

# Advising the Advisor: Professional Development of Junior Faculty

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**Abstract** – Currently there is a growing demand for universities to create rigorous professional development programs aimed at helping their junior faculty rise to their full potential as academic educators and advisors. Such initiatives have to be anchored in the scholarship of education, but additionally need to address a variety of subject-specific issues. The purpose of this paper is twofold. Firstly, it presents an approach to enhancing faculty development offered by an increasing number of universities in the UK where new faculty are required to successfully complete a program in “Learning and Teaching in Higher Education” as part of the criteria to be met for earning tenure. Key aspects, including rationale, objectives, learning outcomes and implementation of the above-mentioned program, are described and, based on further reflection, conclusions regarding the applicability of such a program to the US system are drawn. Secondly, the topic of professional faculty development is considered from a US perspective. Within that context associated activities, including mentoring and junior-senior faculty collaboration in general, are discussed.

*Keywords:* Professional development, mentoring, teaching portfolios, scholarship of education, learning sciences.

## INTRODUCTION

Recently there has been much discussion regarding the capability of junior faculty to successfully advise graduate students with their dissertation projects. In particular, it has been argued that it is time to discard the notion that a first year Assistant Professor is automatically capable of supervising doctoral students. A recent article [Carline, 3] raised various issues related to the advisee-advisor relationship between graduate students and junior faculty. The article also suggests a number of practical steps to improve this relationship and outlines potential ways for newly appointed Assistant Professors to be mentored and supported by their senior colleagues without appearing weak or unconfident to their students. Comments on some of the suggestions presented in [Carline, 3] are outlined below.

- **“New Assistant Professors should sit in on both comprehensive exams and dissertation defenses as an observer immediately upon joining the department.”** – This is very important to young Assistant Professors in order to learn and understand (!) what works and what does not, or how things should or should not be done. It is essential to experience these duties to their full extent. In particular, it is important for young faculty to gain the experience of not doing a perfect job, or even make mistakes, in order to become fully aware of their role and to improve to finally reach their full potential.
- **“New hires should direct their first two dissertation committees jointly with a senior colleague.”** – This seems to be very beneficial to new hires as long as this joint work happens mainly in the background, i.e. is not noticeable to the student. This becomes particularly important if junior and senior faculty agree to jointly direct the student’s research project over a longer period of time prior to dissertation defense. Under certain circumstances, directing a project jointly with a senior colleague might weaken the position of the new hire. And in addition to a potential conflict between junior and senior faculty, as well as their potential consequences with regard to tenure etc., it may also result in the student not knowing whose advice to

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follow. In the worst case a student may finally turn down a junior faculty as advisor and as word spread this may do significant harm to the career development of the younger professor in the long term. However, having a mentor in the background may significantly improve the situation. In this way, new hires would have the opportunity to consult their mentor prior to, and/or after, various commitments if necessary.

- ***“Regardless of graduate-school policy, departments should establish safeguards to ensure that a new faculty member will not take on an advisee in the first year of employment. Limits should be set on the number of advisees an Assistant Professor is allowed before to earning tenure.”*** – Not being allowed to take on advisees in their first year would definitely hold young faculty back with regard to their personal career development. In addition, this would mean not having students to work with on joint publications and/or on setting up research laboratories and conducting corresponding research activities.
- ***“Individual programs should be encouraged to set written expectations and standards for directing a dissertation.”*** – This would be beneficial to students and advisors, as well as the associated department. Having a contract of some type between advisor and student outlining e.g. the minimum/appropriate amount of supervision, resources and administrative support to be provided, the student’s duties and responsibilities (e.g. attending scheduled research meetings, producing a conference paper every six months, a journal paper every year, etc.) would help to enforce what should be good practice already. In addition, it would help to back up the advisor/department against students trying to sue them for inappropriate supervision.
- ***“The student should have a clear understanding regarding when committee members want to see drafts.”*** – This should certainly be the case and probably taken for granted as fixing such dates/milestones can be considered an essential part of general project management. Provisional target dates should be set in the early stages of the project by means of a project plan or a Gantt chart to be agreed by the student and advisor. Once the project has reached a certain stage of maturity, final dates should be fixed well in advance and confirmed by both student and dissertation committee.
- ***“The student and the committee should fix a chronology for completion that everyone agrees to, in order to avoid reaching the defense date and discovering no one is available.”*** – This is somewhat surprising as not doing so simply means not being professionally organized, i.e. insufficient planning. As alluded to above, a project plan or Gantt chart to be agreed to, and signed by both parties would psychologically provide a relatively strong constraint/commitment.

