
Training tomorrow's lecturers: Messages from a national survey of recently-appointed Materials Scientists

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Abstract

The UK Centre for Materials Education (UKCME) is one of 24 Subject Centres which form part of the Higher Education Academy, providing discipline-based support to universities and communities of practitioners across the UK.

Since 2001, all new lecturers to UK higher education are required to undertake institutional-led training to prepare them for their teaching (DfES, 2003). In 2005, the Higher Education Academy (HEA) undertook a national evaluation of such mandatory training courses that had been accredited. This was followed a year later by a national survey carried out by UKCME which focused on new lecturers in the Materials discipline. An analysis of these findings will be presented in this paper. The UKCME research has promoted an understanding of the challenges faced by new lecturers, and their perceptions relating to mandatory training. It has also provided an insight into the role played by the Department in terms of support and guidance, and affirmed the value placed by new lecturers on the subject-specific training provided annually by UKCME.

The paper argues that in its current form, central provision is failing to take account of the demands currently being made on Materials lecturers and failing to address their day-to-day needs. In light of this, the paper contends that while the main responsibility for induction and training in teaching and learning must continue to lie with central provision, acknowledgement should be made of the role played by the Department, and greater responsibility should be given to UKCME (as the appropriate national HEA Subject Centre) for those parts of training applicable to the Materials discipline.

INTRODUCTION

Programmes designed to improve the quality of teaching in UK higher education institutions have been in place since the late 1980s. Such provision has gradually grown in importance, with programmes gaining accreditation in the 1990s, initially through the Staff and Educational Development Association (SEDA), and later by the Institute for Learning and Teaching in HE (ILTHE). Currently, responsibility for accreditation lies with the Higher Education Academy (HEA). In recent years, provision has expanded, and there are now in excess of 140 programmes (Prosser et al, 2006). These programmes have gained status following the White Paper: The Future of Higher Education (DfES, 2003), which made such training mandatory for all new lecturers (Trowler and Bamber, 2005).

MESSAGES FROM NATIONAL SURVEYS

HEA Evaluation

Until recently, there has been very little external evaluation of this provision on a national scale, and in the context of the publication of the UK Professional Standards Framework for teaching and supporting learning in higher education (HEA, 2006). However, in 2005 a formative evaluation was undertaken by the HEA through a questionnaire, the target audience being those with strategic and operational responsibility – Pro-Vice Chancellors, and Vice Principals, along with Directors of Educational Development Units. Findings have been published (Prosser et al, 2006).

This evaluation provided valuable evidence relating to current institutional provision, but its nature and scope has meant that there were parts of the jigsaw missing. It had not been possible, for example, to capture, in any detail, differences which could exist between subject disciplines. In addition, nothing had been learned about the role played by academic departments, or by national HEA Subject Centres in supporting and developing new lecturers.

UKCME Evaluation

To address this, a further piece of evaluation has been undertaken by the UK Centre for Materials Education (UKCME). Although national in its remit, the focus has been sharpened; with experiences and perceptions of institutional training provision collected from the participants themselves drawn from a single discipline community – that of Materials Science.

In a number of ways, this UKCME evaluation (Taylor, 2006a) complements that undertaken by the HEA, and this is represented below in Table 1.

Table 1: National External Evaluation of Higher Education Development Programmes for New Lecturers – the approaches compared

HEA Evaluation (2005)	UKCME Evaluation (2006)
Sample drawn from across the higher education sector	Sample discipline-focused
Data collected through questionnaire, mostly presented in statistical format	Data collected through in-depth interviews, generating qualitative evidence
New Lecturer provision independent of the 'working context'; as Departmental 'dimension' is not included	Strong focus on responses in relation to the Departmental context
Institutional focus solely on 'central provision'	Focus also on the part played by academic Departments and by a discipline Subject Centre – namely the UKCME – in developing new lecturers
No account included of Subject Centre provision for new lecturers	Incorporation of the role of UKCME in relation to new lecturers

The evaluation undertaken by UKCME is based on an analysis of responses made by 32 recently-appointed lecturers (see sample below) in 20 higher education institutions across the UK. Evidence was collected from in-depth semi-structured interviews, chosen to engender the 'narration of experience' (Gudmundsdottir, 1996),

with each of the 32 lecturers in the sample. Each interview lasted at least 30 to 40 minutes, with the full programme of interviews held across the UK between May and August 2006.

Within the sample:

- Ten of the institutions visited were traditional research-intensive universities, four were pre-1992 universities, and the remaining six were post-1992 universities
- 19 interviewees were male, 13 female
- Six respondents had been appointed as a new lecturer in 2000/01, a further twelve had started in 2002/03, with fourteen being appointed in 2004/05.
- In terms of training, there was an even split between lecturers who had completed their institution's mandatory 'new lecturer' course (16 participants) and those who were yet to complete (16 participants).
- 14 from the sample had attended one of the UKCME's optional New Lecturer training courses.

