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Executive summary

This survey of science, technology, engineering and mathematics (STEM) practitioners, working within higher education in the UK, was conducted in the first quarter of 2013 and has provided insights into not only resources that are used within teaching but also resources that are used by staff to enhance their teaching practice. There were 192 respondents representing 74 UK higher education institutions, 50% of these are known to be research-intensive universities within the 1994 or Russell Group. 117 (61%) of respondents hold positions at the level of Reader/Professor or Senior/Principal Lecturer and 171 (89%) have five or more years of teaching experience. The spread of respondents’ disciplines within STEM was Sciences (46%), Maths and Computing (28%), Engineering and Technology (23%) and the Built Environment (3%).

Section 2 of the survey provides an overview of the wide range of teaching approaches that are used. The majority of respondents are engaged in tutor-led teaching practice (58%) and the majority (55%) of respondents updated their teaching material on an annual basis. The majority (69%) use third party electronic or online resources in their teaching with the most common being YouTube (63%) but there is relatively low use of mobile technology such as phones and tablets (10%). The most popular place to locate digital resources to embed into teaching was from an institution’s own library. Third party resources are obtained from a wide variety of sources and most practitioners (82%) seem reasonably knowledgeable about copyright issues of using third party resources, however 18% of respondents are not aware of copyright issues and out of the 153 respondents who had some knowledge, the majority (68%) stated they were not fully aware of all the issues.

One-third of respondents (34%) perceive there to be a gap in the current provision of resources to use in their teaching of students and all of these respondents gave additional information to describe in their own words what they would like to see developed that could be used to help in the teaching of their students. Examples were categorised into the following six themes: generic resources; physical spaces (including IT enhancements); software innovation; library resources and access; case studies and time.

Just over half of all respondents (54%) chose their current approach to teaching because they wished to enhance their students’ engagement with learning. One-quarter revisit their style of teaching termly (26%) and almost two in five do so annually (38%). Some 82% of respondents cited colleagues’ expertise as the main source of support and information for updating and developing their teaching practice, with twice as many respondents picking this than for any other option.

The biggest barrier to developing teaching practice was time, mentioned by 129 of the 177 respondents (73%) who gave details. Respondents reported that administration and research workloads were given repeatedly as a limiting factor in relation to the development of their teaching resources and teaching practice.

One-third of respondents (34%) perceive there to be a gap in the current provision of resources to use in support of their teaching practice and 59 out of 65 gave additional details. Examples were categorised under seven general themes: culture; time; access; investment; IT; e-learning training and networking.

The cultural issues, mentioned by 29 respondents, include a lack of recognition for teaching in research-led institutions and a more general resistance to change. The need for training and evidence-based pedagogic research was also stated.
The main finding within Section 3 (the differences between disciplines) was that maths and computing respondents cited less usage of third party electronic or online resources, videos or films within their teaching. While around one-quarter of respondents in engineering/technology and sciences went to institutional support centres/services in order to update and develop their teaching practice, only 4% of respondents in maths/computing did so.
Introduction

This document reports the outcome of a survey of STEM practitioners in UK higher education (HE) conducted in 2013. The aim of the study was to elicit views and information on particular resources used by STEM practitioners in both their teaching of students and in the development of their teaching practice for the delivery of their teaching. We wished to determine whether there were differences between disciplines, whether early career lecturers had different approaches to teaching and the way in which they found and incorporated resources to established academics, and whether members of staff were regularly updating their teaching practices. The study also sought to determine the common and current issues faced by STEM academics.

It was intended that the outcomes would inform the sector as to the most commonly used resources, how accessible they are to all staff, and where there might be gaps in the provision for possible future resources and funding by the Higher Education Academy (HEA) and other sector bodies.

The Centre for Engineering and Design Education (CEDE) at Loughborough University carried out this research on behalf of the Higher Education Academy (HEA).

No evidence has been found of other recent studies in this area.

Acknowledgements

The Centre for Engineering and Design education (CEDE) at Loughborough University would like to thank the HEA for funding this research. Special thanks to: Melanie King (Head of CEDE) for designing the questionnaire, Claire Creaser from the Library and Information Statistics Unit at Loughborough University for analysis of the quantitative data and generating the survey report, Janette Matthews from the Mathematics Education Centre at Loughborough University for analysis of the qualitative data and for populating the report.
I Method

An online survey was designed and administered through the Bristol Online Survey. Participants were recruited through an email sent on 7 March 2013 to the HEA STEM mailing list by the Higher Education Academy. The survey closed on 14 April 2013. Responses were received from 192 practitioners. The authors of this report do not have access to the number of names on the HEA STEM mailing list so it is not possible to provide a survey response rate.

The survey was administered anonymously but respondents could provide contact details to receive a copy of the findings.

The survey was designed with the intention of receiving responses that would aid understanding of what resources were used to improve teaching practice and which of these were directly embedded into teaching. Questions were asked to determine if there were significantly different practices among teachers who had more experience or differences between different STEM disciplines.

Questions were asked over four sections:

• the profile of the respondent – location, STEM discipline, teaching experience and current role, teaching qualification, whether respondents were research active and whether they conducted pedagogic research;
• teaching with students – types of resources that are used, use of electronic resources, type of media used, frequency of updating teaching materials and where respondents search for third party resources;
• developing teaching practice – approaches used, what limits the development of teaching practice, sources of support for development, and effectiveness of resources;
• perceptions of gaps in the provision of resources to use in teaching or development of teaching practice.

Quantitative data was analysed using SPSS. Qualitative data was analysed into themes.

The survey questions and overall response data are given in Appendix 1. Free format responses are given in Appendix 2.
2 Overall results

2.1 Your profile

In order to obtain insights into the profile of the respondents, the survey included questions concerning the institution to which the respondent was affiliated, the Higher Education Institution (HEI) grouping and location (Questions 1-5). Questions were asked to determine respondents’ discipline and current role, teaching experience and research activities (Questions 5-10). Results are provided in Appendix 1.

Of the 192 respondents 53 (28%) did not provide details of their institution. The remaining 139 respondents represented 74 institutions. The authors of this report do not have access to the number of institutions included in the HEA STEM mailing list so are unable to report on the percentage of institutions represented by responses. The greatest number of responses from a single institution was 11 (Loughborough University). See Appendix 1, Question 1 for a full list of participating respondents’ institutions.

HEI Groupings are shown in Figure 1.1. No independent checks were undertaken on the HEI groupings provided by respondents where institutions were named. It is likely that at least some of the ‘not known’ and ‘other’ responses could be allocated to the named groups; it is also likely that many will not be affiliated to any formal group.

![Figure 1.1 HEI grouping](image)

The majority of respondents were from England, 83%, with 10% from Scotland, 8% from Wales and 3% from Northern Ireland (Figure 1.2).

Sciences represented the largest STEM discipline, 46% (Figure 1.3). Maths/Computing represented 28% of responses and Engineering/Technology 23%. Only six respondents were from the Built Environment discipline. They have been omitted from the comparative analyses by discipline presented in Section 2.
The majority of respondents were experienced teachers, having taught in higher education (HE) for more than ten years, 69% (Figure 1.4). Where required, responses from all those with less than ten years’ experience were combined in the comparative analysis presented in Section 3, in order to provide sufficient data for testing apparent differences.
In terms of appointed position (Figure 1.5), only three respondents were Researchers; they have been included with ‘Other’ positions for the comparative analysis in Section 4. Responses were received from Senior/Principal Lecturers, 37%, Lecturers, 25%, and Readers/Professors, 24%.

Over a third of all respondents, 67, 35% of the total, held a postgraduate certificate in education (PGCE) in HE. Almost half of all respondents, 91, 47%, were Fellows of the HEA.

More than two-thirds of all respondents, 138, 72%, were research active in their discipline. More than half of all respondents, 112, 58%, were undertaking pedagogic research related to their teaching.
2.2 Your teaching with students

The second part of the survey was designed with the intention of obtaining understanding teaching in relation to students – what levels are taught; whether laboratory work is included; what teaching materials, third party resources and media are used; how often teaching materials are updated; where respondents search for materials; and if research active, whether research is brought into teaching (Questions 11-18).

Respondents generally taught across more than one level (Figure 1.6). More than 70% of respondents teach at Levels 4, 5 and 6. Almost half of respondents teach at Level 7, 49%; 32 respondents, 17%, only taught at one level; 53 respondents, 28%, taught at two levels; 58 respondents, 30% taught at three levels (of which 38 taught at levels 4 to 6 only), and 49 respondents, 26%, taught at all four levels.

Question 12 enquired into types of teaching materials that are used to teach students. Respondents use multiple types of teaching materials, ticking, on average, seven or eight options each (Figure 1.7). Eighty four per cent of respondents use PowerPoint slides. Comments suggested that paper-based resources – tutorial/problem sheets (76%), prepared lecture notes (73%), worked example sheets (54%) – are issued as handouts or placed on virtual learning environments (VLEs). Materials are provided for students’ self-study – recommended texts (73%), reading lists (63%) and required reading (34%). To illustrate concepts, 60% of respondents incorporate film/video/animation; 40% make use of case studies/role plays and 30% bring artefacts into their teaching. Half (50%) of practitioners incorporate in-class quizzes/tests and 37% use computer-aided learning software.

Fifty three respondents gave details of ‘Other’ types of materials used. In some cases, these responses represented further detail corresponding to the given options. The following additional types of teaching materials were indicated:

- demonstrations and experiments (9);
- fieldwork/visits (8);
• use of EVS or audience response systems (4);
• other methods of producing slides e.g. Beamer for mathematics, Chemdraw (4);
• use of black/white boards (3);
• guest lecturers (2);
• group work;
• peer assessment;
• portfolio development.

Figure 1.7 Types of teaching materials used

More than two-thirds of all respondents, 133, 69%, use third party electronic or online resources in their teaching. A variety of sources of such material was given, most commonly YouTube, 63% (Figure 1.8). On average, respondents ticked between four and five options each.

Thirty respondents indicated that they used ‘Other’ sources. Analysis of these responses provided further details which could be allocated to the given options such as discipline specific websites and corporate websites. Other sources mentioned were:

• Eluminate;
• MATLAB;
• Freeware;
• private collection of photographs & examples.
A follow-up question (Question 13b) asked for the names of the repository or VLE used. A wide variety of mainly discipline specific resources were named. Some respondents provided considerable detail about their resources. The most commonly used systems were Blackboard, used by 41 respondents (31% of those using third party e-resources) and Moodle, used by 35 respondents (26%). Full details are given in Appendix 2, Question 13b.

Overall, 82% of respondents were aware of copyright issues relating to the use of third party materials and resources for their teaching, while 18% were not. Those who use third party material were more likely to be aware of copyright issues than those who did not (Figure 1.9). Ten respondents ticked ‘Other’, of these, four gave substantive comments (see below) and the remainder indicated the question was not relevant (despite having indicated that they used third party electronic/online resources in their teaching).

I am aware of the copyright issues. I try to use open access or creative commons materials where possible. If not I judge whether it is reasonable to assume educational use for a specific resource and sometimes request permission from copyright holders if I am unsure. [NB This respondent said they did not use third party electronic/online resources in their teaching.]

I use CC 3.0 licence on my material and I'm careful to use CC licenced [sic] images and podcast free music.
I think I’m aware, but I wouldn’t say that I’m as confident as I perhaps need to be.

None of the above covers it: I do know something of the rules and try to abide by them, but I may well fail fully to understand/implement.

Respondents were asked to indicate which forms of media they used in their teaching. More than 90% of respondents use paper-based media (Figure 1.10), although only 24 of these (12% of total respondents, and 14% of those using paper-based media) use such media exclusively. Two-thirds (66%) make use of video/film and more than half use software for demonstration/experiments. A quarter (26%) use electronic voting systems. There is relatively low use of mobile technology such as phones and tablets (10%) or social media (8%).

Respondents were asked to provide details of the media they used. It is clear from the comments that a combination of a wide range of media is used and teaching practice is very different. The full responses are given in Appendix 2, Question 14.

PPTs, handouts with synopses, expected learning outcomes, videos/animations embedded in PPTs and stand-alone links in modules' Blackboard sites. For some teaching activities I use EVS (Turningpoint), and I also maintain a Facebook page to provide both current and prospective students information about teaching and research developments within my department and globally, which is also used by alums.
Skeleton notes given to students before the lectures, so they can fill in the details during lectures. Tutorial sheets. All the above on paper, also available on the VLE.

Mostly, I talk and write on the whiteboard. Sometimes I use keynote or LaTeX slides. Tutorial problems and coursework are handed out as PDFs.

Notes, exercises, EVS, YouTube videos, interactive web pages, CBA etc.

Figure 1.10 Media used in teaching

The majority of respondents update their teaching material annually (55%). All respondents update their teaching materials with 19% updating their material weekly and 24% termly (Figure 1.11).
The range of options for recording where respondents regularly seek resources/learning technology to embed into their teaching was the same as given for the sources of third party electronic/online resources used in teaching (Figure 1.8). Respondents ticked between six and seven options each on average. The most popular choice was library’s digital resources (Figure 1.12). Of the 59 respondents saying they regularly used other sources, 19 (10% of the total) use Google, Google Scholar or general web searches, 14 (7%) look at other, specific, websites, and eight (4%) use books and/or journals. Ten respondents used this option to indicate that they did not search systematically, or did not use third party material. Full details are listed in Appendix 2, Question 16.
One hundred and nineteen (62%) respondents stated that their teaching includes laboratory work. This most frequently took the form of practice by students (74%) and experimentation by students (70%) (Figure 1.13). More than half of the respondents (55%) indicated that they also included demonstrations by staff. Eleven respondents ticked ‘Other’ and provided details. Five responses referred to laboratory work as computer or software labs. These responses may be found in Appendix 2, Question 17b.

### Figure 1.12 Places regularly used when searching for resources/learning technology to embed into teaching

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Percentage of Respondents</th>
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<tbody>
<tr>
<td>Your libraries’ digital resources</td>
<td>40%</td>
</tr>
<tr>
<td>YouTube</td>
<td>35%</td>
</tr>
<tr>
<td>Discipline specific website</td>
<td>30%</td>
</tr>
<tr>
<td>Open source tools</td>
<td>25%</td>
</tr>
<tr>
<td>Professional body website</td>
<td>20%</td>
</tr>
<tr>
<td>Another institution's website/VLE</td>
<td>15%</td>
</tr>
<tr>
<td>Corporate website</td>
<td>10%</td>
</tr>
<tr>
<td>Other courses on your institution's VLE</td>
<td>5%</td>
</tr>
<tr>
<td>HEA OER repository</td>
<td>5%</td>
</tr>
<tr>
<td>Open access repository</td>
<td>5%</td>
</tr>
<tr>
<td>Box of Broadcasts</td>
<td>5%</td>
</tr>
<tr>
<td>National educational repository</td>
<td>5%</td>
</tr>
<tr>
<td>Flickr</td>
<td>5%</td>
</tr>
<tr>
<td>iTunesU</td>
<td>5%</td>
</tr>
<tr>
<td>MOOC/opencourseware</td>
<td>5%</td>
</tr>
<tr>
<td>BUFVC</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
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</tbody>
</table>

**Percentage of respondents**
The survey enquired whether significant updates or changes to lab-based teaching were to be made in the near future. Overall, 54, 38% of those answering the question, indicated that they were looking to make changes. The majority of these included laboratory work in their teaching, two did not. Of those who did include laboratory work in their teaching, just under half (49%) were looking to make significant updates or changes to any lab-based teaching in the near future, while 51% were not (Figure 1.14).

