, or just neutral in tone.

A number of students commented on how useful the “Learning Outcomes” had been for their revision and study strategies. I can imagine that these slides operate as useful “milestones” when lectures are being reviewed and revised by students. I certainly take this as a positive result from the exercise, and strong enough reason alone to keep this element in future delivery of the module.

Whether this development fed into improved performance and attainment levels in the module, which is assessed by 20% coursework and 80% examination, is very difficult to ascertain. The overall module average did increase in 2013/14 (53.0%) as compared to the two previous years when I had delivered it 2011/12 (47.9%) and 2012/13 (47.2%). However, there are multiple factors which could be behind these improvements, and the statistical significance is also questionable given the relatively small class sizes involved.

As a final point, one might consider whether the “Learning Outcomes” which were given were appropriately positioned, in the context of the Bloom Taxonomy etc., and whether they could benefit from re-alignment or re-adjustment. Examples of the verbs generally used were “define”, “distinguish”, “categorise”, “calculate”; quite objective and unambiguous actions, which I feel were appropriate for the level of the class and the mission of this physics module. I did tend to over-use pejorative terms, such as “basic” and “simple”, which perhaps does little to help the morale of students at the lower end of the ability spectrum in the class.



# Chapter 4

## CDSAP workshop reports

### 4.1 Using Positive Psychology in Teaching

**Date/Time/Location** 30<sup>th</sup> November 2011, 13:30 - 16:30, Medrus 3 Penbryn  
**Leader** Alan Mortiboys

The theme of this workshop was to explore if and how some concepts from positive psychology [Bon08] might be helpful for learners and teachers in higher education. Topics under discussion were-

- Learned Optimism, and how it can help you deal with setbacks. This included an introduction to the *ABCDE model* of Seligman [Sel06]; i.e. Adversity-Belief-Consequence-Disputation-Energisation in the handling of setbacks in teaching.
- Strengths based psychology, and how to build on strengths and manage weaknesses. “When things go wrong, keep a sense of perspective; you do a lot of things very well!”
- Flow; a state described as a “magnet for learning”.

With no strong background or knowledge in psychology I was particularly interested in the concept of “flow” in teaching.[Csi97] I am well used to the feeling that progress in research happens at such times of un-inhibition, engrossment, and confidence, and I was interested to consider how such principles might apply to learning and teaching.

### 4.2 Performance in Lecturing

**Date/Time/Location** 14<sup>th</sup> February 2012, 13:30 - 16:30, Visualisation F16 room  
**Leader** Stewart Teobald

The leader of this workshop has extensive experience in drama and performance. The central theme was around ensuring that the impact of delivery matches that of the intention of the message, to form a positive and lasting impression. Aspects explored included-

- Looking at ways of understanding and matching an audience mood; exploring ways of developing emotional and intellectual connections. A basic “transactional analysis”

was described, according to Berne.[Ber64] In this analysis, lecturer/audience interactions were categorised in terms of a “parent”/”adult”/”child” model. The adult represents clear intellectual thinking, whereas the parent (nurture or control) and child (free or adapted) are more emotionally driven. Consideration needs to be given to the likely state of the audience, and style should be adjusted to ensure both emotional and intellectual connection.

- Discussing what the elements of a “positive performance” are. Albert Mehrabian has postulated how the impact of a speaker depends on how you look (55%), how you sound (38%) and what you say (7%).[Meh72]
- Techniques to calm nerves and develop a positive mental attitude. Nerves and associated symptoms were described in terms of the vicious cycle between the mind, body and voice.
- The effects of posture and gesture on you and your audience. In particular, the barriers between lecturer and audience were examined; these can be physical (e.g. the lectern) or psychological (nerves).
- How relaxation, breathing and vocal exercises can improve projection and clarity. Several such exercises were tried out in real time at the workshop, with the four elements of voice (the 4 Ps; pace, pause, power, pitch & tone) in mind.

There were some helpful suggestions in this interesting workshop, in terms of engagement with the audience and delivery style (posture, voice etc.). There was also some discussion on how to practice for important presentations. Given that I might deliver 50 lectures in a term, full rehearsals aren’t usually feasible, but there may still be the possibility of rehearsing key slides and points applying the techniques discussed.

### **4.3 Getting Started with AberLearn Blackboard**

**Date/Time/Location**      18<sup>th</sup> October 2012, 14:00 - 15:00, Hugh Owen Library, Training Room

**Leader**      Johanna Westwood

This short workshop was a beginner’s tutorial for the University’s *Blackboard* online system, which can be used to upload and store module notes, lecture slides, assignments etc., and which can then be viewed and downloaded by the students. Students can also submit their work via this medium, and its use across campus is now becoming almost standard. I have personally found it to be quite a good system/tool for the purposes described.

The course leader gave some simple yet useful demonstrations of the functionality of Blackboard and was very pro-active in dealing with queries from the class. A handy “Good Practice” guidelines/information sheet was also made available. As a relatively new lecturer, I found this exercise quite helpful, and have applied some of this knowledge in my subsequent use of Blackboard across several taught modules.

## **4.4 Presentation Skills**

**Date/Time/Location** 30<sup>th</sup> October 2012, 9:30 - 12:30, Visualisation F16 room

**Leader** Stewart Teobald

This workshop was given by the same leader as the earlier *Performance in Lecturing* session, as described above, and there were certainly elements that were common to both.

The session started with a mock/demonstration presentation, which was pulled-off with a commendable “dead-pan”! It involved the speaker delivering an introductory talk which made all the classic presentational mistakes; spelling errors, offensive/illegible choices of colour and font, pregnant pauses, poor diction, irritating music/sounds. The earlier part of the workshop focused on a debrief of the experience, and there was universal opprobrium for what we had just seen (although I wouldn’t personally rate it as *the* worst talk I’ve ever seen).

The substantive part of the session explored the following elements of presentational skills-

- Preparation. Define objectives (both emotional and intellectual) and motivation, consider who the audience are (expectations and current knowledge), which lecture theatre/room is to be used and which facilities are available,
- Composition; BARR (**B**rainstorm, **A**nalyse, **wR**ite, **R**ehearse). It is important to consider the attention span of audiences and how this might vary over the course of a lecture. It was postulated that, typically, attention is at its lowest at the 2/3rds point in a presentation, although no research source was cited for this.
- Practice. To quote from the handouts- “Remember, you cannot rehearse too much, if you feel you have, then you have simply run out of imagination”. To an extent, I would agree, as some creativity and experimentation with delivery is often beneficial.
- Holding the Audience; mind-set, body language, coping with nerves. The need to add variety of vocal tone and the judicious use of visual aids and demonstrations.
- Handling Questions. This is one aspect that I used to find problematic, thinking back to academic conferences and the likes, because it was one area in which I wasn’t in control of events and the agenda. The advice of not to rush in, and to consider questions carefully, is very sound. We discussed how there are basically 5 options/strategies- i) Answer, if truly confident; ii) Park, “I’d like to come back to that point...”; iii) Throw-open, ask the audience/questioner what their perspective is; iv) Ask a team member, but be sure they will know the answer; v) Admit you don’t know; it’s probably better than being wrong. It is also worth remembering that you cannot be right all of the time, and that a receptive audience will appreciate this.

Overall, this was a stimulating and professionally delivered workshop, which also included some participant led exercises in communication and delivery.

## **4.5 Avoiding Death by PowerPoint- Visual Design and Student Interaction**

**Date/Time/Location** 14<sup>th</sup> November 2012, 10:00 - 12:00, Hugh Owen Library, Training Room

**Leader** Mary Jacob

As my lecture material is delivered almost entirely through PowerPoint, I targeted this workshop, as one of the most potentially relevant and important of those offered within CDSAP.

The title reflects work by Alexei Kapterev [Kap11], *Death by PowerPoint*, which explores many of the common pitfalls associated with presentations in this medium. The session began with some interesting discussion of how the “memory curve” (strength of memory vs. time [Ebb1913]) relates to reinforcement of information, and how this might feed-back into slide and presentation design.