Findings of the UKCME evaluation focused on a number of aspects; four of which are considered below. These aspects were determined through content analysis of the interview findings (Altheide, 1987), taking cognisance of issues both of interpretation (Gudmundsdottir, 1996) and of research rigour (Morse and Field, 1995).

RECENTLY-APPOINTED MATERIALS LECTURERS – THE CONTEXT

Prior Experiences of Teaching

Nearly all new lecturers had already pursued an extensive post-doctoral career before engaging on the training. Most had served a long and varied research apprenticeship, often moving between academic institutions at home and overseas.

There was a strong international dimension to this sample, with such lecturers noting in their interviews of the benefits of 'connecting' beyond institutional training to a national Subject Centre:

- Six interviewees born in the UK had gained research experience studying as post-docs or working in industry overseas (mainly in Europe and the USA).
- Nine interviewees were not originally from the UK. They had gained their education and a considerable amount of their research expertise elsewhere (mostly in Europe, but also in South America, China and Australia).

Although interviewees agreed that their appointment to the post of lecturer was largely based on the quality and extent of research undertaken, new appointees had certainly valued the teaching experience they had gained in their post-doctoral years and were able to build on this experience.

In addition, new lecturers have spent a long time on the receiving end of other people's teaching. Not surprisingly, they seek to draw on this experience to influence their own approach. The interviewees revealed that they want to incorporate what the good ones did, and avoid the pitfalls. They seek to deliver teaching sessions that they themselves would like to receive.

The desire to become as good as possible at teaching meant that all the new lecturers interviewed were positive about receiving training to enable them to

improve. The mandatory courses developed by each institution represented the major mechanism for this, and all the interviewees had engaged with this provision.

Doing the Teaching

Some new lecturers were actively concerned about the student learning experience, and were looking at ways to enhance this. There was, however, a strong focus on content.

Teaching was perceived to be synonymous with lecturing, with a powerful drive to 'get the content right'. To do this, new lecturers drew very heavily on lecture notes and from textbooks (and occasionally the Internet). Lecturers were also heavily influenced by their own experience, and by that of other colleagues. Nevertheless, there was a strong desire to personalise the content. New lecturers often rearranged and added to the content from other sources in an attempt to make the lecture more interesting and relevant. There was also a considerable variation in how this material would be presented. This was heavily influenced by personal preference in relation to delivery.

Another important message to emerge was the importance attached to 'learning by mistakes'. New lecturers were able to look back at things that had gone wrong when preparation for a lecture had proved inadequate, when they had put in too much content, when they had been unaware of students' prior experience and capability, and when their own background subject knowledge had been inadequate.

PERCEPTIONS OF MANADATORY TRAINING THROUGH CENTRAL PROVISION

New lecturers were positive about features of central training provision. They identified a number of strengths. Such training can, in their view:

- be stimulating
- provide opportunities to chat with other colleagues and to learn from them
- raise awareness of pertinent educational issues
- shift thinking, and in some cases practice, in relation to promoting active student learning
- develop expertise in relation to course / module development.

Crucially, the institutional course was at its most valuable when it related directly to practice. There were, however, some perceived deficiencies.

The course makes very considerable demands on participants, at a time when they are struggling to find their feet in the Department and are under intense pressure to develop their research. In the light of this, a considerable proportion of the course content was perceived by interviewees as being irrelevant (Taylor, 2006a), given their heavy workloads during their probationary period.

The great majority of participants (28 out of 32, i.e. 88% of the sample) regard the balance struck between education theory and practice as being wrong. Several saw the relevance of exploring theory, but for them the course had 'gone overboard'. It was not that theory had been rejected completely, but to have real value it had to have a clear practical relevance; i.e. had to relate directly to teaching Materials Science. In addition, participants did welcome having their teaching observed with 'subsequent feedback', which did for example feature in some of the mandatory courses.

The case was therefore argued strongly for more direct references to the subject of Materials Science in their teacher training. While new lecturers welcomed opportunities to meet with colleagues in the same position across the university, there was a concern about the heavy reliance on learning through discussion. A lack of experience had limited the new lecturer to engage fully with some of the issues; conversations had often become diffuse rather than focused – a case of ‘the blind leading the blind’. In addition, participants had found to be onerous the demands made on them, given their time and workload pressures, to compile detailed portfolios / assignments as assessed output for the institutional course. Again, the relevance of this was strongly questioned by the majority of the new lecturers interviewed (23 out of 32, i.e. 72% of the sample).