Fifty four respondents, 28% of the total, were not research active. Of the remainder, 128, 67% of all respondents, and 93% of research active respondents, indicated that they did bring their research into their teaching.
2.3 Developing your teaching practice

This section (Questions 19-25) reports on approaches to teaching practice and methods that respondents gave for the development of teaching practice.

The largest group of respondents described their approach to teaching as being tutor-led (58%), with almost one-third (31%) describing it as activity-led (Figure 1.15). Only 11% described it as student-led.

The most popular approach taken was problem-based learning, used by 120 respondents, 62% of the total (Figure 1.16). Project-based learning (45%), enquiry-based learning (41%) and case-based learning (37%) were also reported. Of the 33 respondents who ticked 'Other', 11 mentioned traditional lecturing styles of teaching.
Respondents were also asked to describe how they blended their approaches and choice of resources, and 141 provided information, listed in Appendix 2, Question 20. Responses provided insights into approaches to teaching practice which are varied. Practitioners change their approach according to topics being covered, group size, available resources and in response to the students themselves.

A fairly traditional approach - lectures (which usually include worked examples and software demonstrations) followed by exercise classes (which often required students to use appropriate software to answer questions).

I do what seems best for the particular topic we are covering. Sometimes e.g. EBL fits that very well but at others it would be rather forced. I don’t believe in using something just because it is trendy or innovative but because it works and sometimes these are indeed trendy or innovative approaches.

Content drives approach. Approach is constrained by resources. Resources need to be generic (cost-effectiveness) but need to be case appropriate.

Lab sheets, exercise sheets are used to start the student off, providing them with an example to go through before having an attempt at their main exercise. Videos are used to help show interviews with experts in the students area/interviews etc. PowerPoint slides are used to highlight the main topics which are talked around. Information from professional bodies is used to highlight the relevancy of the subject area. Subject specific sites are used as additional help/support outside the teaching sessions.

This is influenced by class size. One hundred and eighty students mean my lectures, apart from a few calculations, are mainly didactic. Students get PowerPoint (calculations) via Blackboard. I use Blackboard quizzes for formative assessment for each PowerPoint presentation. Smaller groups allow discursive
tutorials. Small labs (less than 20) allow observation and instant feedback whereas larger tend to be ‘explain, demonstrate and let them get on with it’.

Just over half of all respondents (54%) chose their approach to teaching because they wished to enhance their students’ engagement with learning (Figure 1.17). Around a fifth reported that they wished to provide an experiential learning environment for themselves and their students (22%) or to provide and enhance learning environment for their students (20%). The option ‘I wish to enhance my own professional development’ was also offered; no respondents chose this. Those respondents ticking ‘Other’, 11, indicated that they wished to enhance students’ learning or a combination of the available options. Responses are available in Appendix 2, Question 21.

![Figure 1.17 Choice of approach to teaching practice](image)

(Note that two respondents ticking ‘other’ specified inappropriate reasons, and have been excluded from the graph.)

The biggest barrier to developing teaching practice was time, mentioned by 129 of the 177 respondents (73%) who gave details. Respondents reported that administration and research workloads reduced time to investigate and develop teaching approaches and materials.

*Main problem is insufficient time to do everything - no thinking and planning time, always playing catch up on admin tasks. Just about manage to update lecture content sometimes!*  
*Primarily time with the increased administrative workload over the past decade or so. Also pressure to maintain research output with reduced availability of funding and able research staff.*
Time. This is a major factor. Development of sessions, especially in the first instance requires a lot of time. After that it is maintenance and updating, but initially it is very time consuming to prepare.

Lack of time to properly develop teaching materials - with a greater number of teaching hours it is more difficult to find time to improve practice.

Cultural issues, including the lack of recognition for teaching in research-led institutions and a more general resistance to change (as perceived on the part of respondents) was mentioned by 29 respondents, 16% of the total. The need for training and evidence-based pedagogic research was also stated.

Little recognition by the university of the value of educational initiatives and no reward for the staff involved.

Greater importance of research performance in relation to promotion.

The development of good teaching practice in research-active [staff] isn’t valued by institutions in this sector, who take an 'either/or' view of teaching and research.

Students limited commitment to private study.

My institution and department have criteria that must be fulfilled for all modules and new teaching practices are not always welcome. New ideas are often dismissed in case they might fail rather than being embraced as an opportunity to succeed in improving a student’s experience.

Issues concerning physical resources were raised by 35 respondents, 20% of the total, for example:

Inflexibility of university computing resources. I need my students to see and install the latest, often unusual software.

Restrictions on room availability, resources etc.

Staff shortages and large numbers of 100+ makes small group work difficult. Also not always able to [use] adequate teaching rooms.

Continuing professional development or training was mentioned by 14, 8% of those who responded to this question.

Time and money for resources/staff development.

After a few years people get into teaching habits, and may not be aware of more recent developments. Training opportunities focus on new lecturers, rather than experienced ones.
Also training availability for new techniques is limited. Also trialling new ideas need to be ethically sound not to put student attainment at risk.

A full list of responses is given in Appendix 2, Question 22.

Only two respondents said that they never revisited their chosen style(s) of teaching practice, although 21% do so ‘Seldom’ (Figure 1.18). One-quarter revisit on a termly basis (26%), and almost two in five do so annually (38%).

![Figure 1.18 Frequency of revisiting chosen style of teaching practice](image)

Nineteen different options were provided to detail sources of support and information for updating and developing teaching practice. Colleagues’ expertise was the most usual choice (82%), with twice as many respondents picking this than any other option (Figure 1.19). Of the 34 respondents giving details of ‘Other’ sources, five did not go anywhere to develop their practice. Some of these responses may fit into the predetermined options — colleagues’ expertise, networking through conferences, and web-based resources. Six of the 29 (21%) mention students or student feedback and two referred to peer observation as a means of developing teaching practice.
Figure 1.19 Sources of support and information for updating and developing teaching practice

The final question in this section asked respondents to describe which of the above they had found most useful in helping them to update and develop their teaching practice. One hundred and fifty nine respondents provided details, listed in Appendix 2, Question 25. The most popular choices were networking through talking to colleagues, both in the same institution and elsewhere, mentioned by 80 respondents (50%), conferences (37, 23%) and workshops (37, 23%).

Colleagues' expertise is most directly relevant. However, conference talks and HEA workshops are useful for seeding ideas that sometimes become useful to me or when advising a colleague, perhaps a few years after I attended them.

I have a small network of colleagues who are like-minded in wanting to improve the student experience and their teaching. These colleagues allow me to bounce ideas off them to then look further into my teaching practice.
Educational conferences and workshops allow you to gain new ideas or provide the time for you to reflect on your own practice and how you might integrate ideas into your work.

Attending conferences, but more from the perspective of being able to talk to other practitioners, than from listening to the talks. Support from internal staff developers has also been very helpful, as well as working with discipline specific colleagues, who understand the limitations and norms within the subject.

Being relatively new to teaching, I am undertaking a teaching development programme for new lecturers. This has been useful and has pointed me to other resources.

2.4 Gaps in current provision and development of resources

Respondents were asked about their perception of the current provision of resources to use in their teaching of students and to support the development of their teaching practice.

One-third of respondents (61 out of 181, 34%) perceive there to be a gap in the current provision of resources to use in their teaching of students, and the same percentage (65 out of 192) perceive there to be a gap in the current provision of resources to use in support of the development of their teaching practice.

Question 26a asked respondents to describe in their own words what they would like to see developed that could be used to help in the teaching of students. All those perceiving a gap in resource provision for teaching students gave details, and there was considerable variation in the resources required. Details of all responses are given in Appendix 2, Question 26a. These responses could be categorised thematically under the headings:

- generic resources;
- physical spaces (including IT enhancements to teaching and learning spaces);
- software innovation;
- library resources and access;
- case studies;
- time.

Thirty per cent of respondents cited some sort of generic teaching resources that would be helpful to their teaching practice – however, within these responses, some were at the same time critical of an over simplistic adoption of these resources by lecturers. Examples of responses under this category include:

Module specific resources related to final year specialist course.
I’d like to see more videos on Biomedical Sciences.
Some responses, 10% of which, also contained a criticism of generic resources include:

I think this is a difficult question in that generic resources don’t fit easily into established courses/modules.

Yes there is a gap, but I don’t expect anybody but myself and my team to fill it for our course… there are already enough lazy lecturers out there who endlessly recycle MIT’s notes.

Sixteen per cent responded by requesting improvements to the physical spaces for learning and teaching including information technology (IT) enhancements: a surprising high percentage considering the investment into refurbishment by many HEIs over the past five years. These requests include:

More support for audio-visual communication and better lit classrooms.

The labs are old, dark and use second-hand equipment which is old, tired and out of date.

The ability to see and discuss a large amount of material at the same time is critical. Conventional university lecturing does this with large boards (Warwick, Cambridge, Oxford all do this superbly; at […] there are some good rooms but some bad ones too). The increase in computer projection should not have spoiled that, but it has: it is taken as a reason to diminish board space; it is rarely built so that boards and projector can be used simultaneously (I would do more projection if that were possible); and projection technology is moving only very slowly to the point where it is anything like adequate by itself (at least wall-sized projection space that can be partitioned and used independently).

Nevertheless, 17% of respondents suggested that innovative software would help their teaching. These suggestions included:

Interactive teaching, assessment and feedback tools on mobile platforms.

Digital resources to enhance the learning experience of those with learning differences in practical field-based science disciplines such as geology. While we are developing in-house teaching materials which will be used as virtual fieldtrips, the amount and scope of the resources we can develop are limited by availability of funding and simply other calls on our time.

A good, well designed and tested open e-assessment system with deployable resources. E.g. for maths there is a plethora of different, incompatible e-assessment systems. Open standards projects tend to neglect the UI.
Some 9% of the respondents also cited limited access to library resources which requires improvement:

Technological development needs materials (books, archives, videos) and artefacts that are historical and multidisciplinary. The availability of commentaries and the purchase of items is difficult because of culture and funding.

Open access/copyright-free images and related resources.

Case studies were stated as important to teaching practice development. Examples included:

There is a lack of challenging case studies in the database area that I teach.

Good quality case studies that combine theory with real-world application, photos, video and narrative.

Time was also cited as a barrier to teaching practice development and combined with these complaints and comments on the lack of resources for teaching practice improvements these represented the remainder of comments.

Staff are too stretched - it's impossible to give enough time to teaching with loads of project students to deal with, personal tutorials and conducting research/applying for funding.

Fifty-nine of the 65 respondents perceiving a gap in resource provision for developing teaching practice gave details, and, again, there was considerable variation in the resources required. Details of all responses are given in Appendix 2, Question 27.

Question 27a asked participants to describe in their own words ‘…what resources you would like to see developed that would better support you in the development of your teaching practice?’ Responses can be grouped under seven general themes:

- culture;
- time;
- access;
- investment;
- IT;
- e-learning training;
- networking.

Respondents used this question to state possible resources and to comment on barriers to using existing resources. For example, 15% of respondents suggested that university culture played an important role in support for the development of teaching practice. However, it was believed that currently culture acted against development. Respondents complained that university culture, with its
lack of recognition of teaching development, dis-incentivised academics from pursuing research into teaching practice. This is illustrated by responses which state:

… I’d like to see universities forced to place more emphasis on good teaching (primarily through rewards and recognition of staff). Currently, research is all…

The only real drag on developments in this area is colleagues’ reluctance to change and develop.

The issue is recognition and valuing of the time required to develop my teaching practice.

The time I have available I spend on research, to enhance my career; development of teaching practice doesn’t count for much when it comes to my own career enhancement.

It should be included in our appraisals just as research is.

Clear internal support and recognition for time spent on pedagogical development in promotion structures.

Related to this issue is the question of time. Some 27% of respondents stated that they did not have enough time to devote to this aspect of their professional development. Time is hence one of the most important unavailable resources. Their statements are characterised below:

… the teaching load is so high there is little time to develop and when resources are found there is so little money available.

A time machine. I simply do not have enough hours in the day to deliver the quality of teaching I want to deliver.

… protected time to think through possibilities (if time counts as a resource).

The main resource is time which is short.

Fifteen per cent of respondents stated that while resources are available, access is an issue and cite the problem of access and lack of knowledge about what is available or indeed what knowledge is lacking. For example:

Whenever I have looked, I have found material that will help me to do what I want to do but the problem with the question is, as Donald Rumsfeld said, the unknown unknowns - the things we don’t know that we don’t know. I am sure there are plenty of things that would help me but I don't know what they are until I see them.

With so many approaches out there it is difficult to identify what might work here, for me. Overviews of what has worked in what subject areas for what topics could be useful.

More research-based evidence required, currently there is too much classroom innovation reported without foundation in literature or evaluation.

Only 0.5% in response to this question argue that investment is needed to develop resources:

Well-publicised sources of funding to which one can apply for the types of financial support needed to develop teaching materials and approaches.
More funding opportunities for time-off to focus on developing learning resources. Online repository of programming virtual labs.

IT support was cited by 12% as another resource that was lacking and included comments on the staffing levels of IT departments but also a requirement for more innovation in IT equipment:

… technical support to prepare lecture demonstrations, set up AV.
Local IT support.
Generic mobile platforms I could use to deliver content and assess student performance.
Yes, we learn all about modern technologies and how iPads and such like can enhance teaching but we’re not actually provided with the resources to use such technology.

However, 13% of responses suggest that more training and access to that training including online delivery and capture of events would be useful in terms of resources. They state:

Adequate training and development opportunities in e-learning and Technology Enhanced Learning. Time and cost are a big factor here that is why webinars are proving to be so valuable to me.
Access to HEA and equivalent events that I have been unable to attend. Conference papers/recordings etc.
… specific time to develop teaching - perhaps away days or residential training?
Training course for experienced teaching staff.
Something beyond a PGCert/PGCTLHE, eg ‘proper’ CPD, mandatory PGCert/Dip update/refresh, well-recognised and resourced HEA quals?

Six per cent state their own desire for networking and while not as obvious a response as ‘time’, for example, some of the answers described an isolation easily remedied by social networking initiatives:

I would love a ‘dating agency’ to find similar professionals with a passion for teaching. One of the hardest things I’m finding.
More opportunities to network and share good practice.
… opportunity to share ideas and discuss teaching with others in roughly the same subject area.

The remaining responses were categorised as miscellaneous and included statements such as ‘I don’t know’ or had not entered a statement.
3 Differences between disciplines

The quantitative questions were analysed by discipline, with apparent differences in response patterns tested using the Chi-squared ($\chi^2$) statistic. Questions have only been included in this section where statistically significant differences at the 5% level or better were found. Note that, as the survey did not comprise a random sample of practitioners, these results cannot be used to extrapolate any observed differences to the wider population, but they will serve as an indication of where such differences in teaching practice between the disciplines may exist.