The workshop continued with some analysis and comparison of slides from PowerPoint presentations. Some ideas, such as the use of *sans serif* fonts for maximum readability, were quite useful. However, certain styles and contents were marked as being less effective, or even inferior, to others. In many cases, I actually strongly disagreed with the premises being offered to the class. My attempts to express this disagreement were not well received by the session leader, who appeared slightly flustered that there had been a dissenting view.

Much of the content appeared to be geared towards arts/humanities teaching, where one will very often see sparse PowerPoint slides with key points used as signposts for a much wider, prolonged discourse. In my honest view, it is not possible to teach university level science in this fashion, where numerical and/or formulaic methods form an integral part. Very often, my lecture slides do indeed roughly translate into lecture notes.

I was reminded at this point of the induction day talk regarding *dualism* and *relativism* in teaching.[E+P04] The natural assumption appeared to be that the latter is preferable to the former in all teaching situations, but in I do not accept that it is so clear-cut in science, where large volumes of objective knowledge and information are being disseminated.

## **4.6 Writing Learning Outcomes and Alignment with Assessment**

**Date/Time/Location** 7<sup>th</sup> February 2013, 13:15 - 16:30, Visualisation F16 room

**Leader** Dr Kate Exley

This workshop dealt with issues of how the assessment of modules/courses is (or should be) an integral element of their planning and design. The ideas and input I gained here, of using well defined learning outcomes within a module syllabus, directly led to the 3<sup>rd</sup> of my teaching cycles; “*Using Well-defined ‘Learning Outcomes’ in Lecturing*”, as described previously in Chapter 3.

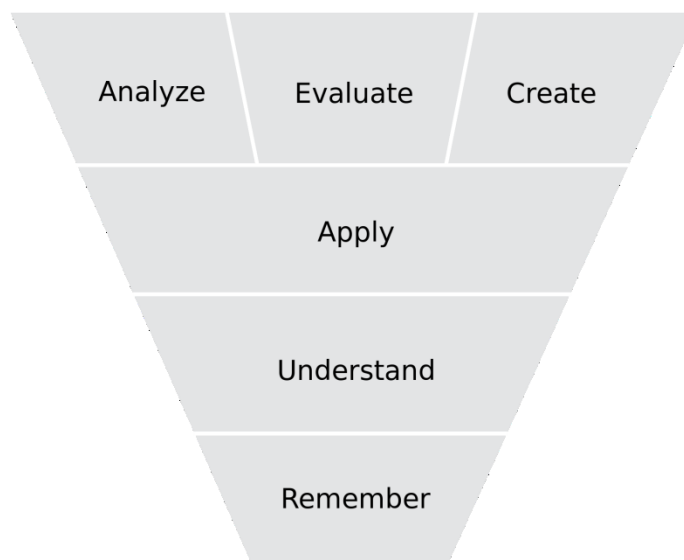
To begin with, learning outcomes and assessment criteria were discussed as a “couplet”: e.g. build a brick wall using xyz method (outcome); stability, height and neatness (assessment). More generally, learning outcomes may relate to knowledge (cognitive), skills (psychomotor) or attitudes (affective). That being the case, some consideration was then given to various strategies and potential difficulties in forming the couplet.

The challenges are to make the learning outcomes understandable to a student *before* they have studied the module, to clarify the boundaries/constraints, and to give the necessary conditions. The use of verbs is very important here (i.e. “should” or “will”, active or passive), and also the level of activity. In Bloom’s Taxonomy [Blo58], a hierarchy in the alignment of assessment is described (see figure 4.1). Three example learning outcomes were given as illustration of this hierarchy, going from the lowest to highest level-

- ...be able to *describe* the 10 characteristics of Norman churches.
- ...be able to *classify* cheeses using the Johnson method.
- ...be able to *reflect* upon their ability to work in a team whilst undertaking a 3 week library project.

It was also discussed how “understand” can sometimes be a difficult word in this context, and that alternatives should be considered

Finally, the class was set the task of devising learning outcome at the level of a single lecture and also for a particular module that we teach. For the foundation year classical mechanics module I deliver, I came up with- “...*be able to apply Newton’s Laws to solve simple quantitative physical problems*”. For a particular lecture, I chose one concerning the concepts of momentum and conservation of momentum. “...*apply the law of conservation of momentum to predict the behaviour of collisions between bodies in motion and to solve simple quantitative example questions*”. With hindsight, I am a little uncomfortable about the pejorative use of words such as “simple” here.



**Figure 4.1;** Categories in the cognitive domain of the revised Bloom's Taxonomy (Anderson *et al.* 2000 [And00])



## **4.7 Laboratory and Practical Teaching**

**Date/Time/Location** 8<sup>th</sup> February 2013, 13:15 - 16:30, Visualisation F16 room

**Leader** Dr Kate Exley

Student laboratory practicals and projects form an integral part of the teaching curriculum within IMPACS, so the relevance of this workshop appeared to be very clear. It was both refreshing and useful to have a class leader with a clear background and expertise, specifically in the teaching of science.

The session started with a reflection on why practical teaching is important to the overall student learning process. Some interesting facts about practical classes in science and engineering emerged; I have transcribed some of the thoughts/comments I had.

- Most students in the UK spend between around 50-70% of their contact time doing practical/laboratory work [Exl99] (how does this compare with your courses?).
  - Comment; I think this is also typical for most degree schemes in IMPACS.
- Practical work usually counts for less than 20% of course marks (why do you think this is?).
  - Comment; in IMPACS, practical labs in Years 1 and 2 do indeed count for comparable amounts. Final year physics projects can count for a greater proportion (up to 50%). Practical marks generally have a high mean score and a low standard deviation, meaning that they have a “smoothing out” or moderating effect on the overall distribution of degree marks. This is because markers usually show relatively low discrimination, rewarding effort, and the reliability of marks is also low, with significant variations between markers.
- Most students dislike their practical work until they carry out their final year project.
  - Comment; I concur with this from my own experiences as a student! The sense of positive achievement is greater when students feel they have had some independent and progressive input into a research-based project.
- Conventional laboratory sessions are usually good at developing manual and observational skills, but are less good at developing problem solving skills and scientific enquiry.
  - Comment; this depends strongly on whether the sessions are qualitative or quantitative in nature, and thus on which skill sets are being tested.

The next activity was to split into smaller groups of 2-3 and to generate a flip-chart poster, laying out the planning behind a practical session and the key roles of demonstrators. This facilitated discussions of considerations before, during, and after a practical class (see Figure 4.2).

Finally, an exercise involving various “difficult situations” in practical laboratories (and what to do) was given to the class. These scenarios were both familiar and wide-ranging; practicals going wrong (no results), over-running/slow-working students, attention-seeking students, students unable to work well in a group, lazy/disengaged students, accidents in the

lab, and so on. Some insightful discussions resulted, with some nice take-home thoughts about how to be a supportive demonstrator; genuinely listen to students, be available, encourage them, be honest (“I don’t know, but I will find out for you”), don’t just tell/lecture them but give useful feedback.