Finally, the authors of [Carline, 3] arrive at the following conclusion: ***“Above all, it is time for programs to discard the notion that a first-year Assistant Professor is automatically capable of supervising a doctoral student’s future.”*** – There is a significant difference between being/not being capable and allowing/not allowing a first-year Assistant Professor to supervise a doctoral student. The capability of a first-year Assistant Professor to advise graduate students, including doctoral candidates, may depend on a number of individual factors such as previous experience in other positions/professions or faculty positions held at universities abroad. Hence the above notion should not be discarded per se. Instead, departments should put more effort into the establishment of effective mentoring policies. And this is perfectly in line with the closing statement of [Carline, 3]: ***“No matter how brilliant or precious the pair, the intervention of a responsible senior mentor and a rigorous department is vital”***.

Although the above suggestions are valuable, they do not address the main issue raised from a holistic perspective. With regard to this, the author would like to report on his experience as newly appointed faculty gained at Durham University in the United Kingdom between 2003 and 2005. Like an increasing number of universities in the UK, Durham offer a program aimed at enhancing faculty development. All newly appointed faculty are required to successfully complete this program in “Learning and Teaching in Higher Education” as part of the criteria to be met for earning tenure. The author believes that this program provides an excellent model of a holistic approach to help junior faculty rise to their full potential as advisors and educators. An overview of this program is presented in the following sections.

## **THE DURHAM UNIVERSITY (UK) POSTGRADUATE CERTIFICATE IN TEACHING AND LEARNING IN HIGHER EDUCATION**

### **Rationale and entry qualifications**

The “Postgraduate Certificate (PGCert) in Learning and Teaching in Higher Education” as delivered at Durham University, UK, between 2003 and 2005 was primarily designed for newly appointed full time academic teaching faculty. The program was developed in response to the requirements outlined in the UK Government’s White Paper “The Future of Higher Education” [The Secretary of State for Education and Skills, 11] regarding the expectation that all new teaching faculty at higher education (HE) institutions would obtain a teaching qualification in accordance with nationally recognized professional standards. Successful completion of this program became part of the compulsory criteria to pass a three-year probationary period and gain tenure afterwards. In addition, the PGCert was also considered suitable for established academics as part of their ongoing professional development [Baume, 1].

The Durham PGCert was based around reflection on a participant’s teaching practice in higher education. In order to achieve the programs learning outcomes, participants had to experience breadth and depth to their HE teaching experience for at least the duration of the program. This had to include: teaching, learner support, design and planning of learning and teaching activities, assessment and/or giving feedback and the development of effective learning environments. It was assumed that all participants had earned at least a bachelors or masters degree. However, most participants had already earned their doctoral degrees and just been appointed to their first faculty position (usually as Lecturer, which is the equivalent of Assistant Professor in the US).

The following paragraphs will give an overview of this program as described in the original course handbook and module guides prepared by Durham University’s Centre for Learning, Teaching and Research in Higher Education (CLTRHE) [CLTRHE 4 – CLTRHE 7].

### **Program aims and learning outcomes**

Overall program aims of the PGCert were defined as follows:

- To provide an initial orientation to the learning and teaching issues that course participants will encounter in their professional teaching role at the University of Durham within the context of their discipline.
- To provide course participants with a learning environment which they can reflect on, and further develop, their professional teaching role and values expressed by the UK professional teaching bodies, namely The Institute for Learning and Teaching in Higher Education (ILTH) and the Staff and Educational Development Association (SEDA).
- To develop in participants an understanding of the factors that influence student learning, and an awareness of the implications that this has for a constructively aligned student-centered approach to teaching.
- To develop an appreciation of the potential role of e-learning within their practice.
- To instill in participants a reflective and innovative approach to their practice that they will take with them throughout their teaching careers.
- To enhance the conceptually underpinned professional teaching practice and the student learning experience at the University of Durham.

