

## Online task design on the Master of Teaching

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### *Introduction*

Technologies in education have often been seen as providing the answers to expanding demands for Continuing Professional Development (CPD), and Information and Communication Technology (ICT) is often promoted by politicians (and sold by retailers/software manufacturers) as the solution to effective learning. The rhetoric however often neglects the serious point that it is not the availability of the technology, which is important, but how it is used. The most ambitious CPD for UK teachers utilizing ICT to date would be the New Opportunities Funds (NOF) training which started in 1999. The aim of this programme was to train and develop all teachers' ICT skills and understanding with particular emphasis on development of classroom practice. This programme is now considered to be at least partially successful but this was after a lot of problems in the early stages. In fact it was the highlighting of such problems that prompted interim evaluations and re-design of NOF training. Design as well as planning and delivery weaknesses were identified with this form of CPD. These design weaknesses included the lack of long term strategies to encourage practice-based research, creativity, ownership of learning and communities of practice. This chapter focuses on the role of e-learning on a course aiming to provide meaningful CPD for newly qualified teachers (NQTs). In this case ICTs play a crucial part in encouraging a form of CPD which is collaborative and allows the development of practice-based research, creativity, ownership of learning and communities of practice (in some way the antithesis of NOF). It investigates the design of the online tasks and activities that students participate in on the Master of Teaching (MTeach) course taught at the Institute of Education. Tutors have needed to develop their own pedagogical expertise in the light of using new technologies. This is based on a belief that professional learning can exist for teachers in a non-hierarchical way via sharing practice, and that this online collaborative work which is classroom focused, cross-phase, cross-subject and cross-experience allows a non skills-based approach to CPD. In this chapter, to analyse and explore these important processes a framework is used (and critiqued) that highlights the relationship between Technology, Pedagogy and Content.

The chapter starts with a review of some of the main research and pedagogic issues that exist with learning technologies in contemporary Higher Education (HE) and CPD settings. It then introduces a framework which has potential in this and other cases for analysing and designing courses where learning technologies are an integral feature. The main part of the chapter focuses on specific pedagogical design issues on the MTeach course. With online courses there are many technological design decisions that need to be made such as the website layout, the conferencing software and other questions about user interface and access. These are important issues but not the focus of this work which concentrates on the nature and structure of the online tasks (what and how are we expecting participants to engage with in these tasks). This central part of the chapter reports on how the course team has developed the online tasks and also uses some small scale research with a group of MTeach students to examine their experiences of participating in these tasks. Where relevant both the process and outcome of task design is critiqued using the analytical framework. The conclusion pulls together key issues and identifies implications for designers of CPD courses.

### *Learning Technologies in HE*

In the increasingly market driven climate of HE in the UK there is often pressure to increase the use of ICTs especially in creating and developing more online courses. Contemporary HE has responded to technological change (particularly the internet) with an expansion of modes and methods of course delivery. However with these changes it is important to consider the design and pedagogies involved with such course developments. ICTs in education (especially the use of online environments) are relatively new and tend to change quickly, but practitioners' understanding of how to use them for effective teaching often lags behind. Laurillard in her writing on the effective use of learning technologies in HE, sets the scene:

*'Learning technologies are unfamiliar and complex. Few of the current generations of academics have ever learned through technology, so practice develops slowly and theory hardly at all.'* (Laurillard, 2002: preface)

Seale et al (2003) investigate learning technologies in post-compulsory education. In this overview, Oliver, like Laurillard before, argues that continual change does not provide stability for research of practice, which has consequently tended to be limited.

*'Learning technology often seems an amnesiac field, reluctant to cite anything 'out of date' (Oliver, 2003: 3)*

Although there is a concern over the lack of theoretical frameworks on which to develop HE courses for CPD, Oliver suggests there is a consensus view but this is has not yet developed into a theoretical position.

*'Generally, learning technologists just do not believe the 'default', transmissive model of education .....They believe that learning arises from thoughtful experimentation (experimental learning), from questioning (critical thinking), from the intertwining of practice and reification, debated with peers (communities of practice). By deeming transmissive e-learning to be 'of questionable value', we have taken a theoretical stand- but are we, individually and collectively, aware of what stand we have taken. (Oliver, 2003: 154)*

There is also within the debate in this book recognition of the potential tension between technology and pedagogy. Most software used is designed for commercial rather than educational use. Even software aimed at the education marketplace is often designed using a self-teach model. The danger is that technology drives the pedagogy and that it encourages a 'transmission' approach whether this is via presentation package or within a virtual learning environment (VLE). Wilson refers to 'pedagogic poor' applications of technology.