The number of respondents in each discipline is given in brackets in the graphs. The Built Environment discipline has not been included, as there were too few responses for valid analysis.

3.1 Your teaching with students

There is some indication of differences between the discipline groups in the types of teaching materials they use in four areas (Figure 2.1). Teachers in the sciences are most likely to use computer-aided learning software/learning technology and those in maths/computing least likely to do so$^1$ with a similar pattern for the use of film/video/animation$^2$. Conversely, teachers in sciences are least likely to use task-specific software, with those in engineering/technology most likely to use this$^3$. Teachers in engineering/technology are also most likely to use artefacts (as products, models, drawings, designs), with those in maths/computing least likely to use these$^4$.

![Figure 2.1 Types of teaching materials/media by STEM discipline](image)

$^1$ $\chi^2=6.57$, 2 df, $p<0.05$
$^2$ $\chi^2=10.19$, 2 df, $p<0.01$
$^3$ $\chi^2=7.526$, 2 df, $p<0.05$
$^4$ $\chi^2=8.89$, 2 df, $p<0.025$
Teachers in maths/computing were less likely to use third party electronic or online resources in their teaching than the other two groups\(^5\) (Figure 2.2). However, there were no apparent differences between the disciplines in the sources of such materials, nor in their awareness of copyright matters.

**Figure 2.2 Use of third party electronic/online resources by STEM discipline**

![Bar chart showing use of third party resources by STEM discipline]

When asked what forms of media do you use in your teaching, only one – video/film (such as YouTube, Box of Broadcasts) - showed differences between the STEM disciplines (Figure 2.3). Teachers in the sciences were more likely to use this than those in the other two disciplines\(^6\).

**Figure 2.3 Use of video/film in teaching by STEM discipline**

![Bar chart showing use of video/film by STEM discipline]

When searching for resources/learning technology to embed into teaching, there were apparent disciplinary differences in the frequency of use of three sources (Figure 2.4). Teachers in

\(^5\) \(\chi^2=9.55, 2\) df, \(p<0.01\)

\(^6\) \(\chi^2=6.19, 2\) df, \(p<0.05\)
engineering/technology were most likely to use professional body websites, while those in maths/computing were least likely to use these\(^7\). Teachers in sciences were most likely to use YouTube, with those in maths least likely to use this source of material\(^8\). Teachers in maths/computing were, however, most likely to use the HEA open educational resources (OER) repository, with those in engineering/technology least likely to use this\(^9\).

![Figure 2.4 Regular sources for resources/learning technology to embed into teaching, by STEM discipline](image)

Perhaps unsurprisingly, there was also a difference in the percentages of respondents in the three disciplines who included laboratory work in their teaching. Seventy three per cent of engineering/technology respondents and 69% of science respondents included laboratory work in their teaching, compared with 43% of maths/computing respondents\(^10\).

### 3.2 Developing your teaching practice

There were very few differences in response patterns between respondents from the three different disciplines in this section of the survey. Perhaps unsurprisingly, engineering/technology respondents were more likely to adopt ‘design/design and make’ approaches in their teaching practice than respondents in the other two groups\(^11\) (Figure 2.5).

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\(^7\) \(\chi^2=6.36, 2 \text{ df, } p<0.05\)  
\(^8\) \(\chi^2=6.92, 2 \text{ df, } p<0.05\)  
\(^9\) \(\chi^2=8.75, 2 \text{ df, } p<0.025\)  
\(^10\) \(\chi^2=12.82, 2 \text{ df, } p<0.01\)  
\(^11\) \(\chi^2=24.13, 2 \text{ df, } p<0.001\)
More interestingly, while around one-quarter of respondents in engineering/technology and sciences went to institutional support centres/services in order to update and develop their teaching practice, only 4% of respondents in maths/computing did so\textsuperscript{12} (Figure 2.6).

\textsuperscript{12} \chi^2=9.71, 2 \text{ df}, p<0.01
4 Levels of experience

The quantitative questions were analysed by the number of years’ experience reported by respondents, with apparent differences in response patterns tested using the Chi-squared ($\chi^2$) statistic. Questions have only been included in this section where statistically significant differences at the 5% level or better were found. Note that, as the survey did not comprise a random sample of practitioners, these results cannot be used to extrapolate any observed differences to the wider population, but they will serve as an indication of where experience may influence teaching practice.

The number of respondents in each experience group is given in brackets in the graphs. Note that in some cases it was necessary to aggregate all respondents with ten years’ experience or less in order to conduct a valid test. There were only three apparent differences in teaching practice found between respondents with different levels of experience.

In terms of the types of teaching materials brought into teaching with students, only 5% of respondents with less than five years’ experience indicated that they used required reading, compared with 41% of those with five to ten years’ experience, and 36% of those with more than ten years’ experience\(^\text{13}\) (Figure 3.1).

Figure 3.1 Use of required reading in teaching with students, by level of experience

The more experienced respondents updated their teaching material less frequently than those with fewer years’ experience\(^\text{14}\) (Figure 3.2).

\(^{13}\) $\chi^2=6.09, \ 2 \ df, \ p<0.05$

\(^{14}\) $\chi^2=9.44, \ 3 \ df, \ p<0.025$
Figure 3.2 Frequency of updating teaching material by level of experience

- Over 10 years (132)
  - Seldom/never
  - Annually
  - Termly
  - Weekly

- Up to 10 years (60)
  - Seldom/never
  - Annually
  - Termly
  - Weekly
Respondents with up to ten years’ experience were less likely to use institutional support centres/services for support and information in order to update and develop their teaching practice than those with more experience\(^\dagger\) (Figure 3.3).

**Figure 3.3 Use of institutional support centres/services for support and information, by level of experience**

\(^\dagger\chi^2=6.50, 2\ df, p<0.05\)
5 Appointed position

The quantitative questions were also analysed by the appointed position reported by respondents, with apparent differences in response patterns tested using the Chi-squared ($\chi^2$) statistic. Questions have only been included in this section where statistically significant differences at the 5% level or better were found. Note that, as the survey did not comprise a random sample of practitioners, these results cannot be used to extrapolate any observed differences to the wider population, but they will serve as an indication of where experience may influence teaching practice.

The number of respondents in each position is given in brackets in the graphs. Only three respondents described themselves as ‘Researchers’; they have been included with ‘Other’ positions in the analyses for this section in order to conduct a valid test. Appointed position appears to be closely associated with experience (Figure 4.1), and it is beyond the scope of this analysis to distinguish between these factors as the causes of differences in teaching practice when both variables are found to influence responses; however, this is only the case for one question (frequency of updating teaching material – Figure 3.2 and Figure 4.2).

Figure 4.1 Appointed position and experience

Differences in response patterns between respondents at different appointed positions were found for only two questions. Those in the most senior positions updated their material least often\(^{16}\) (Figure 4.2), and these were also likely to be more experienced respondents (Figure 4.1). However, the patterns for other appointed positions do not follow the experience results very closely, with lecturers least likely to update their material annually, and those in ‘Other’ positions least likely to do so seldom or never (Figure 4.2).

\(^{16}\) $\chi^2=21.31$, 6 df, p<0.005
The only other question where apparent differences by appointed position were identified was in the use of open source tools when searching for resources/learning technology to embed into teaching. Senior/Principal Lecturers were most likely to do this, while Professors/Readers were least likely to use these tools\textsuperscript{17} (Figure 4.3).

\textsuperscript{17} \chi^2=8.48, 3 df, p<0.05
6 Conclusion

The number of respondents to this survey is relatively low and is perhaps a reflection of the many competing demands on staff time in UK HE presently. However, it has still provided useful insights into four key areas – the resources that STEM practitioners in UK higher education bring into their teaching of students; the resources that are brought into the development of teaching practice; the nature of these resources and gaps in provision; and issues concerning teaching and the development of resources.

There are a wide range and variety of resources that are used for teaching including both traditional and electronic technologies. There is some variation by STEM discipline. Practitioners teaching mathematics and computing are more likely to use computer-aided learning resources, less likely to use online resources in their teaching but do make use of OER repositories. Those teaching the sciences are less likely to use computer-aided learning resources but do embed third party video resources extensively. Engineering academics incorporate artefacts and task specific software more than the other disciplines and make good use of professional body websites but less use of OER repositories. The third party resources are obtained from a wide range of sources and most practitioners would seem to have a general awareness of copyright requirements. It would seem that a more detailed knowledge might be beneficial. Further use of resources is constrained by available funding and institutional infrastructure such as library access to electronic resources. Concerns were expressed over the time that is needed to develop and source good quality resources. Time is also needed to incorporate these into teaching. Requests were made for systems that would share good practice, for example, a search engine which would readily find high quality resources and a means of flagging up excellent resources.

There are wide ranges of teaching approaches that have been adopted across all disciplines. These approaches vary within disciplines according to topics, group sizes, available resources and practitioner preference. Many academics will use a combination of approaches or different approaches in different circumstances depending on activity or student groups. No practitioner chooses a particular teaching approach to further the development of his or her own teaching. The development of teaching practice is limited by time to investigate and implement different approaches, colleagues’ or institutional resistance to change and student culture such as a resistance to self-study.

There were few differences in teaching practices between the disciplines. Engineering/Technology adopted ‘design/design and make’ approaches in their teaching more than the other disciplines. Maths/Computing staff were far less likely to make use of institutional support centres than Engineering or the Sciences.

Research active practitioners bring their research into their teaching. Some practitioners conduct pedagogical research. Some respondents reported that a barrier to innovation was the lack of a sufficient pedagogic evidence base, or any strong evidence that new approaches would be successful.

Insufficient funding or difficulties in obtaining suitable funding was reported as an issue in teaching and teaching practice development. In particular there would appear to be issues around funding for infrastructure. Examples given were for the development and maintenance of laboratories, additional equipment and resources for laboratories and in lecture rooms. Respondents reported the need for funding for IT resources and the need for additional IT support.
Funding for staff development was requested both in terms of training and for time to be away from teaching to attend courses and reflect. This included training in the use of new technologies. Also mentioned was an initiative to provide recordings of workshops that could not be attended. Webinars were cited as a cost-effective method for participating in events without the need for travel.

Respondents discussed the need for continuing professional development for teaching practitioners and recognition through teaching qualifications. It would seem that most training is focussed on new lecturers. However, those attending courses even when they were experienced teaching practitioners reported benefits, including being pointed to new sources of teaching resources. Also mentioned positively was the support for teaching development offered in some institutions.

Responses gave insights into limiting factors for the development of new resources and changes to current teaching practices. There was an impression that current overwhelming workloads – teaching, administrative and research – are an important barrier. A culture within higher education institutions that places a greater emphasis on research, promotional structures that reward research activity over teaching and funding for research being easier to obtain than financial support for the development of teaching resources or teaching practice development all work against development in these areas.

The most important source of knowledge about resources and development for teaching practice was given as colleagues. Respondents highly valued the exchange of ideas and practice through informal networks, conferences and discipline specific workshops such as those provided by the HEA. Concerns were expressed about funding to attend these. Benefits sometimes were felt many years after attending an event.

This study has shown that given sufficient time and resources, STEM practitioners incorporate a wide range of resources into varied teaching approaches and are open to developing their use of both. Practitioners would benefit from time and funding to source and develop new teaching resources which complement those already in use, time and funding to locate excellent resources that already exist, further professional development and opportunities to network and disseminate good practice in their disciplines.
### Appendix 1: Survey questions and overall results

#### Your profile

1. Your institution (optional)

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<td>Newcastle University</td>
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Total responding institutions: 139
### 2. Your HEI grouping

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<th>HEI Grouping</th>
<th>Count</th>
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<td>1994</td>
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<td>Alliance</td>
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<td>Other</td>
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### 3. Your location in the UK

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### 4. Your STEM discipline

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### 5. How many years have you taught in HE?

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<td>More than 10 years</td>
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### 6. What is your appointed position at your HEI?

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<td>Senior/Principal Lecturer</td>
<td>71</td>
<td>37.0%</td>
</tr>
<tr>
<td>Reader/Professor</td>
<td>46</td>
<td>24.0%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>24</td>
<td>12.5%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>192</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

### 7. Do you hold a PGCE in HE?

<table>
<thead>
<tr>
<th>Hold PGCE</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>67</td>
<td>34.9%</td>
</tr>
<tr>
<td>No</td>
<td>125</td>
<td>65.1%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>192</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

### 8. Are you a Fellow (or higher) of the HEA?

<table>
<thead>
<tr>
<th>Fellow Status</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>91</td>
<td>47.4%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>192</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

### 9. Are you research-active in your discipline?

<table>
<thead>
<tr>
<th>Active</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>138</td>
<td>71.9%</td>
</tr>
<tr>
<td>No</td>
<td>54</td>
<td>28.1%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>192</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

### 10. Do you undertake any pedagogic research related to your teaching?

<table>
<thead>
<tr>
<th>Pedagogic Research</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>112</td>
<td>58.3%</td>
</tr>
<tr>
<td>No</td>
<td>80</td>
<td>41.7%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>192</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
Your teaching with students
The following questions relate to information on your teaching and the resources that you would use within your teaching, or student's learning.