Corresponding learning outcomes were defined as follows:

On successful completion of the program participants will:

- Demonstrate knowledge and critical understanding of concepts embedded in the research literature on learning and teaching that are used to differentiate between qualitatively contrasting forms of learning and teaching engagement (for example, deep and surface level learning, study orchestration, conceptual

dissonance, contrasting patterns of motivation, intention and self regulation, teacher-centered and student-centered teaching).

- Be able to demonstrate the professional HE teaching competencies and values expressed and required by ILTHE and SEDA.
- Be able to describe, interpret, evaluate, and reflect on their own teaching practice in a theoretically coherent manner.

### Structure of the program

The program moved through three stages of professional development (of university teaching) foundations, scholarship and reflection, respectively, in three compulsory modules, although these themes were integrated within each module. Full details for each of these modules are taken from the original module guides [CLTRHE 5 – CLTRHE 7]. An overview is given in Table 1 below and brief outlines of individual module aims, learning outcomes, structures and content are presented in the following sections.

Module:	Foundations of Learning & Teaching	The Scholarship of Learning & Teaching	Reflection on Learning & teaching: Portfolio
Credits (UCU)	15	15	30
Content	This module offers an introductory framework for understanding the theory and practice of learning and teaching in HE, whilst also providing support in the development of practical skills associated with teaching and learner support. These generic issues will be considered within the context of the particular learning and teaching context of the University of Durham.	Course members are taken beyond an initial reflection on their teaching practice, towards a deeper understanding of variation in student learning engagement, and of the philosophy of constructive alignment. This in turn provides the theoretical underpinning for participants to conduct research into how their students learn and an assessment of the implications of this for their own teaching.	The development of a learning & teaching portfolio allows for the overall synthesis of research, theory and reflective practice. It provides an emphasis on the development of reflective practice, underpinned by theoretical understanding and serves as an expression and justification of course participants' professional teaching knowledge and values. As such the module provides a structured process whereby course participants will reflect on and document their own practice and values in teaching and the support of learning in HE. This process will lead them to an espousal and justification of their own mental model of learning and teaching in HE.
Delivery	An initial 2 day block of workshops will establish the overall framework. Participants will then be established in peer learning groups in Durham's virtual learning environment duo. In parallel, course participants will be provided with optional opportunities for more practically oriented faculty development sessions, including those offered by Durham's ITS (Information technology Service). A half-day formative assessment event will be scheduled around 8 weeks after the initial workshops. The module is offered twice a year: one beginning in September, and one beginning in April/May.	A series of Wednesday afternoon workshops and seminars, led by institutional, national and international researchers in the field.	The module will commence with a workshop session introducing participants to the role, purpose and expected content of the portfolio, together with modules of reflection. A limited number of plenary workshops will be staged periodically throughout the module, but the portfolio building process will primarily be led by the course participants with the support of their departmental mentors, their peers, and the program team. Participants will be encouraged to use on-line discussion groups to share and discuss their emerging models of learning and teaching. Alongside this, experience gained through course participants' day to day professional teaching practice, and reflection on this, will form the major part of learning on the module.

<b>Assessment</b>	Drawing from peer discussion, formative feedback and from further independent reading course participants will submit a 2,500 word report for summative assessment in which they evaluate aspects of their teaching practice, with a requirement that this reflects at least two of the first four of the ILTHE's 'learning and teaching activities'.	The assignment for this module is research based. Course participants interview three of their own students as a means of constructing their own appreciation of variation in student learning within their own discipline context. An interview protocol is formatively assessed. Summative assessment is through a 2,500 word written report.	Formative assessment will be made up of at least two teaching observations (normally to be conducted by departmental peers). Summative assessment is through a reflective overview (maximum 5,000 words) and a portfolio of supporting evidence.
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Table 1: PGCert Module Overview: Content, Delivery and Assessment

## MODULE 1 – FOUNDATIONS OF LEARNING AND TEACHING

### Rationale

This module was compulsory for the PGCert in Learning and Teaching in HE. It was the opening module of the program, and as such had been designed to enable course members to gain something of a global overview of the issues associated with learning and teaching in HE [Biggs, 2], [Fry, 8], particularly in the context of the University of Durham and the UK. It was also intended to provide some initial practical support in the day-to-day challenges faced by those involved in teaching and the support of learning in HE.