*'I groan at the thought of students faced with death by PowerPoint both in the lecture theatre and now in the VLE' (Wilson, 2003: 14)*

These concerns over pedagogy amongst the learning technology community resonate with our concerns as educators. As teacher educators working on a Masters level course providing CPD for new teachers, which includes substantial online components, we are clear that the course is not about downloadable presentations and readings or pre-packaged 'manuals' on responding to the latest government initiative. What we feel is crucial is that those teachers have the opportunity to discuss with each other and make sense of theoretical concepts, question policy and practice, within the context of their professional lives. As NQTs their professional lives are very busy and very focused on their classrooms and their day to day teaching. There are thus clear design implications for tutors especially for the on-line elements where teachers are not physically together. A subsequent section of this chapter explains in some detail how the course team has responded to these challenges by reporting on practice and research on a core module named 'Understanding Teaching' (UT) specifically designed for NQTs.

#### *A framework for design?*

The growth of e-learning has typically led to numerous sources of advice to course designers. Some models have been very influential such a 'Five Stage' model (Salmon, 2000). Our experience over the early stages of developing the MTeach is that this model raises some useful and valid issues about design and implementation, for instance the need to build in (technical) support and social/group cohesion icebreaker activities in the first stages of online programme development. However it is rather simplistic and mechanistic in parts and does not address the complexities of teachers' learning that need to be investigated and 'un-picked' further to provide a better understanding of the wide range of factors at play in on-line learning environments.

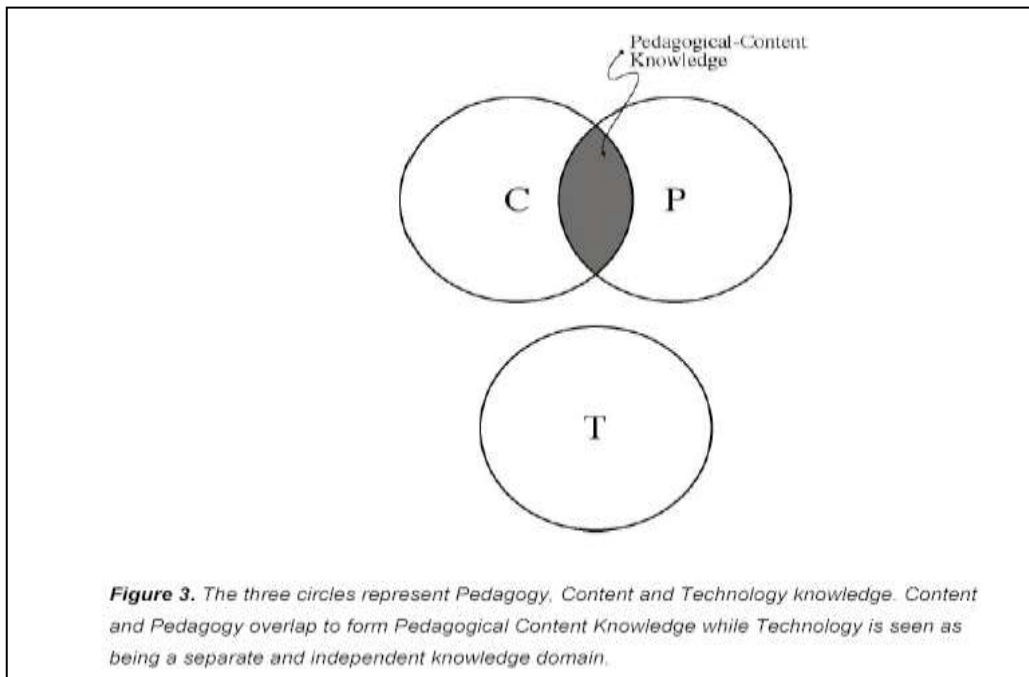
A conceptual framework that addresses more of the complexities that are involved is that of Mishra and Koehler from Michigan State University, USA. In a similar vein to the views of the UK academics cited above they acknowledge the lack of theoretical grounding of research in the area of educational technology. They emphasise three issues which have restricted the development of more unified theoretical and conceptual frameworks, one being the (over) focus on the technology:

*'Part of the problem, we argue, has been a tendency to only look at the technology and not how it is used. Merely introducing technology to the educational process is not enough. (Mishra and Koehler 2006: 3)*

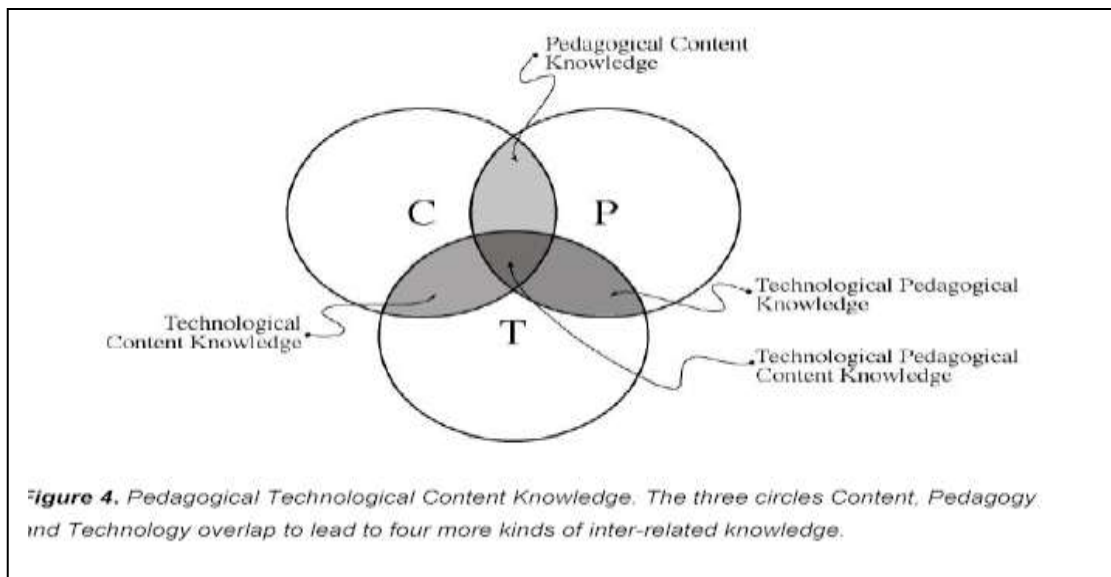
The second is the large number of case study approaches to reporting developments and practice which they argue only provide the first step in building understanding. The third is the rapid change in the technologies which are available.

Mishra and Koehler propose a conceptual framework to address some of the shortfalls in analysing the role of ICTs in education, which they have named Technological Pedagogical Content Knowledge (TPCK). They have developed Shulman's (1986: 9) idea of Pedagogical Content Knowledge (PCK). The argument is that

teachers, - in our case, university tutors - to be effective, need to know not only about the subject matter and about how to teach, but they need to understand appropriate pedagogies for that particular subject, topic, or concept. PCK has been very influential in teacher education and has been adopted widely (but not unquestioningly) both at initial teacher education and for teachers' CPD. Mishra and Koehler have introduced Technology Knowledge (TK), which is knowledge about the technology and how to use it. Below is figure 3 from their paper.



Mishra and Koehler propose that Figure 3 represents what generally happens in both educational practice and debate about the use of technologies - that technologies are seen and treated as separate from content and pedagogy. They argue that this is not a useful way of treating learning technologies and the relationships are 'complex and nuanced' and that technologies may actually constrain content. They suggest that TK needs to overlap as shown in figure 4 below.



They argue that this framework allows a potential model for analysing as well as designing resources, methods, structures and desired outcomes, especially where ICTs are an integral or growing part of a course. They identify a change which many of us in education can relate to, namely that in the past there was a tendency for content to be a driver of course development and pedagogy (and technology) followed. Whereas now they claim, the pervasiveness of technologies has forced educators to re-think pedagogical

issues. They do not however raise the possibility that technology now drives pedagogy, something which is highlighted earlier in this chapter as a concern.