11. Which year/level do you primarily teach? (select all that apply)

<table>
<thead>
<tr>
<th>Year/Level</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1/Level 4</td>
<td>137</td>
<td>71.4%</td>
</tr>
<tr>
<td>Year 2/Level 5</td>
<td>137</td>
<td>71.4%</td>
</tr>
<tr>
<td>Final Year/Level 6</td>
<td>140</td>
<td>72.9%</td>
</tr>
<tr>
<td>Postgrad/Level 7</td>
<td>94</td>
<td>49.0%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>192</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

12. What type(s) of teaching materials/media do you bring into your teaching with students? (select all that apply)

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared lecture notes</td>
<td>140</td>
<td>72.9%</td>
</tr>
<tr>
<td>PowerPoint slides</td>
<td>162</td>
<td>84.4%</td>
</tr>
<tr>
<td>Film/video/animation</td>
<td>116</td>
<td>60.4%</td>
</tr>
<tr>
<td>Worked examples sheets</td>
<td>103</td>
<td>53.6%</td>
</tr>
<tr>
<td>Tutorial/problem sheets</td>
<td>145</td>
<td>75.5%</td>
</tr>
<tr>
<td>In-class quizzes/tests</td>
<td>95</td>
<td>49.5%</td>
</tr>
<tr>
<td>Case studies/role plays</td>
<td>76</td>
<td>39.6%</td>
</tr>
<tr>
<td>Artefacts (as products, models, drawings/designs)</td>
<td>57</td>
<td>29.7%</td>
</tr>
<tr>
<td>Task specific software</td>
<td>68</td>
<td>35.4%</td>
</tr>
<tr>
<td>Computer-aided learning software/learning technology</td>
<td>70</td>
<td>36.5%</td>
</tr>
<tr>
<td>Other ITC</td>
<td>30</td>
<td>15.6%</td>
</tr>
<tr>
<td>Reading lists</td>
<td>121</td>
<td>63.0%</td>
</tr>
<tr>
<td>Recommended texts</td>
<td>139</td>
<td>72.4%</td>
</tr>
<tr>
<td>Required reading</td>
<td>65</td>
<td>33.9%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>65</td>
<td>33.9%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>192</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

13. Do you use third party electronic/online resources in your teaching?

<table>
<thead>
<tr>
<th>Use of Resources</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>133</td>
<td>69.3%</td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>30.7%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>192</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

a. If yes where have these come from? (select all that apply)

<table>
<thead>
<tr>
<th>Resource Source</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other courses on your institution’s VLE (such as Blackboard)</td>
<td>44</td>
<td>33.1%</td>
</tr>
<tr>
<td>Your library’s digital resources (such as e-Books)</td>
<td>64</td>
<td>48.1%</td>
</tr>
<tr>
<td>National educational repository (such as JORUM)</td>
<td>11</td>
<td>8.3%</td>
</tr>
<tr>
<td>Discipline specific website (such as Mathscentre.ac.uk)</td>
<td>45</td>
<td>33.8%</td>
</tr>
<tr>
<td>Corporate website</td>
<td>20</td>
<td>15.0%</td>
</tr>
<tr>
<td>Another institution’s website/VLE</td>
<td>16</td>
<td>12.0%</td>
</tr>
<tr>
<td>MOOC/opencourseware (such as edShare)</td>
<td>5</td>
<td>3.8%</td>
</tr>
<tr>
<td>Open access repository (such as OpenLearn)</td>
<td>16</td>
<td>12.0%</td>
</tr>
<tr>
<td>iTunesU</td>
<td>8</td>
<td>6.0%</td>
</tr>
<tr>
<td>YouTube</td>
<td>84</td>
<td>63.2%</td>
</tr>
<tr>
<td>BUFVC</td>
<td>1</td>
<td>.8%</td>
</tr>
<tr>
<td>Box of Broadcasts</td>
<td>14</td>
<td>10.5%</td>
</tr>
<tr>
<td>Flickr</td>
<td>12</td>
<td>9.0%</td>
</tr>
<tr>
<td>Professional body website</td>
<td>48</td>
<td>36.1%</td>
</tr>
<tr>
<td>HEA website</td>
<td>18</td>
<td>13.5%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>30</td>
<td>22.6%</td>
</tr>
</tbody>
</table>


b. If possible, please provide the name of the repositories or VLE used.
Total responses  134 (see Appendix 2)

c. Are you generally aware of the copyright of third party materials and only modify or re-use if you have the copyright allows it?

<table>
<thead>
<tr>
<th>Option</th>
<th>Yes - I only use open access or creative commons materials</th>
<th>Yes - I use a selection of either open access or copyrighted material (modify materials and attribute where necessary or provide a link to copyrighted material)</th>
<th>No - I generally don’t pay attention to copyright assuming it is alright to use in education</th>
<th>No - I don’t know much about copyright</th>
<th>Other (please specify)</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>49</td>
<td>104</td>
<td>25</td>
<td>4</td>
<td>10</td>
<td>192</td>
</tr>
<tr>
<td></td>
<td>25.5%</td>
<td>54.2%</td>
<td>13.0%</td>
<td>2.1%</td>
<td>5.2%</td>
<td></td>
</tr>
<tr>
<td>Total responses</td>
<td>133</td>
<td>100.0%</td>
<td>133</td>
<td>100.0%</td>
<td>133</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

14. What forms of media do you use in your teaching? (select all that apply)

<table>
<thead>
<tr>
<th>Media</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-based (notes, PPTs, tutorials etc.)</td>
<td>175 91.1%</td>
</tr>
<tr>
<td>Video/film (such as YouTube, Box of Broadcasts)</td>
<td>127 66.1%</td>
</tr>
<tr>
<td>Software/apps (to demonstrate, experiment)</td>
<td>105 54.7%</td>
</tr>
<tr>
<td>Electronic Voting Systems (EVS)</td>
<td>49 25.5%</td>
</tr>
<tr>
<td>Mobile technology (phones, tablets)</td>
<td>20 10.4%</td>
</tr>
<tr>
<td>Social media (Facebook, Twitter)</td>
<td>16 8.3%</td>
</tr>
<tr>
<td>Total responses</td>
<td>192 100.0%</td>
</tr>
</tbody>
</table>

Please provide the details of the types of media used.
Total responses  148 (see Appendix 2)

15. How frequently do you update your teaching material?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Seldom</td>
<td>6 3.1%</td>
</tr>
<tr>
<td>Weekly</td>
<td>37 19.3%</td>
</tr>
<tr>
<td>Termly</td>
<td>44 22.9%</td>
</tr>
<tr>
<td>Annually</td>
<td>105 54.7%</td>
</tr>
<tr>
<td>Total responses</td>
<td>192 100.0%</td>
</tr>
</tbody>
</table>

16. When searching for resources/learning technology to embed into your teaching, where do you regularly look? (select all that apply)

<table>
<thead>
<tr>
<th>Source</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other courses on your institution’s VLE (such as Blackboard)</td>
<td>31 16.1%</td>
</tr>
<tr>
<td>Your Libraries’ digital resources (such as e-Books)</td>
<td>90 46.9%</td>
</tr>
<tr>
<td>National educational repository (such as JORUM)</td>
<td>15 7.8%</td>
</tr>
<tr>
<td>HEA OER Repository</td>
<td>26 13.5%</td>
</tr>
<tr>
<td>Discipline specific website (such as Mathscentre.ac.uk)</td>
<td>79 41.1%</td>
</tr>
<tr>
<td>Corporate website</td>
<td>34 17.7%</td>
</tr>
<tr>
<td>Open source tools</td>
<td>63 32.8%</td>
</tr>
<tr>
<td>Another institution’s website/VLE</td>
<td>36 18.8%</td>
</tr>
<tr>
<td>MOOC/opencourseware (such as edShare)</td>
<td>9 4.7%</td>
</tr>
<tr>
<td>Open access repository (such as OpenLearn)</td>
<td>18 9.4%</td>
</tr>
<tr>
<td>iTunesU</td>
<td>11 5.7%</td>
</tr>
<tr>
<td>YouTube</td>
<td>81 42.2%</td>
</tr>
<tr>
<td>BUFVC</td>
<td>1 0.5%</td>
</tr>
<tr>
<td>Box of Broadcasts</td>
<td>15 7.8%</td>
</tr>
<tr>
<td>Flickr</td>
<td>12 6.3%</td>
</tr>
<tr>
<td>Professional body website</td>
<td>59 30.7%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>59 30.7%</td>
</tr>
</tbody>
</table>
17. Does your teaching include laboratory work?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>119</td>
<td>73</td>
<td>192</td>
</tr>
<tr>
<td>%</td>
<td>62.0%</td>
<td>38.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

a. If yes, which best describes your lab working? (select all that apply)

<table>
<thead>
<tr>
<th>Description</th>
<th>Yes</th>
<th>No</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstration [by staff]</td>
<td>65</td>
<td>54.6%</td>
<td>119</td>
</tr>
<tr>
<td>Practice [students using lab sheet]</td>
<td>88</td>
<td>73.9%</td>
<td>176</td>
</tr>
<tr>
<td>Experimentation [by the students]</td>
<td>83</td>
<td>69.7%</td>
<td>166</td>
</tr>
<tr>
<td>Online virtual laboratories or simulations</td>
<td>25</td>
<td>21.0%</td>
<td>54</td>
</tr>
<tr>
<td>Use of third party remote laboratories</td>
<td>2</td>
<td>1.7%</td>
<td>2</td>
</tr>
<tr>
<td>Provision of remote laboratory to others</td>
<td>11</td>
<td>9.2%</td>
<td>12</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>65</td>
<td>54.6%</td>
<td>119</td>
</tr>
<tr>
<td>Total responses</td>
<td>119</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

b. Are you looking to make significant updates or changes to any lab-based teaching in the near future? (optional)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>54</td>
<td>87</td>
<td>141</td>
</tr>
<tr>
<td>%</td>
<td>38.3%</td>
<td>61.7%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

18. If you are research active, do you bring your research into your teaching?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Not applicable</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>128</td>
<td>10</td>
<td>54</td>
<td>192</td>
</tr>
<tr>
<td>%</td>
<td>66.7%</td>
<td>5.2%</td>
<td>28.1%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Developing your teaching practice**

19. What style of teaching practice best describes your approach to teaching?

<table>
<thead>
<tr>
<th>Style</th>
<th>Yes</th>
<th>No</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutor-led</td>
<td>112</td>
<td>58.3%</td>
<td>192</td>
</tr>
<tr>
<td>Student-led</td>
<td>21</td>
<td>10.9%</td>
<td>23</td>
</tr>
<tr>
<td>Activity-led</td>
<td>59</td>
<td>30.7%</td>
<td>88</td>
</tr>
<tr>
<td>Total responses</td>
<td>192</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

20. What approach(es) do you principally adopt in your teaching practice? (select all that apply)

<table>
<thead>
<tr>
<th>Approach</th>
<th>Yes</th>
<th>No</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enquiry-based learning (EBL)</td>
<td>79</td>
<td>41.1%</td>
<td>192</td>
</tr>
<tr>
<td>Problem-based learning (PBL)</td>
<td>120</td>
<td>62.5%</td>
<td>192</td>
</tr>
<tr>
<td>Case-based learning</td>
<td>70</td>
<td>36.5%</td>
<td>140</td>
</tr>
<tr>
<td>Project-based learning (PjBL)</td>
<td>87</td>
<td>45.3%</td>
<td>192</td>
</tr>
<tr>
<td>Design/Design and Make</td>
<td>31</td>
<td>16.1%</td>
<td>52</td>
</tr>
<tr>
<td>Role play, simulation</td>
<td>18</td>
<td>9.4%</td>
<td>26</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>33</td>
<td>17.2%</td>
<td>192</td>
</tr>
<tr>
<td>Total responses</td>
<td>192</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Describe in your own words [max. 400 characters] how you blend your approach(es) with your choice of resource(s).

Total responses 141 (see Appendix 2)
21. Which of the following best describes your choice of approach to your teaching practice?

<table>
<thead>
<tr>
<th>Option</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I wish to provide an enhanced learning environment for my students</td>
<td>38</td>
<td>20.0%</td>
</tr>
<tr>
<td>I wish to enhance my students’ engagement with their learning</td>
<td>103</td>
<td>54.2%</td>
</tr>
<tr>
<td>I wish to provide an experiential learning environment (both for myself and my students)</td>
<td>42</td>
<td>22.1%</td>
</tr>
<tr>
<td>I wish to enhance my own professional development</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>7</td>
<td>3.7%</td>
</tr>
<tr>
<td>Total responses</td>
<td>190</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

22. Describe in your own words [max. 400 characters] what might limit you in developing your teaching practice further?

Total responses 174 (see Appendix 2)

23. How frequently do you revisit your chosen style(s) of teaching practice?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>2</td>
<td>1.0%</td>
</tr>
<tr>
<td>Seldom</td>
<td>40</td>
<td>20.8%</td>
</tr>
<tr>
<td>Weekly</td>
<td>26</td>
<td>13.5%</td>
</tr>
<tr>
<td>Termly</td>
<td>50</td>
<td>26.0%</td>
</tr>
<tr>
<td>Annually</td>
<td>74</td>
<td>38.5%</td>
</tr>
<tr>
<td>Total responses</td>
<td>192</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

24. Where do you go for support and information in order to update and develop your teaching practice? (select all that apply)

<table>
<thead>
<tr>
<th>Source</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colleagues’ expertise (academics, support staff)</td>
<td>158</td>
<td>82.3%</td>
</tr>
<tr>
<td>Educational journals</td>
<td>81</td>
<td>42.2%</td>
</tr>
<tr>
<td>Educational textbooks</td>
<td>48</td>
<td>25.0%</td>
</tr>
<tr>
<td>EvidenceNet</td>
<td>1</td>
<td>0.5%</td>
</tr>
<tr>
<td>HEA OER resources</td>
<td>41</td>
<td>21.4%</td>
</tr>
<tr>
<td>JORUM</td>
<td>4</td>
<td>2.1%</td>
</tr>
<tr>
<td>HEA reports/toolkits</td>
<td>63</td>
<td>32.8%</td>
</tr>
<tr>
<td>JISC reports</td>
<td>29</td>
<td>15.1%</td>
</tr>
<tr>
<td>Institutional provided resources/guidelines</td>
<td>64</td>
<td>33.3%</td>
</tr>
<tr>
<td>Online tutorials (eg NetSkills)</td>
<td>20</td>
<td>10.4%</td>
</tr>
<tr>
<td>Professional bodies (ALT or SEDA)</td>
<td>36</td>
<td>18.8%</td>
</tr>
<tr>
<td>Institutional staff development courses</td>
<td>75</td>
<td>39.1%</td>
</tr>
<tr>
<td>MOOCs/examples of opencourseware</td>
<td>11</td>
<td>5.7%</td>
</tr>
<tr>
<td>Community mailing lists/online forums</td>
<td>42</td>
<td>21.9%</td>
</tr>
<tr>
<td>Institutional support centres/services</td>
<td>39</td>
<td>20.3%</td>
</tr>
<tr>
<td>National support centres/services</td>
<td>31</td>
<td>16.1%</td>
</tr>
<tr>
<td>Specific online support forums</td>
<td>16</td>
<td>8.3%</td>
</tr>
<tr>
<td>Educational conferences (such as HEA or Association of Learning technology)</td>
<td>76</td>
<td>39.6%</td>
</tr>
<tr>
<td>National workshops/events</td>
<td>60</td>
<td>31.3%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>34</td>
<td>17.7%</td>
</tr>
<tr>
<td>Total responses</td>
<td>192</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

25. Describe in your own words [max. 400 characters] which of the above you have found most effective in enabling you to update and develop your teaching practice.

Total responses 160 (see Appendix 2)
Gaps in current provision

26. Do you perceive there to be a gap in the current provision of resources to use in your teaching of students? (optional)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>61</th>
<th>33.7%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>120</td>
<td>66.3%</td>
<td></td>
</tr>
<tr>
<td>Total responses</td>
<td>181</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

If yes, describe in your own words [max. 400 characters] what resources you would like to see developed that you could use in your teaching of students.

Total responses 61 (see main report)

27. Do you perceive there to be a gap in the current provision of resources to use in support of the development of your teaching practice?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>65</th>
<th>33.9%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>127</td>
<td>66.1%</td>
<td></td>
</tr>
<tr>
<td>Total responses</td>
<td>192</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

If yes, describe in your own words [max. 400 characters] what resources you would like to see developed that would better support you in the development of your teaching practice.

Total responses 59 (see main report)
Appendix 2: Free text responses

Q12 Other: Teaching materials
What type(s) of teaching materials/media do you bring into your teaching with students?