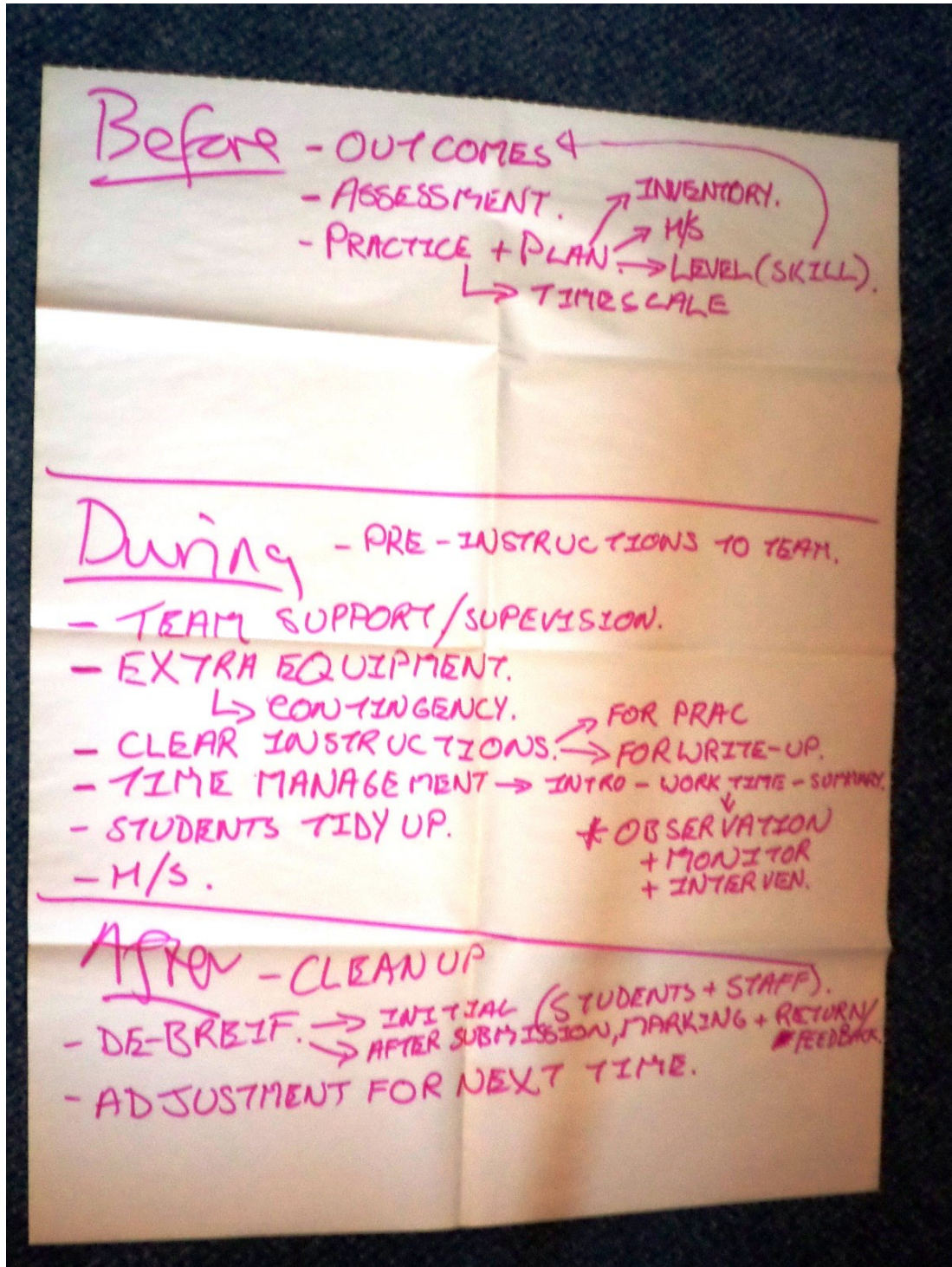


Figure 4.2 Poster from *Laboratory and Practical Classes* workshop.

## **4.8 Inspirational Teaching**

**Date/Time/Location**      22<sup>nd</sup> March 2013, 9:30 - 12:30, Visualisation Boardroom

**Leader**      Alan Mortiboys

This workshop was launched with the sub-text, “Does the person transcend the method?” In other words, how much does the passion, personality and dynamism of the teacher contribute to the overall learning experience? It surely takes something more than expertise in your subject to turn a good session into a great one. So how can teaching be inspired or, indeed, inspirational?

The workshop expanded on these themes, by considering the work of John Hattie [Hat12], whose meta-analyses of teaching describes how the elements of subject expertise, teaching expertise and emotional intelligence are all of importance. The session leader then went on to postulate that the three possible ingredients of inspirational teaching are-

- Planning for a “live” teaching session; try beginning with a set of learning outcomes and an assignment task, and let student questions lead the way from there.[Hil11] A risky approach! However, in practice some such elements of flexibility are a very positive thing.
- Loving your audience; be congruent, empathetic, and non-judgemental. My own experiences are that feelings of contempt or superiority towards an audience can greatly detract from both the delivery and learning outcome.
- Mindfulness; don’t allow inertia to set-in, or plough on regardless when the going gets tough! Need to be responsive and to show a level of curiosity into how teaching can be improved.

The session continued with some exercises, whereby participants were asked to recall a recent teaching engagement, which was then measured against the three ingredients above. Against several possible options, I decided that many of my lectures were rather similar to addressing a public meeting (other options included being a stand-up comedian, performing in a one-person play, and chairing a committee meeting). My lectures are fairly teacher-led with only a small amount of direct student interaction, although I’m often quite aware of the mood and concentration-state of the audience, and will adjust pace and vocal tone accordingly.

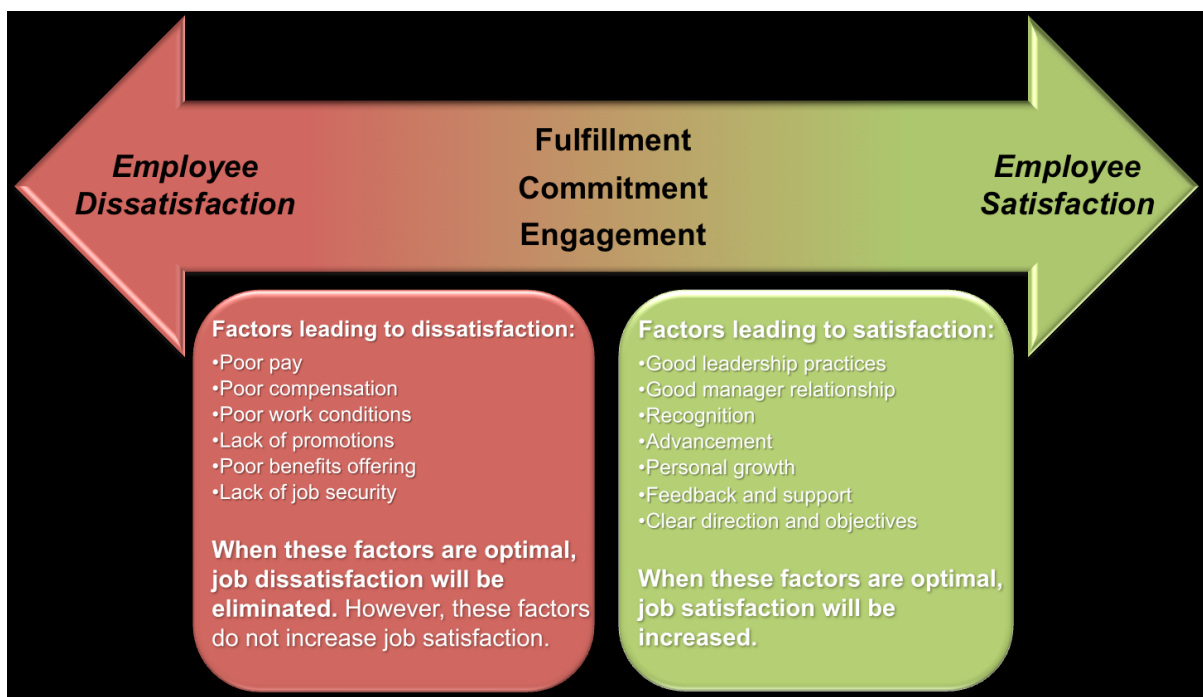
Overall, this was another very good session from this highly professional workshop leader, with some useful insights for my own teaching attitudes and practices.