THE ROLE IN TRAINING PLAYED BY DEPARTMENTS

From this UKCME evaluation, the production of high quality research remains the top priority for Departments, who yet remain to be convinced of the value of the current commitment being made by their institution to having a mandatory course for new lecturers (Taylor, 2006a). In some cases, they are reluctant to release their colleagues, given the demands on time and effort the course will bring, most especially in relation to the requirement (varied in nature, though, across HEIs) to compile a reflective diary and a portfolio of practice.

Nevertheless, Departments were regarded by new lecturers as being supportive of teaching development, and with a number of mechanisms operating to enhance teaching quality. These are represented in Table 2. Two of these ‘mechanisms’, the use of mentors and the informal approaches to support are considered in more detail.

TABLE 2: Supporting New Lecturers – Departmental mechanisms

Department Mechanisms	Potential Impact on New Lecturer
Mentors (official or non-official) – mostly internal, but can be external	<ul style="list-style-type: none"> Respond to problems / issues as raised by new lecturers (useful in relation to content) Assimilate into the Department
Informal contacts with colleagues	<ul style="list-style-type: none"> Support / guidance based on experience Can encourage, reassure, build confidence Explore ideas, and question practice
Official schemes to provide feedback (peer / student); Informal observation of teaching	<ul style="list-style-type: none"> Learn by watching Model other approaches Develop personal approach / style

Mentors

‘Official’ mentors were in place in most institutions, with meetings often ad hoc and informal, and usually taking place at the instigation of the new lecturer. The discussions were essentially reactive, regarding what had already happened, usually, in relation to course content and delivery, with problems defined by the new lecturers themselves.

If the internal mentor was not perceived as ‘useful’, then new lecturers sought ‘a more appropriate colleague’; in some cases, drawing on someone from outside of the Department.

Certainly, new lecturers find the support and guidance they get from mentors useful. However, from this UKCME evaluation, the most valuable 'resource' has been colleagues who can be easily accessed on an ad hoc basis.

Informal Support

The following messages emerged from the UKCME evaluation:

- The majority of lecturers regarded their colleagues as 'friendly', 'approachable', 'helpful'
- New lecturers valued highly having more experienced colleagues they could talk to about their teaching
- Most new lecturers wanted to develop 'in their own way', but they also needed someone to whom they could take their problems
- As a result of such contact, new lecturers had learned from their colleagues and had been influenced to try things out
- Sometimes meetings were prearranged, often ad hoc, with the new lecturer seeking an immediate response from their most immediate teaching experience
- Meetings could also be opportunistic – 'a meeting in the corridor to run ideas past someone'
- 'Meetings' can also take place in an informal setting outside the Department – 'teaching could be on the agenda following a bad or a good week'.

Informal discussions with colleagues have been a big influence; and have proved to be one of the most important ways to learn about teaching, and to critically appraise what have been 'acceptable' Department practices. As a result, new lecturers have become 'aware of the practicalities of teaching; they have been influenced to try things out'.

Crucially, what the interviews revealed is the invaluable role played by the Department in supporting new lecturers in their teaching development. Connecting with colleagues enables the new lecturer to set the agenda, to bring their problems and concerns for discussion. They are looking to develop their own style, their own way of doing things, but will get a sympathetic ear and be able to draw on experience and expertise which is relevant and practically applicable, because it relates directly to the discipline and Departmental context.

PERCEPTIONS OF SUBJECT-SPECIFIC TRAINING

A further 'level' of support has been made available by UKCME through a subject-specific training course offered to new lecturers in Materials Science. This has been in place since 2002, and subject to external evaluation (see for example Taylor, 2004 and 2006b), which has made explicit what participants have required of this training, and identified the benefits.

The following summarises what participants have stated that they are looking for from the UKCME training course:

- A structured approach to discussion
- Tight facilitation, to enhance the value and increase the relevance of development through 'interaction'
- No 'disconnected' theory – instead, an emphasis on application
- A focus on real problems

- Help to build expertise in organising and developing teaching courses
- Input from expert practitioners – learning from others who have addressed successfully issues and problems associated with teaching the discipline
- An input from new lecturers – learning from others who are currently working through problems and working their way toward solutions.