### Aims and learning outcomes

Module aims were defined as follows:

- To provide an overview of teaching and learning practice and theory in HE, within the particular context of the University of Durham, but also addressing the core knowledge and professional values expected by the Institute for Learning and Teaching in Higher Education (ILTHE) and the Staff and Educational Development Association (SEDA).
- To begin to establish in course members a culture of reflection on and evaluation of their own teaching practice, and of the learning of their students.
- To develop familiarity with some of the tools and concepts of e-learning.

Learning outcomes were defined as follows:

Upon successful completion of this module students will:

- Have reflected on their participation in online peer discussions about aspects of their own teaching practice.
- Have evaluated aspects of their current teaching practice within the context of learning and teaching literature (reflecting knowledge and critical understanding of at least two of the ILTHE's first four teaching and learning activities: teaching and the support of learning, contribution to the design and planning of learning activities and/or programs of study, assessment and giving feedback to learners, developing effective learning environments and learner support systems.).

### Structure and content of the module

The module began with a two day block of workshops that covered the following areas:

- **Theory and context:** A brief overview of theories of learning and teaching in HE, together with an exploration of the global, national, institutional and disciplinary (departmental) context that may influence the learning and teaching environment.

- **Planning learning & teaching:** Introducing the theory of constructive alignment (of intended learning outcomes, learning and teaching methods and assessment).
- **Facilitating learning in the classroom:** An overview of a range of techniques that might be employed in large group or small group teaching situations, with an emphasis on approaches that might shift the environment of the classroom from teacher instruction toward student learning.
- **Assessing and providing feedback to learners:** Including: purpose of assessment, principles of assessment, formative and summative assessment, and methods of assessment, assigning groups, peer and self assessment, devising assessment criteria, providing feedback.
- **E-Learning:** An overview of the principles of e-learning, together with a practical workshop.
- **Student support and guidance:** Looking at academic and personal tutoring, and support systems for learner support.
- **Reflecting on learning and teaching:** An introduction to the role of reflection in professional practice, setting the context for the module assignment and for the role of reflection in the program.

Following this workshop course members were allocated to peer discussion groups in the module's e-learning environment 'duo'. It was expected that participants would spend about an hour each week contributing to these discussion boards. These groups provided a semi-structured device and forum for addressing the module assignment, and also offered peer and tutor support. Each course member was asked to bring at least one current issue/challenge/success from their current or future teaching practice to the group for discussion. These issues became then the focus of the module assignment. In parallel with this course members had the option of attending some more practically oriented workshops to help support the development of teaching-related skills. Course members were also given the opportunity to identify other potential workshop topics, and the course team investigated the feasibility of developing and offering these subject to demand and availability of expertise and resources. Midway through the module a half-day formative assessment event provided an opportunity for course members to offer an interim presentation relating to the issues that they had been discussing in their on-line groups. The course team provided feedback, leaving about a month to prepare a written report for formal summative assessment. The duo peer discussion groups continued to operate through this period.

## MODULE 2 – SCHOLARSHIP OF LEARNING AND TEACHING

### Rationale

This second module was also compulsory for the PGCert in Learning and Teaching in Higher Education. It was intended to build on the 'Foundations' module of the program, specifically in terms of providing a focus on student learning from a constructively aligned teaching perspective. Particularly implicit in this perspective was that participants had to become engaged in a largely self-directed (and partly research-based) process of developing and understanding their own 'mental model' of learning and teaching [Ramsden, 9].

### Aims and learning outcomes

The aim of this module was to enable teachers to become scholars of their own students' learning by reconstituting, within their own discipline contexts, and as a practical research assignment, some of the classic theoretical formalizations of variation students' learning. One perspective of teaching was thus framed in terms of creating learning environments that respond to qualitative variation in students' approaches to learning.

Upon successful completion of the module, course participants had demonstrated an ability to:

- Solicit, via an appropriate and formatively assessed interview protocol (as ethically approved by the School of Education Ethics Committee), evidence of variation in the manner in which a sample of three students approach their learning within a discipline context.
- Locate, interpret, and evaluate such evidence in theoretical terms appealing, in particular, to the research literature on conceptions of learning, approaches to learning, and the (qualitative and quantitative) modeling of learning outcomes.