## 4.9 Managing Difficult Situations in Teaching

**Date/Time/Location** 22<sup>nd</sup> March 2013, 13:30 - 16:30, Visualisation F16 room

**Leader** Alan Mortiboys

The workshop began with an interesting discussion of the research literature. Herzberg “motivational theory” and the effects of assessment on the behaviour of students.[Her66] This was compared, illuminatingly, to the effects of extrinsic factors (“hygiene”) on workforces (see Figure 4.3). The ABCDE model of Seligman [Sel06] was again mentioned as in previous sessions with this leader; i.e. Adversity-Belief Consequence-Disputation-Energisation in the handling of setbacks in teaching.



**Figure 4.3** Job Satisfaction Model, after Herzberg (Field, 2008).

There followed an exercise to categorise the “difficult participants” a teacher might encounter.[May03] Many of these stereotypes were all too familiar to my experiences of lecturing/teaching also.

- *The Attacker*; outbursts, may have been unconsciously wounded in some way.
- *The Sniper*; snide comments from the side-lines, trying to influence proceedings without being noticed.
- *The Rebel*; always disagreeing, their power comes from non-conformity.
- *The Incredible Sulk*; don’t want to be there and refusing to play, wanting their plight to be understood.



- *The Outraged*; how on Earth could this be happening? Blaming others to feel secure and to skip responsibility.
- *The Know-It-All*; authorities on everything, often protecting a sense of inferiority.
- *The Passive Aggressor*; backstabbing, projecting on others so as not to feel bad about themselves.
- *The Chatterbox*; always having an opinion, desperate to show their worth.
- *The Side Meeting*; distracting from the main focus, wanting their own agenda.
- *The Mickey-taker*; ever ready with undermining jokes, to endear themselves and score points off others.
- *The Late-comer*; always late and takes long breaks, maybe disinterested or perhaps nervous in groups.
- *The Phoneaholic*; continually on the mobile, possibly self-important or perhaps under some external pressure.

As a follow-up, the class considered strategies for dealing with these traits. To give a few examples of the kinds of discussion that arose; the *Know-It-All* could be acknowledged as a “genius”, whilst gently nudging them outside their comfort zone. The *Late-comer* may need to have ground rules set and given some indication of how their conduct affects others. For the *Sulk*, a more subtle interplay of quiet acknowledgment, allied to the offer of benefits from taking part, might work best.

#### **4.10 Communication with Confidence and Developing Presence**

**Date/Time/Location**          20<sup>th</sup> June 2013, 10:00 - 16:00, Medrus 4 Penbryn

**Leader**                      Chris Morris-Thornton

The stated aim of this event was to help promote confidence in communication, and by inference in teaching/lecturing. I found this to be by far the most enjoyable workshop of those I attended, for reasons I will describe below.

To begin with, the elements of confident communication were discussed; self-esteem, passion, trust, honesty, listening/observing, bravery, energy, being “in the moment”. Presence was further defined in terms of the elements of charisma, magnetism and “star quality”; relating to body, voice and “energy” (Qi, the *life force* from traditional Chinese culture). The concept of 3 Circles of Energy (Rodenburg [Rod09]) provides a useful and thought-provoking overview-

- 1<sup>st</sup> circle                  Inward facing, draining energy from others, tending to “disappear”
- 3<sup>rd</sup> circle                  Outward facing, overconfident, overwhelming
- 2<sup>nd</sup> circle                  “Present”, gives and takes, generates positive energy in others, calm/assertive

Clearly, the 2<sup>nd</sup> circle is the one to migrate to for optimal energy, presence and communication.

Later on in the workshop, the leader introduced a number of proactive exercises; these seemed to be cleverly designed to take participants out of their “comfort zones” and into areas of mild to moderate social phobia. As it turned out, many people did display a considerable fear and self-consciousness of activities such as singing, public reading and miming/role-play! The opportunity to meet such fears head-on in a relatively safe and sane environment gave us some insight into the pathways towards the elusive 2<sup>nd</sup> circle.

The final activity of the day was a relaxation session; controlled breathing and meditation. I had been suffering with quite severe stress in the weeks/months prior to this session, and found that this exercise made me feel more relaxed and positive for several days afterwards. I have since been using similar methods at stressful times, with some degree of success.

#### **4.11 A Map and a Compass; Helping a Student in Distress**

**Date/Time/Location** 5<sup>th</sup> July 2013, 9:30 - 16:30, Medrus 4 Penbryn

**Leader** Jan Batty

This workshop was focussed on student welfare, whilst having numerous relevant and insightful links into teaching and pastoral care issues.

Aspects of mental health and associated conditions (the *Mental Health Continuum*;<sup>[Tud96]</sup> stress, anxiety, depression) were discussed in the contexts of challenges faced by students, ranging from academic pressures, to personal/emotional problems, and loneliness/bereavement. I found myself shocked at the statistics of the prevalence of such conditions. A fascinating exercise, involving trying to assess the state of mind of the artists behind a range of works of art and photographs, was used to start the workshop. Various role-plays in small groups were also formulated, with participants playing the roles of students, mentors, teachers etc.

These were all highly useful exercises, as it gave me a better idea of how to handle situations involving the welfare and mental health of students, and what to do and where to turn for help. I act as personal tutor to many students in IMPACS and have already experienced such “students in distress” at first hand. Also, the event prompted me to think how my teaching practices can be better empathetically tuned to help ameliorate some of the academic pressures faced by students.

#### **4.12 Learning and Teaching Action Research Conference (March 2014)**

**Date/Time/Location** 3<sup>rd</sup> March 2014, Visualisation F16

**Leader** Dr Jo Maddern

I presented my teaching cycle “Qualitative Appreciation of Central Concepts in Physics” at the L&T Action conference, as was a necessary requirement of my PGCTHE course of study.

As is often the case on these occasions, there was a diverse range of different academic disciplines and teaching methods under discussion. In particular, there was a Welsh

language presentation from Iwan Dafis (*Hanes Celf yn Cymraeg*) concerning the use of Welsh medium teaching of art history to part-time student and night-school groups. There was also a presentation by librarian Sahn Nikoi concerning the development of journal databases for graduate level researchers within the university. I found this latter talk quite interesting and relevant, given my own experiences with project students in IMPACS and our efforts to get them to engage with the research literature.

My presentation stimulated quite a lot of interest, with numerous questions from the audience, as well as some general concern about the apparently low participation rates in the assignment associated with the cycle. My contention was that this is to be generally expected for foundation year classes, and that the participation had in fact been better than that for the traditional “problems sheets” that had been set to the class that term.

# Chapter 5

## Teaching Observations

### **5.1 Observation by the Mentor 1**

PGCTHE Teaching Observation Form

**Name of Candidate** Dr Chris Finlayson

**Date** 6<sup>th</sup> March 2013

**Name of Observer** Prof Andrew Evans

**Numbers in class** 61

**Group** Year 3 Physics

**Location** Physics Lecture Theatre A

**Topics** Introductory lecture to PH327-10, “Probing Atoms & Molecules”

**Start Time** 13:10

**Finish Time** 14:00

**Learning Outcomes** Familiarisation with key topics and syllabus

**Aims** As above

**Any particular factors/problem taken into account when planning the session?**

Lecture must strike an “introductory” note, and lead on appropriately from 1<sup>st</sup> half of the module, which is delivered by a colleague.

**Any changes made since similar previous sessions? (if applicable)**

Minor (see below)

**Any aspects of this session which are new to you?**

No.

**How have you incorporated suggestions made previously? (if applicable)**

Slightly less material per slide; result of student survey/feedback from previous year

**Do you wish to be given advice on any particular aspect of your teaching in this session?**

No.



## Observer's Comments

1. **Teaching Characteristics:** *Preparation, selection of aim/objectives, statement of aim and learning outcomes. Selection and organisation of content. Planning. Choice of teaching/learning methods*

Good introduction; set-out the rationale for this part of the module that is shared with other teaching staff. Content well done, with suitable and relevant examples, making links with other parts of the physics course.

2. **Presentation:** *Beginning class, introduction, continuity with other sessions, students' prior knowledge. Clarity of presentation. Pace. Attitude to subject matter. Use of appropriate reinforcement. Ending the session – summary, future work etc.*

Links to the rest of the module were well presented. Set out the learning outcomes up front. Clear presentation.