Assessment for learning, portfolio development
Audience response system
Automated marking scripts/quizzes
Beamer presentation
Beamer slides (like PowerPoint but constructed using LaTeX and thus suitable for mathematics)
Black and white boards
By artefacts I am including rock cores for geological logging
Computer-aided assessment via maths e.g. http://www.mathcentre.ac.uk:8081/mathseg/
Course website
Demonstration experiments
Demonstrations (live)
Drama, story, poetry, music
EVS
Field trips
Fieldwork
Fieldwork - day and residential
Formative quizzes (‘clickers’ in class and online)
Games, both online, as well as physical ones, such as one-word sentence storytelling
Guest lecturers from industry live case studies
I do not teach but supervise PhD students
I give conventional lectures at a board from handwritten notes that are not distributed. Exercise classes work from tutorial sheets that are distributed in advance - i.e. posted on the VLE module page. Very occasionally I run some computer software on a projector
I teach quantitative research methods (i.e. statistics) - so I bring data sets and research questions
If including VLE activities here then add online tests, structured access to electronic resources and PowerPoint presentations with self-assessment slides
Laboratory experiment practical exercises, computer lab practical exercises, project-based learning, field trip-based exercises and projects
Laboratory practicals and field work
Labs
Mic to record for podcasts of lectures
Online material such as activities
Outdoor practicals
Peer assessment
Podcasting/screencasting
Podcasts
Practical exercises
Practical work in the field
Practical work??!
Practicals
Prezi
Prezi data for analysis exercises
Problem-based learning workshops, practical laboratory research (psychophysiology)
Puzzles
Real-life analogies sequencing activities
Rocks and minerals, thin sections
Self-developed online interactive tool for digital image processing
Slides prepared using the Beamer latex package
Small group work and group projects and presentations
SPSS manual written by me
Tablet PC to annotate gappy notes
Turning point - electronic voting system outside speakers
Visits external speakers study tours
VLE
Web links interactive flash animations
Web resources
Word and Chemdraw rather than PowerPoint. VLE whiteboard interesting that you left off Blackboard/whiteboard

Q13a Other: Sources of third party online resources
Where do third party electronic/online resources in your teaching come from?

- As background reading, there is a minor role for web notes from other schools or institutions
- Elluminate
- External websites, such as regulatory bodies, patent office, etc.
- Field Studies Council Open University
- HPA/CDC/WHO websites for up to date and reliable epidemiological information
- I have made my own videos and put onto YouTube and the university VLE (as embedded video)
- Internal company
- Learn Higher
- Masteringbiology Pearson publishing
- MATLAB
- Moodle video recording of all lectures via Panopto + HD webcam
- NASA
- NBS Construction Information Service
- Oerbital
- Online student response system using mobile phones, online simulators (e.g. Logicly), corporate websites (e.g. Android, Microsoft - faculty connection)
- Other websites
- Private collection of photos and examples
- Professional body (ACM, IEEE) digital libraries
- Published journal articles
- Relevant databases
- Sharepoint
- Simulations from websites set up by individual academics
- Specific software, either freeware from web (e.g. Cyclepad) or licenced proprietary
- Textbook online resources that accompany the textbook used for the module
- YouTube NHS
- Various external websites
- Very occasional use of maths computer software that is freely available online
- Videos produced by development agencies
- Wireshark (free ware)
Q13b: Names of repositories and VLEs
If possible, please provide the name of the repositories or VLE used.

* CVonline * HPR 2 * USC Annotated Computer Vision Bibliography * wikipedia
Also used data sets from EDS
Association of American Geographers online module - Global Economy
BB (two respondents)
Blackboard (28 respondents)
Blackboard (alas)
Blackboard learn
Blackboard websites of HEA, Society for General Microbiology, Pharmaceutical Society. Company websites to get latest developments in drug delivery. These are often a good source of videos and animations
Blackboard, BCS
Blackboard, Turnitin
BPS Uni repository
Cannot remember
Centre for Bioscience; YouTube; other sites identified by Google
Chentube3d (Liverpool University)
Cisco netspace, Blackboard
Core materials
Don’t know we call it surreylearn it is bespoke
E-books in library
Elluminate
Expedition Workshed
Extracts from relevant textbooks and British standards
FSC website and internally available course and identification material
HEA OCR
Homebrew
http://education.siggraph.org/
http://www.ics.heacademy.ac.uk/
https://numbas.mathcentre.ac.uk/
I use simulated practical software developed by the PharmaCALogy consortium
IBMS
Institution VLE is Blackboard
Internal VLE based on Moodle
JSTOR
Khan academy, maths tutor, stats tutor, TASH UoS
Learn at Lboro
Learn (three respondents)
Learn Chemistry
Learning Central
Library, computing at schools, MIT website
Lots
Mainly Moodle
Many universities
Materials shared by colleagues from other institutions
Mathcentre Metal & Destress (maths & stats for social sciences)
Merlot, AAPT resources, Compadre
MIT and Carnegie Mellon
MOLE 2
Molecular Jukebox RI Channel PeriodicVideos Institutional Blackboard VLE
Moodle (22 respondents)
Moodle-based system
Moodle IMechE Engineering Village
Moodle Masteringbiology
Moodle, Learn Higher, YouTube, jORUM, Virtual Training Suite, HEA resources
NASA Giovanni, Aeronet Synergy NOAA HYSPLIT
NBS Construction Information Service Summon
now.ntu.ac.uk
NTU online workspace (NOW). Desire2learn? ICE, IStructE websites, etc.
Oerbital Sakai
Online journals
Origami embryo at Oregon Scitable
OUD digital library
Own books, books from the library, Internet
Own in-house VLE not aligned with Blackboard or Moodle
QMPlus+, which is Moodle based
Science Learning Centre (SW)
Search web for resources using Google
Sharepoint
StudyNet
TED.com Vihart - Youtube
University of Leicester open resources
Use Google to find resources on other sites. NASA is great for astro stuff, for example
Various
Various websites provided by academics at other universities
VLE – Moodle
VLE Blackboard
Wake Forrest University
We have Moodle, but what does this question refer to?
We use Moodle
WebCT
Weblearn (Sakai)
WOLF
www.falstad.com
YouTube
YouTube Google images search Wikipedia (for images)

Q14: Media used in teaching
Please provide the details of the types of media used.

‘Skeleton notes’ given to students before the lectures, so they can fill in the details during lectures. Tutorial sheets. All the above on paper, also available on the VLE
2-D and 3-D modelling software
All the above
Anatomy and Physiology Revealed
Anything stumbled across
Apple iPad
Beamer slides, YouTube and other computer-generated animations
Bim software, augmented reality apps, technical and corporate videos on YouTube
But worth emphasising, since this is appearing here out of proportion: I would estimate < 0.5% of contact time involved such software
Chalk and talk
Cisco packet tracer
Clickers (two respondents)
Clickers, BBC videos
Derive and Mathcad
Direct demo from my laptop; display of bullet points via PDF
Documentaries
DVD
DVD commercial
Educational e-gaming
E-learning, Xerte packages
Electronic and hard-copy lecture notes; PowerPoint; in-house CFD software; PRS clicker system (Polleverywhere from next year)
Email
EVS
EVS handsets for multiple choice quizzes in lectures
Facebook
Facebook Group, linked videos, practice materials, lectures and lecture notes
Generally, we don’t provide paper-based material, but students either print their own copies or display on screens (laptops & tablets)
Google sketchup, AutoCAD, SW Slope software
Handouts are sometimes provided when material cannot be made available via VLE
Handouts
Handouts and videos
Handouts of printed slides, tutorial questions, online tutorial worked answers after the tutorial, links to useful/interesting videos
Home grown simulator
I mainly write notes on the white board together with handouts
I try to provide a wide range of complementary resources both in sessions and on the VLE
I will use anything and everything depending on the topic of the course
Illustrations obtained from the Internet
I use short video and animation to get over specific points. I also look for interactive software
Incomplete handouts
Increasingly video presentations that give tutorial support for softwares
iPad for presenting and video annotations/narrations and marking YouTube for videos
Lecture notes, use of CAD techniques for labs
Lecture notes; PowerPoint slides; tutorial exercise sheets; statistical software; online quizzes (that I have written); EVS quizzes
Masteringbiology
Materials made by me and/or my collaborators
Matlab code
Moodle
Mostly paper-based but with online tutorials produced in Camptasia Relay
Mostly standard paper-based stuff, if necessary enhanced with video, and the necessary software
Mostly, I talk and write on the whiteboard. Sometimes I use keynote or LaTeX slides. Tutorial problems and coursework are handed out as PDFs
Movies of case studies or snippets of documentaries, or scientists talking about their own discoveries
MS office, Adobe Captivate
Notes
Notes and demonstration
Notes, booklets, PowerPoints, YouTube web authoring packages/sites
Notes, exercises, EVS, YouTube videos, interactive web pages, CBA etc
Notes, PPTs, tutorial sheets, integrate videos to include case examples and scenarios
Notes, YouTube videos, generic office software and subject specific software for interactive sessions
Online forums and learning journals
Online student response system (SRS) using mobile phones and tablets. YouTube videos, podcasts, PPTs, simulators
Online tutorials electronic marking
Online videos for private study and paper notes for a variety of sources (primarily Mathcentre)
Open University videos on YouTube
Paper
Paper and Beamer slides
Paper and electronic
Paper based and PowerPoints
Paper based and YouTube videos. I will look up Box of Broadcasts though, I’ve never heard of it!
Paper-based notes, PowerPoint presentations, tutorials, field trips
Paper based, PPT, purpose-made videos, illuminate
Paper notes, PPTs, tutorials/workshops
Paper, PPT, PDF, animations, other
Paper-based
Paper-based notes, movie clips from YouTube, or from company/trade organisation websites. Subject-specific software, e.g. engineering simulation
PDF files made from PowerPoints, distributed to students via VLE
PDFs of lecture notes, photocopied materials, website with relevant articles
PharmaCALogy software, TurningPoint EVS
Photocopies of slides with boxes for students to fill in; some videos embedded in PPT or standalone; some links to interesting videos demonstrating relevant things
PowerPoint paper notes, YouTube
PowerPoint
PowerPoint presentation
PowerPoint presentations, tutorials, videos
PowerPoint presentations with embedded (own) photos and data. Commercially available software and video material
PowerPoint presentations, additional paper-based materials/workbooks, video clips (often industry experts)
PowerPoint slides, videos available on the web
PowerPoint with links embedded to Youtube videos or podcasts, such as NBS TV. Handouts and reading lists to read for homework. Videos of case studies such as Mike Parrett’s guide to Building Pathology
PowerPoint, computer simulation, video, fieldwork off campus
PowerPoint, printed worksheets for tutorials, YouTube video links from the VLE, Turningpoint, Textwall, podcasts for mobile devices, module-specific Facebook pages
PowerPoint, videos generally from YouTube and the TurningPoint response pad system
PPT slides on screen, camtasia to capture, EVS for sample q & a, plus live programming examples with console and editor
PPT, LaTeX, DOCX, Fortran (gfortran & Silverfrost/F95). TurningPoint
PPT, video
PPT, videos
PPT. Occasional OU video
PPTs, handouts with synopses, expected learning outcomes, videos/animations embedded in ppts and stand-alone links in modules’ Blackboard sites. For some teaching activities I use EVS (Turningpoint), and I also maintain a Facebook page to provide both current and prospective students information about teaching and research developments within my department and globally, which is also used by alums
PPTs, websites, YouTube, practical/fieldtrip worksheets/handouts
PPTX, computer models, spreadsheets, SMath sheets, Mathematica CDF files, conceptual sketches from real-world projects that I’ve worked on
Printed lecture notes, films or animations of phenomena, simulation software for optics, voting systems for revision classes
Printed notes with gaps that I fill in during lectures; full notes available online
Printed notes, problem sheets, tutorial sheets, clickers, Moodle quizzes
Provide lecture notes at start of course, circulate problem sheets for tutorials. YouTube in lectures (periodic videos, RI channel, Jmol/Gaussview to demonstrate vibrations
Published BoB and video from book publishers used on VLE with publishers permission
Screencasts, recorded lectures
See above. I typically make edited PDF versions of my PPTs available before hand with answers to Qs missing. I make the full PPT available afterwards.

Self-created PPTs with built-in computer-aided learning notes + self-created videos

Self-written software

Simulation and design software - various including SolidWorks, LabView, etc.

Simulation tools

Simulations

Simulations, animations, videos

Software to demonstrate AND mark programming

Students can download PDFs of a wide variety of support materials from Blackboard including links to YouTube mashups, digital video/film, access to library e-resources, subject-specific software etc.

Supply copies of PPT slides. Online PPTs with voice. Online statistics course. Quizdom EVS

Teaching materials developed by myself and colleagues. Videos and photographs from the Internet. Publications produced by relevant agencies

Textbook, notes, acted-out demonstrations, videos of lectures, software apps

The majority of my computing teaching uses paper resources and websites but I have introduced tablets to help draw diagrams and share ideas. For my mathematics teaching there are several apps that the students can use to check their results.

Too many to list

Turningpoint

Tutorial sheets

Twitter

Use a combination of these in any module depending on content, with focus on students contributing to shared resources such as wikis, discussion boards etc.

Use polleverywhere, tutorial software, peerwise

Use video of my lectures via the VLE

Video clips to show how mining operations work, modelling of moon origin. Sound - I sometimes start with some ambient music. Virtual microscope clips. Heat3D Software to model 2D/3D heat distribution

Video, links to sites/blogs

Video: mostly YouTube; also CDROMs. Software: Maple. EVS: Interwrite. Paper: flat stuff, usually white, with words on.

Videos (two respondents)

Videos and experimental materials

Videos from company websites. Software: LabVIEW, Unisim, Matlab, Simulink

Videos of drilling techniques, landslides, ground engineering projects; notes on all my lectures

Videos, CDs, YouTube clips, handouts, worksheets, field equipment

We have a course-based Twitter account which is used to keep students up to date with relevant world news items. We use iPads to support fieldwork. I use YouTube videos during classes

Web applications (animations) and iPad apps (again outputting animations)

Web-based notes also

Whatever is the most applicable, I am not wedded to any one particular approach

Wireshark

YouTube etc.

You Tube, BoB for Clips, OU DVD and videos. LifePilot occasionally. Computer molecular modeller and specialist IR spectroscopy software

YouTube (two respondents)

YouTube & Box of Broadcasts

YouTube video clips for subject-specific topics. EVS for information consolidation quizzes

YouTube videos, discipline-specific software, PowerPoint

YouTube, ArcMAP, Moodle, Screencast-o-matic

Q16 Other: Sources of resources/learning technology

When searching for resources/learning technology to embed into your teaching, where do you regularly look?

BBC website
A national survey of UK HE STEM practitioners

August 2013

Book and research articles
Book publisher websites
Don’t tend to look

Emails from Pharmaceutical Technology, Lancet and other online journals, Google, especially for images, websites linked to specific textbooks

ESDS for data sets
Examples I might’ve seen via Twitter

General Googling for nice explanatory sites for general concepts/background

General web searches

Google
Google and Google Scholar
Google Scholar
Google search
Google!