- Consider the implications of the evidence gathered, and its theoretical import, in terms of developing a basis for reflective practice and personal actionable theory.

### **Structure and content of the module**

The content of this module was grounded in the literature on students' experiences of learning, and how their engagement with learning might vary in terms of their own conceptions of learning, prior knowledge, intentions, motives and self regulation, as well as their perceptions of the learning environment, its implicit and explicit demands, and how it is shaped in terms of approaches to teaching. These influences on learning in higher education contexts represented the key concepts as they were referred to in the research literature.

## **MODULE 3 – REFLECTION ON LEARNING AND TEACHING: PORTFOLIO**

### **Rationale**

This module was compulsory for the PGCert in Learning and Teaching in HE. It provided a framework within which course participants could develop and express an overall synthesis of theory and reflective practice [Schön, 10]. It provided an emphasis on the development of reflective practice, underpinned by theoretical understanding, and the resulting portfolio served as an expression and justification of course participants' professional teaching knowledge and values.

### **Aims and learning outcomes**

This module aimed to provide a structured process whereby course participants would reflect on, and document, their own practice and values in teaching, and the support of learning in HE, in the context of their own work-based experience, their research into aspects of their students' learning, and engagement with the generic and discipline/subject specific learning and teaching research literature. This process led the participants to an espousal and justification of their own mental model of learning and teaching in HE.

Upon successful completion of the module, course participants were able to:

- Demonstrate their capacity to design learning and teaching sequences in which there was a constructive alignment between intended learning outcomes, student learning experiences and methods of assessment. This included being able to formulate aims and learning outcomes, to design appropriate learning environments and student support systems, to employ appropriate methods of formative and summative assessment and employ appropriate methods for evaluating the teaching and learning experience.
- Reflect on and document their own professional teaching practice in terms of the requirements of the HE Academy and SEDA.
- Reflect on the role of e-learning within their subject or discipline.
- Describe and provide a theoretical justification for their own mental model of learning and teaching in HE, within the context of their subject or discipline.

### **Structure and content of the module**

Course participants were provided with a brief introduction to the requirements of the portfolio within the workshop program at the beginning of the 'Foundations' module, the point at which they embarked upon the PGCert program as a whole. As such, at one level this module existed in parallel with the other two modules on the program, although it was recognized that it was not the subject of primary scholarly emphasis of course participants until Module 1 (Foundations...) and Module 2 (Scholarship...) were complete, around eight months before the final portfolio was due to be submitted. It was therefore at that point that the more formal induction workshop for this module was offered, which included practical advice on preparing the portfolio, together with material relating to the theory and practice of reflection within the context of professional development. A further workshop was offered before submission, the aim being to refocus activity after the summer break and to provide an opportunity

for participants to share ideas about their emerging mental models of learning and teaching. The expert seminar sessions, formally scheduled as part of Module 2 (Scholarship...) also played a key formative role for the portfolio, and participants were encouraged to use each of these as an opportunity for personal reflection on the validity of certain ideas and concepts about student learning and effective learning environments to which they were introduced, in terms of their relevance for themselves and their teaching. During the course of the module participants could also independently attend, or contribute to, academic development or learning and teaching seminars, workshops and conferences (e.g. organized by HE Academy Subject Centers) – these again provided excellent stimuli for reflection, and potential material for the portfolio. Individual and small group support was available throughout the module from the module leader, however the principal learning was based in the participants’ professional work situation and therefore the PGCert departmental mentors also played a key role here.

### FUTURE PROFESSIONAL DEVELOPMENT OF JUNIOR FACULTY

In the introduction to this paper a number of suggestions regarding potential ways, and departmental policies, to improve the advisor-advisee relationship were discussed. In this regard mentoring was considered a key cornerstone. Subsequently, a more holistic approach to enhancing the development of junior faculty, as being practiced in the UK, was presented. In the following discussion the emphasis is on combining both approaches and suggesting a potential way to help newly appointed faculty develop the professional skills required to become successful scholars, educators, and advisors. An overview is illustrated in Figure 1.