3. **Technique and Aids:** *General apparatus – board, OHP, data projector, use of handouts. Question and answer technique. Other evaluation procedures, class management, instructions to students.*

Good use of hand-out, blackboard, PowerPoint, and whiteboard. Good use of animations. Use of question & answer during the lecture. Students clear on content module.

4. **Student Responses:** *General class atmosphere, level of participation, attention and interest. Student attitude and ability to carry out classwork. Were learning problems identified and overcome? Awareness of individual needs. Attitude to students.*

Positive atmosphere, excellent student engagement and interest.

5. **General:** *Was effective communication achieved? Was there good student – teacher rapport? Were the outcomes achieved? Appropriateness of teaching/learning methods*

Question & answer during the lecture with student engagement. Good student-teacher rapport, with outcomes achieved. The teaching/learning method was varied and appropriate.

6. **Future areas of focus:**

- Be careful with symbols and nomenclature; potential and potential energy, “U”, “V”, “E” etc.
- Units consistency; e.g. eV, kJ/mol.
- Molecule names; ethene, ethylene etc.

7. **Strengths:**

- Well prepared material
- Very broad grasp of the subject, and enthusiastic!
- Good diagrams, and relevant; not just decoration.

**Course Member's Notes and Observation**

(Completed after a post-session discussion with the observer.)

1. **How helpful were the comments about the observation?**

Very useful. The support and encouragement I received was most satisfying and a definite morale boost.

2. **In the light of the comments made are you likely to make any changes?**

Advice about being careful with nomenclature and units is duly noted.

3. **Any further comments about the session and observation?**

No.

## **5.2 Observation by the Mentor 2**

PGCTHE Teaching Observation Form

**Name of Candidate** Dr Chris Finlayson

**Date** 26<sup>th</sup> February 2014

**Name of Observer** Prof Andrew Evans

**Numbers in class** 79

**Group** Year 2 Physics

**Location** Physics Lecture Theatre A

**Topics** Lecture on “Microscopes”, as part of PH220-10 Optics module

**Start Time** 12:10

**Finish Time** 13:00

**Learning Outcomes** Microscopes; basic function, limitations/drawbacks, advanced microscopy methods

**Aims** See outcomes

**Any particular factors/problem taken into account when planning the session?**

None.

**Any changes made since similar previous sessions? (if applicable)**

N/A

**Any aspects of this session which are new to you?**

This is the first time this module has been given.

**How have you incorporated suggestions made previously? (if applicable)**

N/A

**Do you wish to be given advice on any particular aspect of your teaching in this session?**

Suitability of content for Year 2 level.

### **Observer’s Comments**

1. **Teaching Characteristics:** *Preparation, selection of aim/objectives, statement of aim and learning outcomes. Selection and organisation of content. Planning. Choice of teaching/learning methods*

This is the first year of delivery for the module that Dr Finlayson has conceived and prepared and is now delivering. Aims clearly presented at the start, within the context of the module. Good also to see an historical context discussed.

2. **Presentation:** *Beginning class, introduction, continuity with other sessions, students' prior knowledge. Clarity of presentation. Pace. Attitude to subject matter. Use of appropriate reinforcement. Ending the session – summary, future work etc.*

Reference was made to important prior knowledge within the module and more widely within the course. Good balance of overview and detail. The content is appropriate for Year 2 and good preparation for Year 3, although there is overlap with year 1.

3. **Technique and Aids:** *General apparatus – board, OHP, data projector, use of handouts. Question and answer technique. Other evaluation procedures, class management, instructions to students.*

Good use of PowerPoint presentation. Good illustration of key concepts such as microscope resolution.

4. **Student Responses:** *General class atmosphere, level of participation, attention and interest. Student attitude and ability to carry out classwork. Were learning problems identified and overcome? Awareness of individual needs. Attitude to students.*

Good relationship with the students and good engagement in both directions.

5. **General:** *Was effective communication achieved? Was there good student – teacher rapport? Were the outcomes achieved? Appropriateness of teaching/learning methods*

The teaching methods were appropriate and effective communication was achieved, although students could have been asked more questions.

6. **Future areas of focus:**

Some of the concepts could be illustrated using microscopes or even a laser pointer, lenses etc. It might be informative to give more information about the objects that are imaged and used as examples, e.g. what cells? what organisms? References should also be included where appropriate.

7. **Strengths:**

Good range of practical examples that are informative and demonstrate the relevance across disciplines.

**Course Member's Notes and Observation**

(Completed after a post-session discussion with the observer)

1. **How helpful were the comments about the observation?**

Very positive and constructive comments, showing a good empathy with the teaching challenges. This kind of mentor support is good for morale and confidence.

2. **In the light of the comments made are you likely to make any changes?**

Possibly. Experience tells me that this new module will develop and improve generally in the next years in which it is delivered. I would like to make this lecture more “interactive” in future.

3. **Any further comments about the session and observation?**

No.

### **5.3 Observation by Course team (CDSAP staff)**

PGCTHE Teaching Observation Form

**Name of Candidate** Dr Chris Finlayson

**Date** 15<sup>th</sup> March 2014

**Name of Observer** Dr Jo Madden

**Numbers in class** 61

**Group** Year 3 Physics

**Location** Physics Lecture Theatre A

**Topics** Lecture on “Infra-red spectroscopy”, as part of PH327-10 module

**Start Time** 16:10

**Finish Time** 17:00

**Learning Outcomes** Understanding IR spectra in terms of underlying properties of molecules.

**Aims** Introduction to IR absorption spectroscopy and spectra.

**Any particular factors/problem taken into account when planning the session?**

Vastly increased class size in 2013, as compared to 2012. Specific challenges of this unclear.

**Any changes made since similar previous sessions? (if applicable)**

No.

**Any aspects of this session which are new to you?**

No.

**How have you incorporated suggestions made previously? (if applicable)**

Previous feedback was predominantly positive.

**Do you wish to be given advice on any particular aspect of your teaching in this session?**

No.

**Observer’s Comments**

1. **Teaching Characteristics:** *Preparation, selection of aim/objectives, statement of aim and learning outcomes. Selection and organisation of content. Planning. Choice of teaching/learning methods*

Thoughtfulness is demonstrated regarding the context of teaching. Expertise in the subject matter is clear.

2. **Presentation:** *Beginning class, introduction, continuity with other sessions, students' prior knowledge. Clarity of presentation. Pace. Attitude to subject matter. Use of appropriate reinforcement. Ending the session – summary, future work etc.*

Class begins by relating back to previous work. Good use of illustrative videos. The whiteboard is used effectively. A good level of detail is given throughout the class.

3. **Technique and Aids:** *General apparatus – board, OHP, data projector, use of handouts. Question and answer technique. Other evaluation procedures, class management, instructions to students.*

Teaching is delivered in a “transmission” style in the main. This makes it harder to assess rapport or students' understanding of the subject matter.

4. **Student Responses:** *General class atmosphere, level of participation, attention and interest. Student attitude and ability to carry out classwork. Were learning problems identified and overcome? Awareness of individual needs. Attitude to students.*

Students are mainly listening very well.

5. **General:** *Was effective communication achieved? Was there good student – teacher rapport? Were the outcomes achieved? Appropriateness of teaching/learning methods*

You “warm up” as you go along and your session becomes livelier. Could you try voice exercises/warm-up beforehand?

6. **Future areas of focus:**

Be aware of verbal “tics”, i.e. umm, err, okay. Vary pace and pitch to add interest and variety. Give more “eye contact” to students- you tend to look at the screen or PowerPoint quite often. Think about including more interactivity; i.e. Q&A, activities. Try not to discourage student questions.

7. **Strengths:**

Detailed knowledge of the subject. “Down to Earth” approach- meeting students at their level.

**Course Member's Notes and Observation**

(Completed after a post-session discussion with the observer)

1. **How helpful were the comments about the observation?**

Useful insight from an observer not familiar with the science content, but instead focusing on style and delivery.