I create it myself
I do not do this
I don’t

I don’t look in any methodical way
I don’t look, but I occasionally have my attention drawn to something that might be useful

I use the scientific tools that I know from my work in my subject. I would not want to increase the technology component

Internal company, Google

Internet

It says ‘select all that apply’ and none apply, but this question is mandatory so I must enter something to proceed. I answered no to ‘Do you use third party electronic/online resources in your teaching?’ and, consequently, none apply

JISC Google

Journal of Chemical Education

Just use Google

Manufacturer’s reference site; forums; stackexchange.com; dofactory.com; etc.

Medline Vetlink

Microsoft - faculty connection IBM (e.g. material relevant to software engineering)

Most of the time I simply use Google and see what turns up...

Museums

My eyes are always open and I incorporate what I stumble on. Systematic searching is unfeasible for workload

National geological survey sites (most countries have them). Company websites from my industry (ground engineering and engineering geology)

NBS Construction Information Service

Not applicable

Open University website

Other external websites, e.g. patent office, HSE, as appropriate

Other websites

Own resources

Real books

Research journal articles (for case studies)

Research papers

Scientific papers

Specific NGOs

Technology-related website

Textbooks

The web

This would mainly be images. I use Google to search for Creative Commons licensed ones

Various external websites. Primarily for images

Websites for experiments. Open access experimental data

Websites of organisations that provide up to date and reliable information

www.sciencedirect.com
Q17b Other: Laboratories
What best describes your lab-working?

- These are computer labs - not science labs
- The use of Computer Labs, software programming
- In these sense of software lab - teaching students to do quantitative research through SPSS
- Computer lab practicals to learn use of software and apply it to data they have collected for assessed projects
- Field work
- Depending upon the class we might be doing a coding example, or work through a business model canvas, or some other service design process, or play a game to illustrate the main point that week
- Open-ended group projects
- Simulators/simulations or actual hardware
- We are hoping to have our own dedicated laboratory in the future
- This pertains to in-lecture practical work - I do not teach in lab sessions per se.
- Answered yes as contribute to courses that include laboratory work, but not currently involved in these classes

Q20: Blending of teaching approaches and resources
Describe in your own words how you blend your approach(es) with your choice of resources.

A fairly traditional approach - lectures (which usually include worked examples and software demonstrations) followed by exercise classes (which often required students to use appropriate software to answer questions)
A linked programme of lectures, game-based learning and a design and build competition support the teaching of engineering dynamics.
A variety of learning styles, from formal lectures, to problem-solving practicals, outdoor equipment demonstrations, student-led problem-solving classes, to educational e-gaming
Active engagement lectures, tutorials as collaborative group work sessions focusing on problem-solving strategies, real-world tutorial problems
Ad hoc
Also in connection with question 19) I teach several modules and the approach is different in each, depending on the material. For some modules in which the need is mainly to transmit factual information I use straight lectures; other modules designed to teach skills or an appreciation of how the subject can be applied are based on case studies and practical problems, and are much more student and activity led. Question 19 seems to assume that a teacher can only teach in one way!
Application based
Approaches usually vary in response to activity. Our course is predominantly student-led so lectures are organised in response to needs
Appropriately
As a reader, my teaching is mainly lecture based with a large group so mainly me talking at them but with opportunities for discussion, group tasks etc.
As appropriate to LO
Attempt to use simulations to let students discover facts for themselves, before I lecture on them
Balance is the keyword - too much of the same and it defies the purpose
Based on evaluation of student engagement. If students respond, I do more of it, if I find the time. If something appears an effective improvement in delivery, and can be implemented with little effort, I try it out. If successful, I use it more pervasively in my teaching
Bring the problem to the student; the student to the tool; and then work on the problem breaking it down to manageable areas. Being open to the method and guide them to a conclusion
By choosing the most appropriate for the task in hand (experimentation for practical matters, PowerPoint for theory etc.)
Case studies from own files are used to introduce various topics then I set practical classes around similar problems
Choose the resource to match the content and then fit the approach around that
Content drives approach. Approach is constrained by resources. Resources need to be generic (cost-effectiveness) but need to be case appropriate
Depends on the level, basic idea is to provide learners a springboard from which they can explore their own ideas through reading and reflection
Dependent on the topic I blend styles which most suit building the right images and pictures in the learner’s mind to aid understanding of (often difficult) scientific concepts. Particular attention is paid to Threshold Concepts and Troublesome Knowledge.

Depends on audience
Depends on availability, access, easy of use
Depends on context. Some in-class contact others focused to encourage and support independent learning and study
Depends on what resources are available
Depends on year group
Depends totally on the subject area. Combination of lecture material, problems, worked examples and practical skills works best for engineering
Difficult to say as I try to use a mixture of approaches dependent on the material being covered
EVS with problem discussion in lectures. Dissertation for project based. Online formative exercises and quizzes to guide learning
Example problems are taken from current topics and news
Example, trial, error and learn
Firstly by setting up demonstrations with quiz sheets. Secondly by providing materials for students to construct experiments in lab and field. Thirdly by providing case study material (e.g. criminal cases) for discussion and analysis
For a particular topic I tend to provide the principles that can be used, and then use examples to show how the theory was applied
Give students problems with limited amount of previous knowledge, motivate students to research for themselves material required
Go through a series of case examples as a way to make theory and techniques relevant
I am not entirely sure what this question means
I blend them
I develop theories together with students, discussing issues found in a problem-based approach. I use software and web applications to enhance and develop students’ understanding of core concepts while using problems to develop their skills
I do what seems best for the particular topic we are covering. Sometimes e.g. EBL fits that very well but at others it would be rather forced. I don’t believe in using something just because it is trendy or innovative but because it works and sometimes these are indeed trendy or innovative approaches
I encourage students to access research material (mine, published sources, web-based material) and to use this as the basis upon which to design their own research projects. I also ask them to engage in peer review of work, to seek out and attempt to answer research questions
I give lectures and hand out problems sheets associated with each lecture. Labs demonstrate the more practical aspects of what I teach
I guess I start from the lecture-based model but make these sessions interactive so that students challenge and discuss solutions
I helped develop the AAG online module mentioned earlier and so use it as part of workshop-based discussion and activities
I ignore edu-babble and do what comes naturally
I just grab anything that will make an example/concept more entertaining/interesting
I like students to learn through group projects. I always assign groups on a seeding basis. Students have to deal with large datasets and produce tightly defined reports so they have to make editorial decisions. In some projects students have the primary materials to work with and interrogate. In others, they operate as exploration companies and the information they think they want from me as a contractor. They will manage budgets and make decisions balancing scientific need and economic benefit. The projects will typically run over a five to six week period
I principally lecture from my own written notes, with occasional pauses to use other media. Sometimes these are provided as links for students to look at outside class
I put them into the blender and press the button for about 30 seconds. What sort of answer do you expect in 400 characters?
I teach the students
I try to generate cases or problems which the students may face in their profession. I seek help from internet sources, textbooks and my own experience
I try to give some very general background to statistical methods (assuming that students will fill in details/background as they see fit). Then I give them some data and let them have a go (or we might do it together in the first instance)
I try to make the sessions fun and memorable. I want students to learn not just from lectures but also by doing and by doing it wrong as well
I try to provide the right environment for students (by setting specific problems or projects) and then help them use these for their learning
I try to relate my teaching to the outside world, thus emphasising the relevance of the science
I use a multitude of approaches to engage students with a range of learning styles
I use cross-functional project teams
I use mathematical problem-solving activities to engage students with the process of doing mathematics to give them a sense of how the children they will teach should experience it
I use online data sets and problem sheets to help students get experience of working with data to learn statistical principles. Often they are set problems to solve or a project to carry out with these data sets
I use resources to stimulate student thinking, understanding and engagement. They are the ones who need to learn. I (hopefully) provide the environment for them to do so, with guidance & stimuli as required
I use the lecture to set the context for the practical session and where possible use the lecture as an active learning session. However, this is still a new approach for me, which I’m still developing and haven’t used it across all of my teaching yet
I work mostly in a lecture setting so there are some practical limits on the techniques I can use
I would look for an example of a case study on the internet or from my research (usually in articles) and integrate it into a class exercise to derive a solution
I’m lucky (or cursed) that I had a real job before joining academia where I designed structures for 15 years. I’m a walking anecdote and it seems to work well
In the main I teach traditional material to motivated students using traditional methods
Intro incomplete handouts, followed by problem-based learning. Case study intro followed by student case study project work
Introduce principles, practice, reinforce, test
Investigations by students involve the resources known and lead to finding more
It depends entirely on what I am teaching and which case studies I want to use. The VLE has easy access to e-books and I try to include a variety of styles and pedagogical approaches in the planning of my teaching
It depends solely on what is being taught and the availability of suitable ideas to use
It is important for me to get students to think about how to start solving problems in mathematics with the techniques given. This is best done in forms of examples (tutor led and student led). Thus developing good examples is the key
It is very much level dependent but my primary teaching approach is to facilitate appropriate student activity and lecture as little as possible
It varies being specific to the topic and the techniques being discussed
Lab sheets, exercise sheets are used to start the student off, providing them with an example to go through before having an attempt at their main exercise. Videos are used to help show interviews with experts in the students area/interviews etc. PowerPoint slides are used to highlight the main topics which are talked around. Information from professional bodies is used to highlight the relevant of the subject area. Subject specific sites are used as additional help/support outside the teaching sessions
Lectures are signposts to learning and provide examples of engineering practice. Lots of independent learning. Weekly problem classes (mainly group work) including some computing. Regular small tests of core material. Formative and summative assessment
Lectures with active learning through clickers
Limited face-to-face time so that determines approach as distance learners
Link teaching to research and other university activities
Main theories are tutor led, supported by vids and class activity, then we do it outside in the context they will be working in
Maths is primarily problem-based, and problem solving is a key skill the students need to learn
Mixing resources and styles as much as possible to keep learner interest is what I try to do albeit some subjects lend themselves more to certain styles
Mostly tutor-led due to lack of resources, with the encouragement for student-led work through problems, case studies, design tasks etc. which are not resource-intensive
My approach is primarily project led, and I customise tutorial advice based on student needs
My courses are a combination of tutor-led sessions which include some videos and some use of e-voting for feedback, together with computer lab sessions which the students use to solve problems and eventually tackle a project using the software
My lecture notes are tightly interwoven with the mathematical simulation package that is used for teaching and project work
My lectures, particularly at the early-stage level, are open and discursive - so highly non traditional and as close to a seminar/workshop as one can get with a large body of students: a hybrid therefore
OU teaching is fairly prescripted; I use my own material to enhance that and to explain concepts
Pretty ad hoc really!
 Primarily didactic but with practicals and project work based on problem/case based approaches
Questions embedded in the presentation, so that students can engage with what I teach
Randomly
Resources are presented as learning materials in advance of the session and students are questioned about the topic in class
Resources are put on the VLE and students directed to them before the face-to-face sessions

Resources are there to provide further information on a topic, or to allow students to hear from external speakers who are unable to attend in person

Resources underpin my aims, typically either to illustrate lecturing points or assist with practical work

Robotics approach to introductory programming - all students compete individually in robot olympics, as a group to test and document their robots, and complete weekly lab sheets in labs as practice activities. Students meet in groups with their tutors for advice. Fantasy role play used in places to build student confidence for writing code

Set time-limited group tasks with end of session plenaries

Solving problems is one of the most efficient ways to learn science

Some material is delivered in a traditional lecture environment, which is interspersed with online applications/video clips etc. Students are also encouraged to attempt discuss/problems in preparation for tutorial classes. CBA is typically also available to reinforce particular methods and EVS might be used to test knowledge and initiate discussion

Structure problems for students to solve or to analyse

Student activities to be discussed in class

Students using the support come with their particular inquiries therefore using my research into approaches to studying helps to select resources and methods that will suit best

Students analyse data sets, design sampling strategies, design questionnaire etc. They use video, lectures, texts to help learn to do this and practice in labs, class discussions, assignments etc.

Students are more engaged when the learning materials are e-based. Therefore all material is delivered electronically. All F-2-F time is now devoted to workshops with students feeding back their findings

Students are pointed to a range of resources as starting points for developing their arguments ready for debating

Students find own resources where module is enquiry based

Students get to look at resources - I set the problems

Teaching medicine, primarily aim to get students taking and EBL approach to learning

The approach I uses varies with: level of study content of module desired learning outcomes. First years have PBL/EBL workshops around academic & professional psychological skills tutorial; seminar work; lectures and experimentation following lab sheet/demonstration. Second years have lecture; seminar workshop where experimentation is following lab sheet and then developing students own research. Third year involves lecture; student-led discussion; student-led experimentation

The main vehicle is the good old fashioned lecture

The most viral thing is keeping to the schedule. Teaching time has been cut by ~25% so everything is a rush and you can’t afford to fall behind

The primary resource is a large amount of board space - I want to develop discussions slowly and at length, and with many points visible at the same time. If projection tools allowed live development of different parts of a technical story over a large visible area, I would be delighted to try it - but (at least at my university) currently it does not (I would envisage at least four independent projection areas, but ideally a vast floor to ceiling, wall to wall, virtual space in which to roam freely, as I do on (good) boards

The resources I use will either be the start point for the session/discussion or will be used as part of the methodology of how the students should tackle the problem

The students are provided with the knowledge base and I explore how such knowledge can be used through EBL/PBL and role play. Students put themselves in the role of ‘expert’ and comment on case studies/develop ‘professional’ reports etc.

Theory with practical applications during and consolidated at the end

Therapeutic questions are posed after an introduction to the background material (given by PowerPoint) and then students are asked to either vote or discuss treatment options as enquiry-based approach

This is driven by the context of the teaching environment and learning objectives

This is influenced by class size. Some 180 students mean my lectures, apart from a few calculations, are mainly didactic.

Students get PowerPoint (-calculations) via Blackboard. I use Blackboard quizzes for formative assessment for each PowerPoint presentation. Smaller groups allow discursive tutorials. Small labs (less than 20) allow observation and instant feedback whereas larger tend to be ‘explain, demonstrate and let them get on with it’

Through industrial experience

To be honest, I follow the institution’s lead and guidelines

To demonstrate previous students’ approaches to similar problems

Too variable to give a prescriptive answer, however the main watchword is to keep resource cost minimal

Traditional physics syllabus delivered primarily by lecture supported by lab

Try to demonstrate principles with genuine cases from networks

Tutorials and assessments include EBL, PBL, case studies, PJBL. Role play is used in group projects

Tutorials lectures and classes

Use approach depending on topic all designed on lesson plan

Usual format may be interactive PowerPoint presentation with podcast/video examples within it (links to internet). At the
end of the presentation will be references and reading list and individual or group tasks to undertake for the remainder of
the session. Results of tasks will be shared and discussed. Revision questions may also be devised by the group and
disseminated. Reading list or material given as homework

Varied, depending on the topic/level of difficulty/number of students etc.
Varies by subject (e.g. first-year maths often suits ‘chalk’n’talk’ while programming, web development and second-/third-year
maths suits others)

Very traditional teaching but assessment uses a lot of computer-aided assessment (CAA)

Videos, cases, discussion as a means of elaborating theory

VLE resources proved in advance and lectures delivered based on those resources

We have a traditional delivery of lectures, labs and workshops. I include links to videos etc. in lecture notes and case
study/PBL approaches in workshops

What I do is limited by institution resources

What point am I trying to convey? Where can I find a good illustration/case study or can I set up e.g. a computer practical to
explore it?