### *TPCK and the MTeach*

The TPCK model provides a helpful analytical framework for evaluating course and task design, which has become relevant to teacher educators because of its PCK foundation. The next section explains the make up, context and process of the development of the MTeach course team and attempts to assess the relevance of applying a TPCK framework to the way they worked on the design of the modules and tasks. This is followed by a focus on a particular module to try to evaluate the development of TPCK achieved by tutors within the design of the online tasks.

The academic course team is currently made up of ten staff who, all but one, are PGCE tutors from six secondary subject areas and primary education. Generally work on this course forms a minority part of their contract. The conditions for a high level of PCK exist; all staff are experienced teacher educators with a willingness to share critical reflections on their own pedagogies, including varied experiences of using technology. It has been a challenge for the course team to design and develop this course over the last 5 years. Team meetings are well-attended, open and developmental, allowing genuine debate and criticality. Staff who previously had not worked together seemed to gain confidence and value the cross subject, cross phase learning that takes place. Because this course was new and was planned with technologies as an integral part from the outset the team needed to carefully design the tasks and sessions in an integrated way taking into account pedagogies, content and technologies. The criteria for this design process although not overtly stated but apparent from experience and observation is to encourage within the tasks a pedagogy of social constructivism. That students (the new teachers) make sense of their school experiences and reading via interaction with professional colleagues. This allows them to develop their understanding and construct knowledge within a 'situated' learning community.

The team came with varied Technology Knowledge (TK) as well as their subject specialisms and ideas about pedagogy. The design of a new course allowed staff to work to their strengths and the sharing of knowledge and techniques about ICT or content or pedagogy was reciprocal. Aspects of the TPCK model do resonate with the way the course team worked. For example some of the team are perhaps what we could call 'ICT enthusiasts' arguably with high TK and their understanding of the potential of particular ICTs enabled course design to have a richer TPCK than if there were no enthusiasts. Once the course was up and running and staff experienced using the new technologies (initially mediated by the enthusiasts) it could be argued there was a move to higher levels of TPCK generally. An indicator of this is a special interest group (SIG) on ICT and Pedagogy, which grew out of this team in the first year of the course and is now an established group open to all University staff.

There are important ways however in which the team designed the course and tasks which do not fit so well with the TPCK framework. The main weakness in the model is the lack of presence of the learner. This is similar to criticisms of Shulman made by Banks and Moon (2005) where a main concern is that in essence the PCK model is teacher-centred. This can be taken a stage further, in that the TPCK model also fails to highlight the importance of other 'knowledges' that Shulman later introduced such as knowledge of learners and knowledge of educational contexts. The MTeach team for instance took great store in considering these two 'knowledges' in the design of the course. This is firstly exemplified by the fact that the course has three routes specifically designed for teachers at different stages of an early teaching career. The 'P' route (post PGCE) for NQTs, the 'I' route following an induction year, and the 'E' route for more experienced teachers (3 years plus). By looking further at the 'P' route we can illustrate how knowledge of the learner and their educational contexts is at the forefront of the online course design. The course team knows the NQT year is probably one of the busiest and potentially most stressful in a teaching career. To avoid overload for these new teachers the two modules they undertake are run over the whole of an academic year rather than being completed in one term. The integration and balance of both face-to-face (f2f) and on-line elements are designed very much with the learners' needs in mind. This allows flexibility via the on-line tasks as to when they undertake study periods. The timings and subject focus of these tasks is carefully planned to fit in with the typical issues and pressures of an NQT year. The tasks require participants to use (reflect and analyse on) their day to day experiences as new teachers. The idea is that the sharing of experiences, the grappling with classroom issues, the use of readings and theoretical frameworks, encourages students to build on previous knowledge and understanding and make sense of the educational contexts in which they are situated. The online environment provides a crucial supportive and challenging space in which to do this with peers. What is clear here to us as teacher educators designing and running a CPD programme, is that the TPCK model misses out crucial factors especially to do with the role of the learner in this process. The TPCK model alludes to complexities and nuances that can come from using learning technologies but fails to address the importance of considering educational contexts, the role of the learner and their previous knowledge all of which are core

factors affecting the learning of NQTs. In contrast for us these issues are the starting points of course and task design decisions.

To reflect, experiment and discuss how a specific part of the course has developed against the TPCK model there follows a closer examination of the Understanding Teaching (UT) module based on a small scale piece of research which was carried out with students taking this module. It is the longest running 'core' module for NQTs, and for most of the teaching team it was the first module they worked on with new technologies.