2. **In the light of the comments made are you likely to make any changes?**

Possibly. This was a lecture with little scope for student interaction; will try to develop this.

3. **Any further comments about the session and observation?**

Not sure about the advice about “warm-up” and “verbal tics”. I often give up to 50 lectures per term, so it isn't possible to treat each one like a theatre performance! My informal style has worked well on the whole, I feel...



## **5.4 Observation by a Colleague 1**

PGCTHE Teaching Observation Form

**Name of Candidate** Dr Chris Finlayson

**Date** 15<sup>th</sup> November 2011

**Name of Observer** Dr Edwin Flikkema

**Numbers in class** 29

**Group** Year 0 (Foundation level) Physics

**Location** Llandinam G4

**Topics** Lecture on “Newtonian Gravitation”, as part of PH010-10 module

**Start Time** 16:10

**Finish Time** 17:00

**Learning Outcomes** To be able to solve simple problems involving motion under gravity, using equations of motion.

**Aims** To show some quantitative appreciation of projectile motion and how this relates to the concept of orbits (see Newton’s Mound).

### **Any particular factors/problem taken into account when planning the session?**

I inherited the teaching of this foundation level module at very short notice in autumn 2011. My teaching strategy centred on the delivery of pre-existing notes and lecture slides, whilst making my own on-going improvements.

### **Any changes made since similar previous sessions? (if applicable)**

See above.

### **Any aspects of this session which are new to you?**

No.

### **How have you incorporated suggestions made previously? (if applicable)**

N/A.

### **Do you wish to be given advice on any particular aspect of your teaching in this session?**

No.

### **Observer’s Comments**

1. **Teaching Characteristics:** *Preparation, selection of aim/objectives, statement of aim and learning outcomes. Selection and organisation of content. Planning. Choice of teaching/learning methods*

Fairly self-contained lecture on motion under gravity, starting from parabolic flight of projectiles, ending in Kepler's laws of planetary motion. Combination of slide and talk and in-class assignments.

2. **Presentation:** *Beginning class, introduction, continuity with other sessions, students' prior knowledge. Clarity of presentation. Pace. Attitude to subject matter. Use of appropriate reinforcement. Ending the session – summary, future work etc.*

Recap at beginning of class OK. Very clear with many examples and in-class assignments. Pace is fine (seemed a bit fast at the beginning). Humorous approach, with plenty of jokes.

3. **Technique and Aids:** *General apparatus – board, OHP, data projector, use of handouts. Question and answer technique. Other evaluation procedures, class management, instructions to students.*

Slides (data projector) used: sometimes too much text, or font size too small. Question and answer technique used, which worked very well.

4. **Student Responses:** *General class atmosphere, level of participation, attention and interest. Student attitude and ability to carry out classwork. Were learning problems identified and overcome? Awareness of individual needs. Attitude to students.*

Informal/casual class atmosphere, which works well; students are not afraid to ask questions. Students showed interest, and questions were answered adequately.

5. **General:** *Was effective communication achieved? Was there good student – teacher rapport? Were the outcomes achieved? Appropriateness of teaching/learning methods*

Effective communication was achieved. Students asked many questions, which were answered adequately. There was a good student-teacher rapport; informal atmosphere. Outcomes were achieved. The teaching methods were appropriate; slides, talk, and assignments.

6. **Future areas of focus:**

Slides can be improved (less text, larger font).

7. **Strengths:**

Engaging lecturing style, with lots of jokes. Clear explanations. Good student-teacher relationship.

**Course Member's Notes and Observation**

(Completed after a post-session discussion with the observer)

1. **How helpful were the comments about the observation?**

The “Year 0”, lectures are designed to be part-lecture, part workshop; this is potentially a difficult balancing act. I think the observer’s comments re-assure me that the module delivery style is workable, and some helpful suggestions for improvements are made.

2. **In the light of the comments made are you likely to make any changes?**

Will continue to revise and improve slides and other course materials from year to year.

3. **Any further comments about the session and observation?**

No.

## **5.5 Observation by a Colleague 2**

PGCTHE Teaching Observation Form

**Name of Candidate** Dr Chris Finlayson

**Date** 22<sup>nd</sup> October 2012

**Name of Observer** Dr Edwin Flikkema

**Numbers in class** 22

**Group** Year 3 Physics

**Location** IBERS 0.31

**Topics** Lecture on “Laser Physics”, as part of PH345-10 module

**Start Time** 13:10

**Finish Time** 14:00

**Learning Outcomes** A basic understanding of the physics and applications of pulsed lasers.

**Aims** As above

**Any particular factors/problem taken into account when planning the session?**

Need to present large amounts of information in an informative fashion.

**Any changes made since similar previous sessions? (if applicable)**

No.

**Any aspects of this session which are new to you?**

No.

**How have you incorporated suggestions made previously? (if applicable)**

N/A.

**Do you wish to be given advice on any particular aspect of your teaching in this session?**

Nothing in particular.

### **Observer's Comments**

1. **Teaching Characteristics:** *Preparation, selection of aim/objectives, statement of aim and learning outcomes. Selection and organisation of content. Planning. Choice of teaching/learning methods*

The lecturer was well prepared, as evidenced by fluent speech. Selection of content was clear (pulsed lasers). It was well-planned and finished exactly on time. The teaching method consisted of OHP slides and talk

2. **Presentation:** *Beginning class, introduction, continuity with other sessions, students' prior knowledge. Clarity of presentation. Pace. Attitude to subject matter. Use of appropriate reinforcement. Ending the session – summary, future work etc.*

Class was started a little ahead of time (more students came in after the start). The recap and introduction was good. Presentation was very clear with a good voice and fluent speech. A useful summary slide was shown regularly.

3. **Technique and Aids:** *General apparatus – board, OHP, data projector, use of handouts. Question and answer technique. Other evaluation procedures, class management, instructions to students.*

A conventional slides and talk approach was used. Occasionally the slides contained too much text. Otherwise, this technique is appropriate for the subject.

4. **Student Responses:** *General class atmosphere, level of participation, attention and interest. Student attitude and ability to carry out classwork. Were learning problems identified and overcome? Awareness of individual needs. Attitude to students.*

The students were engaged and captivated, as evidenced by quietness. Only once, some students were talking amongst themselves.

5. **General:** *Was effective communication achieved? Was there good student – teacher rapport? Were the outcomes achieved? Appropriateness of teaching/learning methods*

The teaching method is appropriate for this subject. Perhaps audience participation could be improved by e.g. asking questions

6. **Future areas of focus:**

- Occasionally, slides could be improved by reducing the amount of text.
- A bit more audience participation could be achieved, e.g. by asking questions
- A note to the time-tabling office; the layout of room 0.31 in IBERS is not ideal for lecturing.

7. **Strengths:**

- Excellent lecturing style with a clear voice and fluent speech.
- The pace was good (sometimes bordering on too quick)
- The occasional joke was made to improve student-teacher rapport

**Course Member's Notes and Observation**

(Completed after a post-session discussion with the observer)

1. **How helpful were the comments about the observation?**

Very useful and constructive, as this was one of the more difficult lectures in this module.

2. **In the light of the comments made are you likely to make any changes?**

Might reduce amount of text and/or spread material out over several slides in future.

3. **Any further comments about the session and observation?**

Very useful indeed; this is certainly one aspect of the PGCTHE programme which I feel positive about.

## **5.6 Observation by a Colleague 3**

PGCTHE Teaching Observation Form

**Name of Candidate** Dr Chris Finlayson

**Date** 13<sup>th</sup> November 2012

**Name of Observer** Dr Adil Mughal

**Numbers in class** ca. 20

**Group** Year 0 (Foundation level) Physics

**Location** Llandinam G3

**Topics** Lecture on “Newtonian Gravitation”, as part of PH010-10 module

**Start Time** 16:10

**Finish Time** 17:00

**Learning Outcomes** Simple problem solving in topics of projectiles and orbits.

**Aims** As above

**Any particular factors/problem taken into account when planning the session?**

None.