Whatever is suitable - in my opinion

Where feasible I use an enquiry-based approach, even if only small elements of this can be blended with more traditional
approaches. The aim is to encourage students to take charge of their own learning and increase their digital and
information literacy skills in order that they become effective deep lifelong learners

With flexibility and inventiveness

Worksheets

**Q22: Barriers to developing teaching practice**

Describe in your own words what might limit you in developing your teaching practice further.

Academic pressures and lack of time!

Access to flexible learning spaces

Administrative responsibilities

After a few years people get into teaching habits, and may not be aware of more recent developments. Training opportunities
focus on new lecturers, rather than experienced ones

Age and compulsory retirement

Already working 60+ hours a week on all the things the Univ needs

Availability of accessible online resources

Availability of equipment, artefacts, books and archives

Being overloaded and overworked

Being so fed up with the change from being a public service to becoming a private business that I just cannot bring myself to
engage with ‘costing’ so leaving the institution

Competing demands of research (REF) and teaching

Constraints being put on by the university systems - e.g. a recent limit on the time to provide feedback on work will probably
mean a redesign of the assessments to give less marking so that the deadline is reached

Current teaching and admin load

Currently working on part-time contracts to teach after relocation, previously did lot of education-based research but now in
two different unis and hard to get going again. Lack of contacts, not same education research culture in the team

Engagement of students

Equipment and time with student is limited and planning time is constrained. Also training availability for new techniques is
limited. Also trialling new ideas need to be ethically sound not to put student attainment at risk

Firstly, all professional development in HE teaching is self-

managed in an FE institution. I am undertaking an EdD in my own
time and at my own expense. Lack of resources and time to develop them is an issue

Funding

Government policies - fees have produced an increase in customer demand which is sometimes at odds with good
educational practice. Local management fear of the million and one national surveys and data repositories which are, at
best, simplistic in what they capture

Having enough time given all my other duties and responsibilities

Having to spend time with this edu-babble nonsense instead of engaging with my subject. This question indicates the idiocy of
current educational and pedagogical focus – ‘enhancement’ on what baseline criteria?

HEA

High teaching load and pointless administrative jobs. Retirement is fast approaching but I don’t let that influence my
I am reluctant to use new technology for its own sake. I want to be in control, not be controlled by the technology.

I am a good teacher, but my interest is mainly in research and I spend most of my time in advancing my research.

I don’t have the opportunity to get any further teaching qualifications within my organisation. I would have to pay for it myself.

I hardly manage to fulfil my current duties, let alone find the time to further develop any ideas.

I would like to invert lectures but: time to prepare; fear that students will not engage.

If there were resistance to change by those determining certain teaching requirements, such as the essay questions that are set.

Inadequate time to reflect and improve.

Inflexibility of university computing resources. I need my students to see and install the latest, often unusual software.

Infrastructure (e.g., buildings, facilities). Heavy administrative responsibilities. Pressures on other members of staff, such as REF, mean implementing broad changes to teaching practice, not just in one or two specific modules, can be difficult.

Institutional inertia on behalf of higher faculty members – ‘It was good enough for us...’. Teaching seen as a second-class activity by institution.

Insufficient thinking and reading time.

Insufficient time between knowing what modules I will have to teach and actually starting teaching them, lack of certainty that I will be teaching a module for a number of years.

Lack of reward.

Lack of time.

Lack of time and funding (six respondents).

Lack of time in the day, and being constrained by too many other duties, or too much teaching which make it hard to try new ideas. Still, I’ve managed so far so hopefully this will continue.

Lack of time is a major issue ... I spend all my time delivering teaching with little time to spend on development.

Lack of time is the main barrier to exploring new methods, though also lack of conviction that they would be helpful.

Lack of time, lack of resources, restrictive workload models, unrealistic workload models, contribution not being taken into account in workload model.

Lack of time spent in the laboratory on some courses is problematic but the main problem is lack of demonstration facilities in some lecture theatres and sometimes their remoteness from laboratories and prep rooms.

Lack of time to explore what is available, plus ignorance of what is available.

Lack of time to properly develop teaching materials - with a greater number of teaching hours it is more difficult to find time to improve practice.

Lack of time to work on activities that increase student engagement and shift the balance more in favour of the student.

Lack of time, greater importance of research performance in relation to promotion etc.

Lack of time, lack of recognition/reward for time spent on improving teaching.

Lack of time, lack of reward, nonsense-speak and broad-brush approach in pedagogical texts and from practitioners.

Lack of time. A university career is driven by research and income and this takes up all the time.

Lack of training.

Large groups, lack of time with students, students limited commitment to private study.

Limitation in the timetable.

Limited face-to-face contact as teaching some students wholly online.

Limited scope and institutional constraints.

Little recognition by the university of the value of educational initiatives and no reward for the staff involved.

Local IT support.

Main problem is insufficient time to everything - no thinking and planning time, always playing catch up on admin tasks. Just about manage to update lecture content sometimes!

Management - they now generally have no idea of what teaching at a university entails. Either no academic background or lacking experience. Endemic in most of UK culture spin over ability.

Money and time.

Mostly lack of time due to extensive admin duties.

My age! 62.

My institution and department have criteria that must be fulfilled for all modules and new teaching practices are not always welcome. New ideas are often dismissed in case they might fail rather than being embraced as an opportunity to succeed in improving a student’s experience.

My time and student motivation.
No allocated research time; tend to have to do it in my own time
Not enough hours in the day!!!
Not having a job
Not knowing maths is cool
Not knowing what can be done or if know what can be done how to do it
Over large class sizes with inadequate demonstrator resources
Primarily time with the increased administrative workload over the past decade or so. Also pressure to maintain research output with reduced availability of funding and able research staff
Probably the main factor is time, as always...
Promotion reduces the contact
Research-driven internal structures
Resource constraints, confidence to 'have a go' and do something a bit different, and time to plan something 'different' to the point where I'm happy to use it. Generally, it's easier and quicker to use something I've done before, even though it doesn't engage the students in the best way
Resources available (primarily time)
Resources for developing new tools and teaching activities. Would like to explore infonomic approach for large classes
Retirement
Staff shortages and large numbers of 100+ makes small group work difficult. Also not always able to access adequate teaching rooms
Teaching practice is limited due to time pressures elsewhere
The amount of 'knowledge' I have to tell them severely limits the time there then is for them to find things out for themselves which would be a more effective way of learning although is less easy to control
The development of good teaching practice in research-active isn't valued by institutions in this sector, who take an 'either/or' view of teaching and research
The fact that teaching is unrewarded (in promotional terms). HEIs are REF focused to the exclusion of all else
The increasing reliance on technology to substitute for the use of the human brain to think
The main limitation to teaching development is from resistance from some colleagues, and the resistance from some students to novel approaches to learning. The students are all too familiar with 'chalk and talk', learning 'the right answer' and taking traditional exams. Introducing open-ended, problem- or case-based learning, where students have to be more autonomous can be a culture shock. The best way to address this would be to introduce more of the problem-based learning and teamwork throughout the programmes, but staff resistance can make this difficult
The need to cover a large amount of material in the course
The profession. If I want recognition or a promotion, then I can't be teaching centred and pedagogic research is looked down upon in Engineering
The QAA
The time it takes to find/develop resources specific to content
This may be - timetabling. If constrained to use a room unsuitable for group working, Well-resourced classrooms generally give me a free hand in using the materials I want
Time (21 respondents)
Time - in other words my workload. Technical help and support is limited
Time - too busy
Time! Increasing research and admin loads mean that time available to develop and enhance teaching is restricted. Finance is also required to update and enhance lab equipment
Time and resources (two respondents)
Time and administration commitments
Time and money for resources/staff development
Time and my skills in the development of online resources
Time and the fact that I'm close to retirement
Time available
Time available to develop the lectures
Time constraints (three respondents)
Time constraints and the emphasis placed on research. Although my institution says that it values teaching, this doesn't trickle down to faculty level when it comes to promotion/career development
Time constraints, especially due to expectations of research output
Time constraints. Pressure to publish
Time for preparation
Time in FE!!

Time is a significant fact in limiting my development of teaching practices. In addition, location, many of the events linked to the more relevant professional bodies are not located in Wales, and would require time to travel to the venue. Not many discussions linked to the specific subject area.

Time is the main issue. As a result, improvements tend to be incremental year on year.

Time limitations in developing new resources. Fear of adopting new techniques and technologies.

Time limitations to spend researching and learning new methods. Lack of confidence in trying new methods.

Time pressure

(two respondents)

Time pressure to perform admin tasks

Time pressures; enormous teaching and admin load, substantially higher than other discipline-research staff in my department

Time restrictions

Time to design interactive teaching materials (animated videos, online and mobile apps for teaching)

Time to develop and research

Time to develop and trial new ideas. Difficulty of convincing colleagues to be innovative and try something they are unfamiliar with (and time). Also continual interference from senior management e.g., insistence on timetabling that ignores need for fieldwork etc. And an integrated curriculum not appropriate for STEM e.g., Biology with no options - dreadful

Time to develop my skills and materials

Time to develop new ideas, and restrictions on room availability, resources etc.

Time to develop resources

Time to think through possible approaches

Time, cost, course and research demands

Time, experience, cost of developing quality simulations

Time, experience, support

Time, time, time (and energy)

Time. Always by far the biggest issue

Time. Having to do more and more with less and less

Time. Money. Patience

Time. This is a major factor. Development of sessions, especially in the first instance requires a lot of time. After that, it is maintenance and updating, but initially it is very time-consuming to prepare

Time. Workload

Time. Scepticism that newer techniques work well for me

Time; class size; money

Time; other commitments

Timetable limitations! Room type availability - large flat space teaching room

Timetabling constraints. Time to develop and improve teaching

Too many generic training courses and not enough subject-specific provision. Teaching maths has different challenges!

Visual resources

We are moving site Summer 2013, so I have yet to get my head round what I can do

Workload

Workload pressure. Despite the current emphasis on enhancing the student experience, lecturers’ workloads are becoming more and more bogged down with duties that do not have a direct or positive impact on student learning

Workload, not enough time spent on research, unwillingness of students to engage in independent learning coupled with too many colleagues taking and offering the easy way out

Q24 Other: Sources of support and information for developing teaching practice

Where do you go for support and information in order to update and develop your teaching practice?

- A maths education book produced by the HEA MSOR Network (by Alcock and Simpson)
- At the moment, I am trying to utilise as many webinars as I can. These are quick and effective ways of acquiring new information and skills. I wish there were more of them
- Colleagues at other universities teaching similar courses
- Coming from industry to be a lecturer, I find most academics painful to work with. However, I’m blessed that my team have all worked in industry and understand what their teaching will lead to. I also draw inspiration from TED lectures
Disciplinary education conferences from HEA, ACM SIGCSE, etc.
Discussions with colleagues
Feedback from students
GEES website
Generally networking and keeping up to date on the science and ways of engaging with students
Google search
Individual education blogs and websites (patchy in quality, but sometimes much better than the rather corporate material provided by institutions)
Just started a PGCAP which I’m hoping will help
LTsnd
National and international research conferences
Only discussions with colleagues, including those arising from peer observation (which for instance convinces me that PowerPoint is poorly suited to our discipline)
Part of the University Teacher Fellow Network
Peer observation student feedback. Doing pedagogic research
Regular discussion with colleagues (both maths and maths education specialists)
Research journals, research conferences, visits to other researchers in my field
Self reflection and student feedback!
Sigma network
Student feedback
Students
Twitter
Ulster’s CHEP
Unconferences to see what professionals are doing in the workplace to cover these same issues
US University T&L reports YouTube TED
Very little money to support going to conferences
Working with Field Studies Council to develop new teaching areas and techniques

Q25: Developing teaching practice
Describe in your own words which of the above you have found most effective in enabling you to update and develop your teaching practice.

A combination of chatting with colleagues and intra-university forums/courses
AAPT National Meetings; HEA workshops. Journals (New Directions, AJP, EJP, Phys Rev ST PER, etc.)
Academic journals and conferences
ACM SIGCSE and similar provide focussed input from a large and diverse community
All of the above
Any chance for reflection and sharing of practice is useful
As an engineer I have to do CPD. Running a KTP is extremely fruitful
Asking our local Inst for Academic Development
Attendance and participation at HEA subject centre workshops and events
Attending conferences, but more from the perspective of being able to talk to other practitioners, than from listening to the talks. Support from internal staff developers has also been very helpful, as well as working with discipline specific colleagues, who understand the limitations and norms within the subject
BCS events which link to the subject area
Being relatively new to teaching, I am undertaking a teaching development programme for new lecturers. This has been useful and has pointed me to other resources
Best is hearing about good practice from colleagues
Books and supporting video material VLE training
Colleague expertise
Colleagues (two respondents)
Colleagues and educational conferences (e.g. HEA conferences, anatomy society education component to annual conference)
Colleagues and engagement in postgraduate certificate in education (PGCE) in HE course.

Colleagues and journals/papers

Colleagues and relevant journal articles

Colleagues are very useful as they understand the context of any development

Colleagues as they allow me to explore ideas and how to implement them

Colleagues at a local and national level, through informal contact often spurred by meetings and educational conferences

Colleagues’ evidence/examples

Colleagues’ experience, mine and other institutions (e.g. OU)

Colleagues’ experience

Colleagues’ expertise

Colleagues’ expertise is most directly relevant. However, conference talks and HEA workshops are useful for seeding ideas that sometimes become useful to me or when advising a colleague, perhaps a few years after I attended them. Listening to others talk is less directly applicable but if we only listened to colleagues at our own institutions then we won't be exposed to new ideas

Colleague’s expertise within your own subject area

Colleagues’ expertise, because the best ideas come from other practitioners in your own subject area

Colleagues have been very helpful; as have textbooks; and journals are, of course, essential when carrying out pedagogical research; I have struggled to find resources elsewhere but have copied the list above and will see if any of the resources listed help in future

Colleagues in other universities

Colleagues, not only from my institution but where I am external examiner

Colleagues. The big advantage: what they recommend tends to work in practice, even if it doesn’t work in theory

Conferences

Conferences - good for inspiring practice on a long-term basis. Colleagues’ expertise - good for monitoring or implementing a quick change in delivery on a short-term basis

Conferences and national training courses such as ALT-C and JISC courses

Conferences and reports/papers

Conferences and workshops are most useful, although they tend to be ‘preaching to the converted’

Conferences and workshops. Opportunity to discuss and ask questions

Conferences provide the most inspiration and examples of different, new, tested, and/or experimental styles. Other resources give depth

Conferences where you can discuss and compare with your peers

Conferences, networking and talking to colleagues in disciplines outside science

Conferences, talking to colleagues from other HEIs

Conferences ... they focus the mind for a couple of days

Courses & conferences

Courses provided by the institute have provided a good and constructive environment

Departmental awaydays

Discussion seminars within our institution to share ideas and best practice, including occasional visiting speakers from other institutions

Discussion with colleagues about what they are trying and what’s working

Discussion with colleagues both locally and nationally

Discussions and brainstorming with colleagues

Discussions with colleagues (three respondents)

Discussions with those from other institutes are particularly stimulating

Educational conferences (two respondents)

Educational conferences and networks

Educational conferences and workshops allow you to gain new ideas or provide the time for you to reflect on your own practice and how you might integrate ideas into your work

Educational conferences as they allow exchange of ideas. Last year I went to an HEA conference on online assessment which I found very useful. Books and journals can often be written in an impenetrable style

Educational journals and conferences

Educational journals and textbooks (two respondents)

Educational own research and textbooks

EER journals and conferences, for engineering not STEM as this is too diverse
Engaging with the community of practice

Engineering education conferences, HEA workshops

Few

Going to unconferences in the software area has been the best approach for new ideas. HEA ones are the next best one

Guinea Pigs ... When I’m about to take a radical departure in my teaching style I will run trial lectures and invite feedback. I’d rather be sacked for doing something, than nothing

Having readily available information via internet works best, next is talking and networking with colleagues

HEA STEM conferences

I am currently taking a Certificate in Academic Practice at my institution and am finding this helpful. I also subscribe to HEA publications (MSOR Connections) which is very informative too

I find a combination of these most effective. Most enjoyable are workshops and conferences

I find educational conferences very valuable and also texts and journals

I have a small network of colleagues who are like minded in wanting to improve the student experience and their teaching.