The table below illustrates the interplay of face-to-face (f2f) and online tasks in the UT module.

Timing	Tasks	'Understanding Teaching' (UT) Module Activity	Mode
September		Inaugural evening	f2f
October	1	Starter task (classroom management focus)	online
November		Saturday conference	f2f
Nov/Dec	2	Classroom interactions	online
Jan/Feb	3	Learning, progression and achievement	online
February		Twilight/Saturday tutor group meeting	f2f
March	4	Evaluating teaching	online
April/May	5	Developing pedagogy	online
June		Coursework in progress conference	f2f
July/August		Coursework write up	Online/f2f

Table 1: Structure of module

As discussed above, the content, focus and timing of these tasks were carefully designed by the course team to be relevant and pertinent to the issues NQTs encounter in their schools and classrooms. Each of these tasks, accessible via the MTeach website, follows a pattern which has been designed and developed by the team: an opening page/section delineates briefly the aims, purpose and context of the discussion. From this, participants can move either to the task itself or to a background paper written specifically by course tutors drawing on key literature in the field and listing carefully selected, recommended background reading. The task usually offers a choice of questions as well as links to two or three digitised core readings. Participants are encouraged to read the background paper before they choose the task and to engage with the digitised readings before composing their response to the task (usually 300-500 words) by a specific date. This is posted into a password protected online tutor group conference area. In a further step, they are required to submit at least one further posting by a specified date per online discussion in response to the contributions made by their peers.

#### *The research*

A small-scale practitioner enquiry was designed to investigate students' experiences and perceptions of participating in the UT online tasks. The idea behind this was to move them from reporting on how they approached the tasks to commenting on what aspects of the tasks worked well (or not) and why they felt this was the case. A questionnaire was sent to fourteen students (see appendix 1) who were full time teachers across a range of subjects and phases in both primary and secondary schools. The questions (5, 6 and 7) that were concerned with the design aspects of tasks were deliberately open ended without a prescriptive list of choices or a likert scale. The rationale for this was to try and see the students' overall opinions, experiences and perceptions rather than them commenting on specific design elements of the tasks referred to earlier (e.g. introduction, background paper, tasks, digitized readings, postings, responses and so on). This enquiry is exploratory and small scale in nature but will act as a pilot for further research in this area which can include more students, modules and wider data collection methods such as interviews.

#### *Findings*

Some key issues emerge from this enquiry, which are useful for CPD course designers to take on board when using online discussion groups. It was clearly the case that students valued the situated nature of the tasks, in that they were asked reflect on and explain their own teaching experiences and that this was an interactive and shared process. Also significant is that students tended to see tasks as holistic and not a series of interconnected parts, however they did identify the second stage of the online discussions as less useful than the first stage, something discussed in more detail below.

There were several design aspects of the tasks that were identified as important and positive by the students, namely that:

- they were focused around their classroom experiences;
- they enabled the making of meaningful theory-practice connections;
- they encouraged being reflective in the light of wider research;

- they helped them think about and develop wider teaching strategies;
- they facilitated interaction and sharing ideas with colleagues;
- there was easy access to the tasks/readings (down loadable);
- the timing (within the school year) and the flexibility of the tasks (personal control over when to work on them) was well thought out.

There were less responses about negative experiences with the tasks, but it was clear that responding to other students' postings was seen as less useful than other parts of the tasks.

To experiment with the TPCK model in the context of this research the next section includes a simplified outline of the UT module in terms of Technology, Pedagogy and Content which is followed by a discussion about the implications for courses design. It is useful to remind ourselves that it is the level of TPCK in the course team and the online tasks, not the students' TPCK we are considering in this case.

**Technology:** This is the password protected website of resources including digitized readings, digitized exemplars, shared files and e-journal access. The website hosts the online tasks and acts as a portal to the online tutor group where participants engage in asynchronous postings required by the online tasks and facilitated by a tutor.

**Pedagogy:** An underlying pedagogic ethos of the course/module is that of social constructivism. That students (the new teachers) make sense of their school experiences and reading via interaction with professional colleagues. This allows them to develop their understanding and construct knowledge within a 'situated' learning community.

**Content:** The UT module aims to develop students' understanding of the following via (digitised and other) readings and reflections on their teaching.