**Any changes made since similar previous sessions? (if applicable)**

I also delivered this course last year. Minor changes made to slides etc.

**Any aspects of this session which are new to you?**

No.

**How have you incorporated suggestions made previously? (if applicable)**

Yes, some font sizes on slides have been increased.

**Do you wish to be given advice on any particular aspect of your teaching in this session?**

No.

### **Observer’s Comments**

1. **Teaching Characteristics:** *Preparation, selection of aim/objectives, statement of aim and learning outcomes. Selection and organisation of content. Planning. Choice of teaching/learning methods*

Lecturer was prepared with an appropriate range of material for the class at hand. Material was logically organised with theory followed by applications.

2. **Presentation:** *Beginning class, introduction, continuity with other sessions, students' prior knowledge. Clarity of presentation. Pace. Attitude to subject matter. Use of appropriate reinforcement. Ending the session – summary, future work etc.*

Good use of introduction. Set out the direction of the lecture from the start. Good use of pictures to convey physical principles. Good pace- could use more ideas/narrative from history to illuminate the work?

3. **Technique and Aids:** *General apparatus – board, OHP, data projector, use of handouts. Question and answer technique. Other evaluation procedures, class management, instructions to students.*

Good amount of interaction with students. Perhaps more time spent guiding students with hints would be useful?

4. **Student Responses:** *General class atmosphere, level of participation, attention and interest. Student attitude and ability to carry out classwork. Were learning problems identified and overcome? Awareness of individual needs. Attitude to students.*

Possible low attendance, and some late arrivals. Perhaps students should be better distributed around the room for maximum engagement? Some students not engaging and playing games on their computer. There were 1 or 2 very keen students.

5. **General:** *Was effective communication achieved? Was there good student – teacher rapport? Were the outcomes achieved? Appropriateness of teaching/learning methods*

- More use could be made of idea of symmetry in problem solving
- Very entertaining section on orbits.
- In some cases student-teacher rapport was good.
- Learning outcomes were achieved.

6. **Future areas of focus:**

- More engagement with struggling students.
- More use of multimedia items?

7. **Strengths:**

Good presentation, material, enthusiasm, use of examples.



**Course Member's Notes and Observation**

(Completed after a post-session discussion with the observer)

1. **How helpful were the comments about the observation?**

Very helpful and positive! Makes me confident that my lecturing style(s) are working.

2. **In the light of the comments made are you likely to make any changes?**

I intend to ask students not to play games etc. on their computers during lectures.

Note; I subsequently followed this matter up with the Head of Year (Dr Balasz Pinter). After an e-mail had been sent to the student group concerned, less of this kind of disruption occurred in the following lectures.

3. **Any further comments about the session and observation?**

No.

## **5.7 Observation of a Colleague by the Participant**

PGCTHE Teaching Observation Form

**Name of Candidate** Edwin Flikkema

**Name of Observer** Chris Finlayson

**Group** PHM8320

**Topics** Quantum Mechanics

**Date** 1/12/2011

**Numbers in class** 7

**Location** Physics Sciences Building 319

**Start Time** 4pm

**Finish Time** 5pm

**Learning Outcomes and aims**

N/A

**Any particular factors/problem taken into account when planning the session?**

N/A

**Any changes made since similar previous sessions? (if applicable)**

N/A

**Any aspects of this session which are new to you?**

N/A

**How have you incorporated suggestions made previously? (if applicable)**

N/A

**Do you wish to be given advice on any particular aspect of your teaching in this session?**

N/A

### **Observers Comments**

1. **Teaching Characteristics:** *Preparation, selection of aim/objectives, statement of aim and learning outcomes. Selection and organisation of content. Planning. Choice of teaching/learning methods*

- Session started with Module Questionnaire
- Topic of "Perturbation theory" clearly introduced and issues explained reasonably.
- Clear and accessible example chosen (simple Harmonic Oscillator).
- Planning/layout seemed logical. "Signposting" good.

2. **Presentation:** *Beginning class, introduction, continuity with other sessions, students' prior knowledge. Clarity of presentation. Pace. Attitude to subject matter. Use of appropriate reinforcement. Ending the session – summary, future work etc.*

Link to previous session emphasised. Pace and delivery seemed fine. Writing out notes on the board controls speed of delivery nicely. However, later on, a couple of students seemed to struggle with keeping-up with note-taking.

3. **Technique and Aids:** *General apparatus – board, OHP, data projector, use of handouts. Question and answer technique. Other evaluation procedures, class management, instructions to students* Predominant use of whiteboard works OK.

- Notation in Quantum Mechanics can be detailed & complex; OHP slides might be better?
- Having lots of notes/derivations on board at once is helpful!
- Probably need to back notes up with printed handouts?

4. **Student Responses:** *General class atmosphere, level of participation, attention and interest. Student attitude and ability to carry out classwork. Were learning problems identified and overcome? Awareness of individual needs. Attitude to students.*

Atmosphere seemed very informal and democratic. Small class size was definitely helpful. When the substantive material commenced, the atmosphere was studious and attentive. Students picked up on a mistake on the board; lecturer dealt with this appropriately.

5. **General:** *Was effective communication achieved? Was there good student – teacher rapport? Were the outcomes achieved? Appropriateness of teaching/learning methods*

- Initial exchanges frank and uninhibited; students seemed confident about questions/comments.
- A hard topic, and the students became more passive during the lecture (unsurprisingly!), however none appeared bored or disinterested.
- Respect for the lecturer appears good.

6. **Future areas of focus:**

Presentation style has pragmatic advantages, but maybe needs more focus. Maybe try OHP delivery and compare student response? "Interactive" elements would be very difficult for this kind of material! Worth thinking about...

7. **Strengths:**

Lecturer clearly knows and understands material very well indeed... Only checking notes occasionally. Presentation style seems to work for this class.

**Course Member's Notes and Observation**

(Completed after a post-session discussion with the observer)

**1. How helpful were the comments about the observation?**

Useful discussion about OHP slides versus whiteboard. This is very relevant to the teaching cycle on this.

**2. In the light of the comments made are you likely to make any changes?**

I might try incorporating some animations into the lecture, to make it more lively.

**3. Any further comments about the session and observation?**

The subject of this session was quite technical and difficult to explain. I am quite pleased that the comments are fairly positive.



# Chapter 6

## Personal Commentary

### **6.1 Current Teaching Content**

Since my appointment as Lecturer in Physics in 2011, student numbers within IMPACS have risen very sharply, without a commensurate increase in the number of teaching staff. In the 1<sup>st</sup> semester of the academic year, in particular, my workloads have been very high, with 50+ hours of lectures per term being typical. When material has to be generated from scratch for many of these lectures, literally days of additional preparation time per lecture is also required. As an academic who, as a post-doctoral fellow, was used to relatively minor teaching roles and a research-led agenda, this was a very great change in my professional outlook.

My probationary contract stipulates that I should be involved in the delivery of 40 credits worth of teaching modules after 3 years (a taught module of ca.20 lectures would typically carry a weighting of 10 credits). Accordingly, I have accrued the following duties for the teaching of various physics modules within IMPACS, some of which have been actively used for teaching development cycles and in teaching observations, as described in Chapters 3 and 5 of this portfolio, respectively.

- PH345-10 “Optronics”; a Year 3 level physics lecture module, with typical class sizes of 20-25 students. I began teaching this in 2011 as a half module, and took over responsibility for the whole module (module coordinator) in 2012. I have independently devised a syllabus covering a number of prescient topics in what might be termed *Modern Optics*.
- PH335-10 “Semiconductor Physics”; a Year 3 level physics lecture module, with typical class sizes of 50-60 students. I began teaching this in 2012 as a half module, and still share the delivery with Prof Andy Evans (module coordinator).
- PH327-10 “Probing Atoms & Molecules”; a Year 3 level physics lecture module, with typical class sizes of 70-80 students. I began teaching this in 2011 as a half module, and took over responsibility as module coordinator in 2013. I share the delivery of the module with Dr Rudi Winter.
- PH220-10 “Optics”; a new Year 2 physics lecture module in 2014, with typical class sizes of 70-80. I took a leading role in the introduction, and syllabus design of this module, and am also the module coordinator.