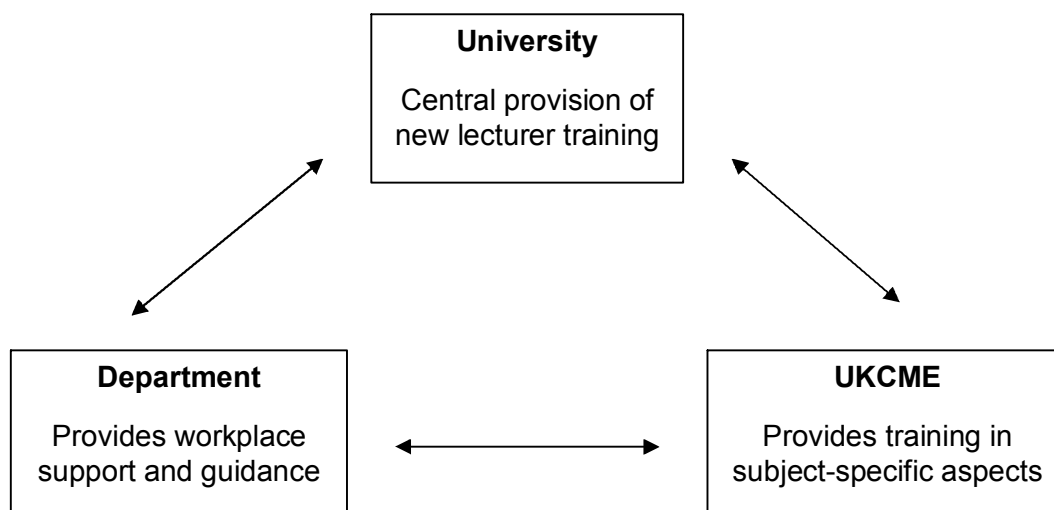
Over the last six years, UKCME has developed content in its training course to address the above. Response has been very positive from participating new lecturers. This is borne out in Table 3, which provides an analysis of the reactions from interviewees within the sample of the UKCME evaluation described in this paper.

TABLE 3: Benefits of the UKCME Training Course to Participating New Lecturers

Benefits	Process
Makes theory relevant	<ul style="list-style-type: none"> • By linking new lecturers with actual practice, and to practitioners currently engaged in Materials Science teaching
Promotes development through social interaction	<ul style="list-style-type: none"> • By linking colleagues working in a similar context, facing similar problems • By encouraging others to share problems • By providing opportunities for new lecturers to learn from others • By engaging in structured discussion
Builds for the future	<ul style="list-style-type: none"> • By providing advice, guidance, reassurance to build up confidence • By widening horizons, providing fresh insights • By promoting networks with participants
Connects with relevant resources	<ul style="list-style-type: none"> • By highlighting what else is on offer from the Subject Centre • By identifying what is available and what has worked • By signposting information and resources through websites

DISCUSSION

This paper has focused on three elements of training / development available to new lecturers in the Materials Science discipline to enable them to enhance the quality of their teaching. The relationship between all these parts is shown in Figure 1.

FIGURE 1: Tripartite Relationship in the Provision of New Lecturer Training

Only one of these elements – offered centrally by the institution – is mandatory, and formally recognised for its contribution by accreditation through the HEA. Participating in this training represents a significant commitment from any new lecturer, and whilst strengths have been identified, there are deficiencies relating primarily to the perceived lack of practical relevance and its separation from the context in which the new lecturer operates (Ferman, 2002; Fanghanel, 2004).

The second component is the Department itself. And while its contribution is hidden and largely unsung, practices especially through the use of mentors and informal collegial support can make a real difference. Although Departments remain primarily committed to research, they have a crucial role to play in new lecturer development; not least because teaching guidance is directly related to the day-to-day world in which the new lecturer is operating (Brew, 2003).

The UKCME evaluation reported in this paper reveals that there is limited connection between central provision and the Department themselves – though, where this does occur, e.g. through schemes of direct observation, impact is positive. While Departments have little appetite for extending their role, evaluation reveals that they could have a greater voice in shaping content and influencing activities, especially in relation to the portfolio / assignments.

The final part in this landscape for new lecturers in Materials Science is the annual training course offered by UKCME. Here, the content has evolved gradually over time, in consultation with the discipline community and through external evaluation. Its strengths are well documented, and the evidence from this evaluation has reinforced earlier messages as to why the approach has proved successful.

It provides a context which is practical and relevant. It encourages problem identification, and promotes problem solving. It brings together new lecturers facing similar problems, but from different institutional contexts, and provides them with opportunities to learn from one another and expert practitioners in their field.

This training course offered by UKCME is in a unique position to support recently-appointed lecturers in Materials Science. It has already forged working relationships

with its subject community in Departments (Taylor and Mannis, 2006), and is now in a position to complement central training provision (as shown earlier in Figure 1). Already practices are in place in the UKCME training that enable new lecturers to identify, explore and reflect upon issues and problems relevant to their own teaching; practices which also stimulate individuals to future exploration and action. By connecting the UKCME training directly to the compilation and writing of the portfolio required by the mandatory course, this could transform what is currently regarded as an onerous demand by new lecturers into something which is relevant and appropriate. Rather than simply work to satisfy a requirement of the course, this would enhance professional capability and contribute to teaching and learning development.

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