- Classroom interactions;
- Learning, progression and achievement;
- Evaluating teaching;
- Developing pedagogy.

The main findings illustrate a high degree of TPCK in the task design up to initial posting and reading of each others' postings. Students said they found these parts worked, they were useful, they felt they were developing and progressing. Interestingly this was less the case at the stage where they were required to respond to each others' postings. One then needs to ask why this was? One could argue it was not the technology that was the barrier (this had worked fine in the earlier stages of online task engagement) but rather the design of this stage/aspect of the task. It can be seen that this aspect of the tasks is more open ended and the learner would benefit from more directed structure, purpose, exemplification and perhaps a more creative approach to the design. In other words, there needs to be more thought about both the pedagogy and content aspects of this stage of the task. This is a positive example of using the TPCK framework, as it reminds us to consider all factors when approaching design, even at individual stages of a task.

Although the course team did not use the TPCK framework when designing the online tasks, it is apparent that tutor TPCK was (even if unconsciously) at work. The team adopts an integrated approach to design of tasks where the available technology is used to create an environment that allowed constructivist ideas about pedagogy and learning where content emanated from classroom experiences and carefully selected readings.

The clearest findings of this research were about issues that are not made explicit by the TPCK model. What was important for students was the fact that the tasks were focused around their classroom experiences, there was interaction with colleagues and the timing and flexibility of the tasks worked well. These are issues about educational contexts, the role and previous knowledge of learners, and as explained earlier were the starting points to the way we designed the course. The TPCK model by not including specific reference to the learner creates a potential analytical gap which can miss out on the importance of considering these particular factors in any course or task design. Thus one should be cautious about adopting the TPCK framework in a simplistic and unquestioning way. Without due consideration of the learners and their contexts, course and task design is less likely to be effective.

#### *Conclusions and ways forward*

Design of courses that use learning technologies (especially the internet) is important as the plethora of options available increases. However, it is important not to accept 'the latest' learning technologies without question. Consequently theoretical models and frameworks that allow critiques of design can be very useful. TPCK seems to include strengths and weaknesses. The strengths are that it can provide a tool for thinking

about the design of courses. In particular it flags up the important issues of pedagogy, content and technology. It also emphasises or reminds us of the need to consider the inter relationship between these factors particularly as learning technologies continue to grow at a rapid pace. Criticisms of the TPCK model concur with other writer's concerns with Shulman's early formulation of PCK which seem to have been at least partially transferred to this new model, such as the lack of discussion about learner's (previous) knowledge and the process of learning.

The key design features which emerge from reviewing both student and course team experience with the online tasks is that the tasks require students to relate theory and concepts to their current teaching and then explain this to others. Interaction with peers is seen as important. These aspects of design correlate with the findings of Daly and Pachler (see earlier chapter) and Pachler and Pickering (2003), who have analysed the online discussions and established the formation of 'communities of (professional) practice' (Wenger, 1998) where theory practice issues are discussed critically and situated learning develops.

What is clear is that the MTeach participants value the collaborative nature of this online work where they are making meaningful theory practice linkages and connections based on their own and other's day to day teaching experiences. The design of the course and the tasks has been crucial in facilitating this non-hierarchical non transmission mode of professional development and learning.

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Questionnaire

**Background**

The focus of this research is to find out about your experiences of participating in the on-line tutor group. More specifically I would like to find out how this was facilitated by the design of the tasks. At this stage I am trying to keep most of the questions open-ended and do not want to restrict or direct your answers. Do use continuation sheets if necessary.

**It may be useful to read all the questions before answering**

1. Name:
2. Age:
3. Do you have a computer with on line access at home?
4. Describe briefly any previous experience (before the MTeach) of on-line tutor group work/study you have been involved in:

**The MTeach course**

5. Describe briefly how you worked on the UT on-line tasks
6. What aspects/parts of the tasks worked well for you?

Why do you think this was?

7. What aspects/parts of the tasks did you find less useful?

Why do you think this was?

8. Please feel free to add any other views or comments you have about the design and structure of the tasks.
9. Are there any other questions you think I should have asked about on-line task design?

Thank you very much for completing this questionnaire, it can be returned either by the postage paid envelope or via email to [a.unwin@ioe.ac.uk](mailto:a.unwin@ioe.ac.uk) . If possible please return this by Friday 15<sup>th</sup> of July.