- PH010-10 “Introduction to Physical Forces / Newtonian Mechanics”; a foundation year physics class, which I have taught and been the module coordinator for since 2011. Typical numbers of ~30 with a broad spectrum, in terms of educational experience and attainment, with many mature students and others with non-standard entry routes into a physics degree. I lecture this class in 2-hour weekly slots during semester 1, with the session intended to have some seminar/workshop elements to it, in addition to being a traditional lecture.

Additionally, I will typically devise, supervise and assess several Final Year projects each academic year (see also *Teaching Cycles*). I am also a personal/pastoral tutor to around 20 students across all year groups, and I am presently the Year 2 Tutor. There may also be further workload added over the coming year(s).

## **6.2 Personal development in learning and teaching**

My development as a Lecturer in Physics over 3 years has certainly been a significant personal and professional journey. In assessment, I would say that my studies for the PGCTHE have played only a minor role in this regard.

I found the teaching observations to be the most useful element of the PGCTHE. In addition to the very useful, insightful feedback and advice received from colleagues, I also found my observations of fellow candidates very illuminating. An example of such an observation is shown in Chapter 5.7. This gave me an opportunity to see university physics teaching in action across a wide range of teaching situations and topic areas; for example, I provided observations for diverse lectures on quantum mechanics, numerical methods and differential equations (mathematics). Above all else, I valued the sense of camaraderie and the feeling of colleagues working with each other towards common goals, which is very good for overall morale.

The teaching cycles proved a fairly interesting exercise, with some valuable modifications and improvements having resulted across a number of the modules I teach. Sometimes, the “interventions” seemed a little forced and contrived in nature, and were at the mercy of the enthusiasm and co-operation (or lack thereof) of the student subjects.

The CDSAP workshops were quite a mixed bag; often rather generic in nature, and not having a specific focus on science teaching. Some were also quite tendentious in the messages they attempted to convey. I consider the most important things I have gained from this element are an improved confidence in my teaching abilities, an appreciation of the importance of relaxation and stress-relief in the face of heavy workloads, and a better idea of the difficulties faced by some students and what can be done to ameliorate these.

For this Personal Commentary section, I will re-visit some themes from my induction day statement (see Chapter 2), which was composed prior to the start of my teaching duties in Aberystwyth.

*My higher education journey was filled with the usual mixture of mostly good and (occasionally) bad lecturing. Whilst many staff were evidently “pro-student”, others clearly*

*viewed teaching as a distraction from their research. Many of the poorer experiences were due to deficiencies in, or failure of, presentational clarity.* This was an “anti-model” of university teaching which I was anxious not to emulate! I have to say that nothing had prepared me for the sheer volume of work and effort involved with being a lecturer. A very great amount of my time and care has gone into this and other teaching, decidedly to the detriment of activities such as my research, over the past 3 years. In future years, and as modules are recapitulated rather than composed, I hope/expect that a better balance of work priorities will emerge. With regards to clarity and presentation, I feel settled and confident in the slide-based lectures I have been producing and aim to continue with this approach, taking on-board some of the useful input I have received from the teaching observations and also student feedback.

*Many of my university tutors proved quite inspirational and pivotal in my career choices, especially those whom I got to know personally in small group or one-to-one situations.* I have particularly enjoyed supervising students in their project work and with their final year assignments. It is in these slightly more intimate environments where my experience and knowledge can have a big impact on student learning. Anecdotally, it only tends to be the more capable and/or engaged students who take advantage of such educational resources. However, we do as a department and university seem to spend a lot of time chasing-up the low-achieving tail of the student body; so, I feel that it is only right and fair that some time and care be found for the high-achievers.

*The available methods and media have changed greatly since my time as a university student, some 15 years ago. “Chalk & talk” and acetate overhead slides have been predominantly replaced by PC-driven presentations in PowerPoint, for example.* I have observed several lectures which still use the chalk-and-talk methods; these tending to be the ones involving large amounts of derivations, equations and mathematical formulation (e.g. quantum mechanics). This approach also tends to help with the pace of such a lecture. However, much of the material I teach involves a dual qualitative/quantitative approach, for which I find PowerPoint slides work well. The need to independently record what gets written on boards is also alleviated. Student feedback has been broadly supportive of this approach (to quote a Year 3 student from the 2013 cohort- “I very much enjoyed the lecture. Not everyone can do a slide-based lecture well, but you appear to have the balance just about perfect”).

*It is also the case that such teaching has to be mutually entwined with the current research activities and knowledge. This is particularly true of final year and advanced-level courses.* I have certainly found this to be true, with 3 years of lecturing behind me now. I have introduced advanced research topics into final year physics modules in a number of places (e.g. the topic of “photonic crystals” into PH345-10 Optronics and “organic semiconductors” into PH327-10 Probing Atoms & Molecules). This has usually prompted an enthusiastic class response, with students gaining some insight into possible areas of future employment or post-graduate study.

*One important aspect of my job role as Lecturer, and also related to teaching, is outreach. This involves a range of activities from public/press liaisons to open-days and admissions events.* I have actively taken on the challenges of the outreach aspect of teaching, and now regularly contribute departmental “taster talks” on the university open days and



UCAS interview days. The important of these occasions to the university's recruitment effort can hardly be understated. I was also selected to be involved with the Welsh Crucible 2013 event which, whilst focusing on research more than teaching, also gave me some useful pointers and experience in dealing with the media,[Fin14] and in understanding their motives and practices.

On a final topic; in the present climate of increased higher education fees, students are demanding "more value for their money". Many are now calling for improved and increased use of multi-media elements in teaching, such as the real-time filming/recording of lectures. Certain colleagues at the university have indeed started using the *Panopto* capture system. As someone who takes quite an informal approach to the delivery of lectures, such a prospect fills me with a considerable disquiet and apprehension. I am also concerned about the possible effect this would have on student attendance, if what is effectively a film of each lecture was available for private viewing later. Should practices move towards the filming of lectures as standard, I would certainly hope to use university resources, such as the CDSAP workshops, as a source of help and reassurance.

# Chapter 7

## Mentor approval of submission



**PGCTHE**  
**Mentor - Approval of Submission**

The Postgraduate Certificate in Teaching in Higher Education is an M level course. The AU Generic Level Description to be applied in assessing participants is:

“LEVEL M: Display mastery of a complex and specialized area of knowledge and skills, employing advanced skills to conduct research, or advanced technical and professional activity, accepting responsibility for all related decision making including supervision and, in appropriate circumstances, the guidance of others.”

The portfolio **must** contain:

- i A matrix which helps the assessor find material offered as evidence of competence
- ii Two induction workshop assignments:
  - Personal statement on learning and teaching in higher education
  - Poster
- iii Teaching Cycle 1   
 Teaching Cycle 2   
 Teaching Cycle 3
- iv Teaching Observations:
  - Two observations by the mentor
  - One observation by course team
  - Three observations by colleagues
  - One observation by the participant
- v Personal commentary:
  - Reflection on personal development in learning and teaching
  - Current teaching context
  - Evidence of six days of Continuing Professional Development (or 36 hours CPD)
  - Plans for future Continuing Professional Development
- vi References and Sources
- vi Mentor approval of submission form (once mentor has read portfolio)

**Candidate Name** Dr Chris Finlayson

**I confirm that I have read this portfolio and I am confident that it engages with the Areas of Activity, Core Knowledge and Professional Values set out in the UK Professional Standards Framework for Teaching in Higher Education.**

**Mentor Name** Prof Andy Evans

**Signature**

**Date** 15<sup>th</sup> April 2014



# Chapter 8

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