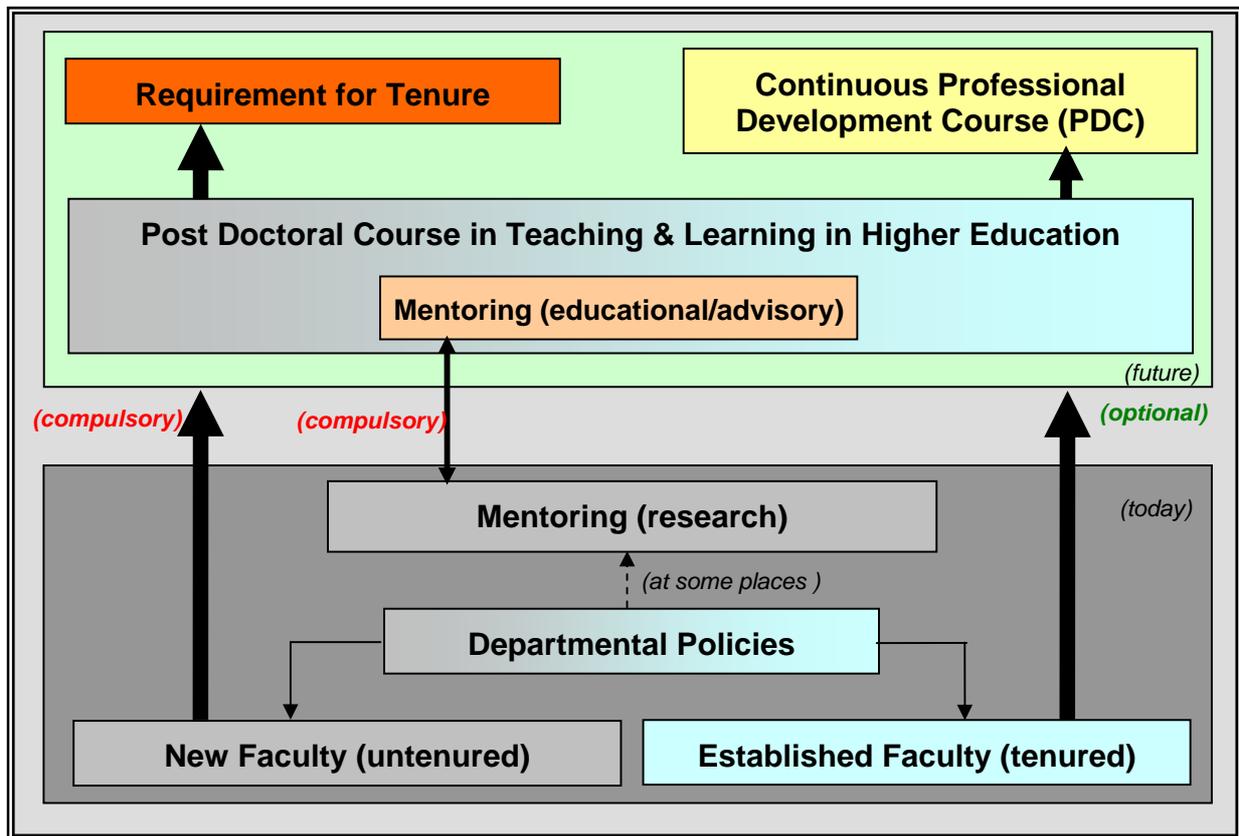


Figure 1: Post-doctoral course and special mentoring as part of requirements for earning tenure.

#### Mentoring

Policies for departmental mentoring have been established within many institutions across the country. However, there is considerable variation between these policies. While some institutions just recommend junior faculty to

'find themselves a mentor', there are others which have developed sound mentoring programs. Furthermore, most institutions seem not to distinguish between mentoring in terms of research, scholarship, teaching/education, and advisory activities at all. At most of the institutions which have mentoring policies for junior faculty in place, new faculty are assigned senior colleagues as mentors as soon as they are appointed.

Since mentoring plays a significant role in an individual's development, there are several ways to improve mentoring policies. Since individuals have different personalities, it appears that from a psychological point of view it would be better not to simply assign a mentor, but instead, new hires should be given a timeframe in which to identify several mentors: one for research related aspects of their career development, one for teaching and advisory aspects, and maybe one for more general or personal issues, such as work-life balance etc. Once the new hire has identified the mentor(s) he or she would like to consult, and the person(s) concerned feel comfortable about mentoring the new hire, department heads may officially assign/appoint these mentors to the new hire. Furthermore, both parties should have the right to request a change of mentor if they feel that for whatever reason their current mentoring relationship is no longer beneficial.