These colleagues allow me to bounce ideas off them to then look further into my teaching practice

I have found something useful in most of the above

I have found that talking with colleagues who have teaching experience is the best way to improve my teaching practice. I find that teaching quality theory is useless to achieve this

I have received a lot of inspiration from conferences and workshops but I find the most effective way is to engage with students about what they have learned, what they have enjoyed and how much they have enjoyed my courses. I take all such feedback very seriously, even if I sometimes ignore it

I only ticked one - colleagues

I reflect on materials from all sorts of sources so it is hard to choose one resource above another

In the past HEA conferences been a great source of ideas and support and have presented several papers at them too. If you are at a conference or workshop you are immersed in the subject whereas reading journals/checking other resources happens in fragments and often gets pushed to the bottom of the to do list!

Incentive of wishing to publish research relating to teaching practice

inhouse cdsa and training days

Institutional conferences and events have been most readily available and effective in inspiring and informing my teaching development

Institutional guidelines generally plus bought-in expertise. Also NTU Learning and Teaching Conference

Institutional ideas sharing, particularly between disciplines

Institutional resources

Institutional staff development courses have provided stimulus and opportunity to relate my practice to literature and to be reflective upon my practice

Institutional staff development courses (two respondents)

Institutional support - problem of awareness of alternative sources

Institutional support staff

institutional training

Institution’s staff development events

Interaction with colleagues has been most productive

Interaction with other researchers is most helpful

Internal events/visiting speakers

International conferences and HEA development events

It’s always useful to talk to colleagues, but I’m following the PGCert course at the moment and I’ve found that to be a useful experience as well

I’ve adopted methods which have proved effective in the school or elsewhere

Journals

Journals. MOOCs

Learning from colleagues

Learning from experienced colleagues

LinkedIn HE group discussions - straight to the point and from a worldwide community

Loughborough’s Subject Centre/CETL

LTSN and professional bodies. BES AES

Materials provided by the Open University and interchanges with colleagues

Meeting with people in the university who also want to develop teaching and learning and talking through projects with them

Motivated and informed colleagues are the best resource I’ve found
My colleagues

National workshops on particular themes/topics

No one place can help, you need a plethora of sources to provide a range of ideas, and in many cases take bits from each one to make your own style

None

(two respondents)

None more effective than others, one needs to choose the right source of support and education for specific reasons

None of them - experience is everything plus talking to colleagues, too much band-waggon jumping at latest in thing

Other colleagues’ experiences

Others in an equivalent position either at my own or other institutions

Peer learning

Peer review by colleagues, HEA resources

Plagiarism - aka dissemination of best practice

Possibly colleagues’ expertise

Random Google search can throw a surprising mix of resources and tips

Reading educational journals and involvement with the Educational Development Centre of the Uni have been very helpful - but it is always lots of ideas but little chance to implement them. Used to use HEA Bioscience quite a lot, now the mailing lists and discussions

Reflecting on the best way to ensure that the students learn

Self reflection and student feedback!

Staff development courses

Students

Talking to other colleagues. I have a history in FE education, and can apply some of that to my current role, but techniques used in FE are not always transferable, and there are some issues with student expectation

Talking to colleagues

(three respondents)

Talking to colleagues is the most useful

Talking to staff at other universities with similar issues and pressures

Talking to younger colleagues

Teaching and learning seminars. We have an Institute for Science Education and good links with our Faculty of Education colleagues as well as a centre for pedagogic research. I also enjoy observing others teach and letting others observe me. Even after more than 30 years there are always things to learn!

Teaching is a personal activity. Observation of myself and talking to students are the controls, not that list

Teaching practice is about what is comfortable and natural to you as a teacher; not what other people say and/or do. The latter may influence but must never define. Teacher-centred teaching is always the best approach given the totally diverse nature of the learners. A good teacher will communicate with all learners because the teacher is comfortable with what he/she does

Textbooks

The best prompts to change/develop are often experiential for me - it’s through collaboration with others that I tend to pick up new ideas and adapt my own practice

The forums that are in-house

To be honest, I find the most useful resource is my own imagination

Trial and error with feedback from students

Ulster’s CHEP (in-house arm of staff development) aimed at developing T&L practice

Updating your teaching practice is a time consuming and difficult task and consciously doing this is must use a combination of different methods

Using books and discussing with colleagues

Very difficult to say!

Webinars, as described in q.24

Where I can find case studies which can be used or adapted or examples of problem-based or project-based learning scenarios which can be used ‘off the shelf’. Major time demand in creating these things from scratch

Without doubt I find the subject centre materials that were developed at GEES some of the most useful for improving my teaching practice. In addition I have made widespread use of various HEA toolkits

Workshops and events; seeing how things are done and trying them out

Workshops and talks are useful if you have time to go

Workshops because they are focussed and you get immediate advice on what you are considering

Workshops held within our college (the equivalent of ‘faculties’)

Workshops where others in the same areas describe things that have worked for them
Q26: Desired of resources for teaching
What resources would you like to see developed that you could use in your teaching of students?

- 3D visualisation of large datasets - e.g. datasets to allow immersion in an outdoor field area using projection in a dome
- A good, well designed & tested open e-assessment system with deployable resources. E.g. for maths there is a plethora of different, incompatible e-assessment systems. Open standards projects tend to neglect the UI
- Access to electronic texts
- All students to be provided with a laptop
- Although there is an increase in the availability of resources I have not found many subject-specific case studies that could be used for teaching computing, specifically software engineering and requirements gathering
- Anatomical models or clear, simple animations linking anatomy to physiology of components of body systems
- Anything related to molecular genetics would be good
- Apps
- As above, credible, high-quality case studies and projects/problem scenarios for student-centred learning
- Based on our remit and time restrictions, it’s hard to develop the course around one textbook
- Biology movies, especially developmental biology
- But this is due to the speed of change in the area
- Consolidation of the many good resources. A good search engine would be good to pick out required ones quickly
- Digital resources to enhance the learning experience of those with learning differences in practical field-based science disciplines such as geology. While we are developing in-house teaching materials which will be used as virtual fieldtrips, the amount and scope of the resources we can develop are limited by availability of funding and simply other calls on our time
- Educational e-gaming resources. As the minute I have to develop my own
- Effective handling and support for larger learning groups
- Facilities rather than resources: for live demonstrations in lectures. We have film clips of course, and that often works in a satisfactory way, but it is not quite the same as doing the experiment or demonstration live!
- Funding to better develop industrial links in order to engage industry in teaching students
- Further lab equipment for real-time experiments
- Good chemistry journals both paper and on line. Good chemistry databases. All are very expensive
- Good quality case studies that combine theory with real-world application, photos, video and narrative
- High-quality film material and associated exercises in child development. Case studies with engaging (film) material in research ethics
- I am currently funded by the HEA on a project to investigate the availability of resources and good practice about learning about technology and statistics in qualitative data analysis. It is currently hard to find such resources suitable for undergraduate use
- I think this is a difficult question in that generic resources don’t fit easily into established courses/modules
- I’d like to see more videos on Biomedical Sciences
- Increasing student numbers and pressure on physical resource
- Interactive mathematical assessment
- Interactive teaching, assessment and feedback tools on mobile platforms
- Laboratory experiments
- Laboratory practical ideas. Technical details
- Lack of psychological research in programming education
- Local IT support
- Module specific resources related to final year specialist course
- Money - it seems as if nobody is willing to pay for equipment that needs upgrading
- More animations for difficult concepts
- More interaction resources such as clickers, we have one set of 36, and I don’t have any classes that small
- More space, more time, more money
- More support for audio-visual communication and better lit classrooms
A national survey of UK HE STEM practitioners

- More web applications in mathematics as a subject in its own right, instead of applications either demonstrating a particular calculation or demonstrating a particular application to another discipline
- Need more good-quality royalty-free images
- Only the best teachers get given the new resources (laptops/tablets/etc.) to enhance their teaching further
- Open access/copyright-free images and related resources
- Our new library will be pants
- Poorly implemented PRS
- Some e-learning units, and possibly videos of lab tests for distance learning students
- Staff are too stretched - it's impossible to give enough time to teaching with loads of project students to deal with, personal tutorials and conducting research/applying for funding
- Teaching from application!!
- Technological development needs materials (books, archives, videos) and artefacts that are historical and multidisciplinary. The availability of commentaries and the purchase of items are difficult because of culture and funding
- Technology for designing quick and efficient electronic tests
- The ability to see and discuss a large amount of material at the same time is critical. Conventional university lecturing does this with large boards (Warwick, Cambridge, Oxford all do this superbly; at Loughborough there are some good rooms but some bad ones too). The increase in computer projection should not have spoiled that, but it has: it is taken as a reason to diminish board space; it is rarely built so that boards and projector can be used simultaneously (I would do more projection if that were possible); and projection technology is moving only very slowly to the point where it is anything like adequate by itself (at least wall-sized projection space that can be partitioned and used independently)
- The labs are old, dark and use second-hand equipment which is old, tried and out of date
- There is a lack of challenging case studies in the database area that I teach
- There is so much available that it is difficult to determine exactly what is available and the quality of what is available
- Time (two identical)
- Time to do the job
- Too little metadata with resources to enable easy use by others. Instructor packs for materials would be a real asset. Too little evaluation of educational effectiveness and optimisation of resources
- Use of forums and wholly online modules
- Would need more time
- Yes there is a gap, but I don’t expect anybody but myself and my team to fill it for our course... There are already enough lazy lecturers out there who endlessly recycle MIT’s notes
- Yes, not all equipment is available in each room

Q27: Desired resources for developing teaching practice

What resources would you like to see developed that would better support you in the development of your teaching practice?

- A search engine as above
- A time machine ... I simply do not have enough hours in the day to deliver the quality of teaching I want to deliver
- Access to HEA and equivalent events that I have been unable to attend. Conference papers/recordings etc.
- Adequate training and development opportunities in e-learning and Technology Enhanced Learning. Time and cost are a big factor here, that is why webinars are proving to be so valuable to me
- Again it is mainly time to develop my teaching practice while remaining at the forefront of my subject
- Again protected time to think through possibilities (if time counts as a resource)
- All students to be provided with a laptop
- Anything would help!
- Application-driven teaching!
- Clear internal support and recognition for time spent on pedagogical development in promotion structures
- Concept-driven resources, rather than application- or computation-driven resources
- Current employer supportive but this is a specialised institution and there is a limited amount of subject-specific support
- Decentralised subject centres
- Ease of access to training events
- Employment of staff; better IT support
- Enough time in the midst of everything else required of an academic
• Generic mobile platforms I could use to deliver content and assess student performance
• I think I need more support from the university to change the way I am teaching, i.e. more lecture time, flexible teaching environments etc.
• I think the resources are there but a lack of time and funding make it difficult to access them
• I wanted to say 'no' but then I can't leave a comment. Whenever I have looked, I have found material that will help me to do what I want to do but the problem with the question is, as Donald Rumsfeld said, the unknown unknowns - the things we don't know that we don't know. I am sure there are plenty of things that would help me but I don't know what they are until I see them
• I would like a couple of dedicated teaching assistants who could help with all aspects of course development as the many other calls on my time mean that I do not have the time or energy to do much more than dust off last year's notes and teach those
• I would LOVE a 'dating agency' to find similar professionals with a passion for teaching. One of the hardest things I'm finding having come from industry is the relative solitude
• Idiot guides to new websites, templates for Prezis etc.
• Industrial placements
• It is difficult to determine exactly what is available and the quality of what is available
• It should be included in our appraisals, just as research is
• Local IT support
• Local technology archives, collections, heritage sites...Collaboration aims with museums and companies could be a solution
• Maybe not a resource, but I'd like to see unis forced to place more emphasis on good teaching (primarily through reward and recognition of staff). Currently, research is all ...
• More funding opportunities for time off to focus on developing learning resources. Online repository of programming virtual labs
• More opportunities to network and share good practice
• More research-based evidence required, currently there is too much classroom innovation reported without foundation in literature or evaluation
• More time!
• My institution has just invested heavily in support of teaching in my area, but there are always more things that one would want to do and the generous support given will not cover everything
• Need more time
• Opportunity to share ideas and discuss teaching with others in roughly the same subject area
• Reliable AV and support for getting AV teaching materials into the format required
• Some really good, real data sets for use in teaching stats that beginners can use
• Something beyond a PGCert/PGCTLHE, e.g. 'proper' CPD, mandatory PGCert/Dip update/refresh, well-recognised & resourced HEA quals?
• Specific time to develop teaching - perhaps away days or residential training?
• Technical support to prepare lecture demonstrations, set up AV...
• The HEA Practice Guides are excellent, but only cover a certain range of topics
• The issue is recognition and valuing of the time required to develop my teaching practice
• The main resource is time which is short
• The only real drag on developments in this area is colleagues' reluctance to change and develop
• The rhetoric does not match the reality
• The teaching load is so high there is little time to develop, and when resources are found there is so little money available many resources cannot be bought
• The time I have available I spend on research, to enhance my career; development of teaching practice doesn't count for much when it comes to my own career enhancement
• Time (5 identical)
• Training courses for experienced teaching staff
• Well-publicised sources of funding to which one can apply for the types of financial support needed to develop teaching materials and approaches
• With so many approaches out there it is difficult to identify what might work here, for me. Overviews of what has worked in what subject areas for what topics could be useful
• Yes, we learn all about modern technologies and how iPads and such like can enhance teaching but we’re not actually provided with the resources to use such technology
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