### **Post-doctoral education and mentoring**

An interesting idea would be to introduce a post-doctoral program, similar to the one reported in this paper, into the procedure for obtaining tenure. If such a program became compulsory, all newly appointed faculty would have obtained a teaching qualification in accordance with nationally or internationally recognized professional standards by the time they become tenured/promoted. Long-term, more and more faculty across all engineering disciplines would become familiar with the fundamentals of learning sciences and engineering education, and hence be in a much better position to advise students, develop new courses and programs, etc.

Mentoring would play an integral part of such a post-doc program. In addition to a research mentor, candidates would identify a mentor for educational/advisory issues to support them for the duration of the program. Such a mentor's role could include:

- Encouraging their mentees to ask about departmental strategies or conventions on teaching, assessment, and student supervision.
- Undertaking frequent teaching, supervision, or committee chairing observations, and give and discuss feedback.
- Ensuring that the department is supporting the mentee's participation in the program in appropriate ways.
- Helping to better link or align their mentee's research and teaching activities.
- Offering appropriate information and action if the mentee is failing to fulfill assignments or other coursework required on the program.
- Reviewing the mentee's portfolio when complete and giving feedback.

### **CLOSURE**

Following on from a recent article regarding the capabilities of new Assistant Professors to advise graduate students or doctoral students in particular, this paper presented an overview of a highly successful approach to 'advising the advisors' as being practiced nationwide in the United Kingdom. The author believes that this approach has the potential to serve as a role model and, tailored to the requirements of individual institutions, could be adopted within the US academic system. Research regarding identifying the exact requirements to both adopting such a program (at various institutions or nationwide) and required content and structure is being carried out at present.

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## REFERENCES

- [1] Baume, David, "Continuing Professional Development Series, LTSN Generic Centre, Supporting Portfolio Development, May 2003.
- [2] Biggs, John, "Teaching for Quality Learning at University", The Society for Research into Higher Education & Open University Press (McGraw-Hill Education), 2<sup>nd</sup> Edition, 2003, ISBN 0335211682.
- [3] Carline, Diana B. and David D. Perlmutter, "Advising the new advisor", The Chronicle of Higher Education: Chronicle Careers, 11/5/2006, <http://chronicle.com/jobs/news/2006/09/2006090501c/careers.html>
- [4] Centre for Learning, Teaching and Research in Higher Education (CLTRHE), "Postgraduate Certificate in Learning and Teaching in Higher Education – Course Handbook", Durham University, UK, April 2004.
- [5] Centre for Learning, Teaching and Research in Higher Education (CLTRHE), "Postgraduate Certificate in Learning and Teaching in Higher Education – EDUC40115 Foundations of Learning and Teaching – Module Guide", Durham University, UK, April 2004.
- [6] Centre for Learning, Teaching and Research in Higher Education (CLTRHE), "Postgraduate Certificate in Learning and Teaching in Higher Education – EDUC40215 Scholarship of Learning and Teaching – Module Guide", Durham University, UK, January 2005.
- [7] Centre for Learning, Teaching and Research in Higher Education (CLTRHE), "Postgraduate Certificate in Learning and Teaching in Higher Education – EDUC41030 Reflection on Learning and Teaching: Portfolio – Module Guide", Durham University, UK, 2005.
- [8] Fry, Heather, Ketteridge, Steve and Stephanie Marshall, "A Handbook for Teaching & Learning in Higher Education – Enhancing Academic Practice", RoutledgeFalmer, 2<sup>nd</sup> Edition, 2003, ISBN 0749437995.
- [9] Ramsden, Paul, "Learning to Teach in Higher Education", RoutledgeFalmer, 2<sup>nd</sup> Edition, 2003, ISBN 0415303451.
- [10] Schön, Donald, "The Reflective Practitioner – How professionals think in action", MPG Books Ltd, Cornwall, 1991, ISBN 0857423194.
- [11] The Secretary of State for Education and Skills, UK Government, "The Future of Higher Education", January 2003, <http://www.dfes.gov.uk/hegateway/uploads/White%20Pape.pdf>

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