A model for enhancing assessment and teaching practice at the coalface: Insights from a Fellow-In-Residence Engagement program

Boles, Wageeh and Beck, Hilary
Queensland University of Technology
Corresponding Author Email: w.boles@qut.edu.au

BACKGROUND

Australian universities are currently engaging with new governmental policies and regulations that require them to demonstrate enhanced quality and accountability in teaching and research. These discipline-specific standards articulate the minimum, or Threshold Learning Outcomes, that a higher education institution is expected to address so that graduating students can demonstrate their achievement to their institution, accreditation agencies, and industry recruiters. This impacts not only on the design of Engineering programs, but also on the preparation of academics to engage with these standards and implement them in their day-to-day teaching practice.

PURPOSE

It is hypothesised that, compared with conducting workshops, having a nationally recognised academic staying in residence at an institution, can lead to better engagement and enhanced practice. This paper describes a Fellow-In-Residence Engagement (FIRE) program as a more effective model for enhanced academic staff engagement and development.

DESIGN/METHOD

A case study approach is used in this investigation, where the Fellow worked with five different universities around Australia. At each location, the Fellow focussed on aligning assessment with program and course objectives, developing evidence-based assessments (as a step towards addressing Academic Standards), and mentoring of academics (especially early- and mid-career ones).

RESULTS

Interviews and comments as well as written communications with individuals and groups provided insights on the impact the program had at the participating universities. Further insights have also been obtained using feedback evaluation forms. These indicate specific and actual changes, solid plans being made and implemented with testimonies from individuals and leaders.

CONCLUSIONS

Based on the feedback received, and the changes observed during the implementation of the FIRE program, the model appears to be a promising way of conducting academic staff development, and for realising a more lasting impact on enhancing teaching and assessment practices, leading to better achievement of student learning outcomes. The model could also be seen as a practical approach for better utilising the recognised expertise within Engineering Education and the Higher Education sector.

KEYWORDS

Academic standards, assessment, staff development, fellow-in-residence engagement program

ACKNOWLEDGEMENTS

Support for this research has been provided by the Australian Government Office for Learning and Teaching, through a National Teaching Fellowship awarded to the first author. The views in this paper do not necessarily reflect the views of the Australian Government Office for Learning and Teaching. The authors wish to thank all colleagues who facilitated the implementation of this work at the participating universities.

Introduction

Australian universities are currently engaging with new governmental policies and regulations that require them to demonstrate enhanced quality and accountability in teaching and research. The development of national academic standards for learning outcomes in higher education is one such instance of this drive for excellence. These discipline-specific standards articulate the minimum, or Threshold Learning Outcomes, to be addressed by higher education institutions so that graduating students can demonstrate their achievement to their institutions, accreditation agencies, and industry recruiters. This impacts not only on the design of Engineering courses (with particular emphasis on pedagogy and assessment), but also on the preparation of academics to engage with these standards and implement them in their day-to-day teaching practice on a micro level.

This imperative for enhanced quality and accountability in teaching is also significant at a meso level, for according to the Australian Bureau of Statistics, about 25 per cent of teachers in Australian universities are aged 55 and above and more than 54 per cent are aged 45 and above (ABS, 2006). A number of institutions have undertaken recruitment drives to regenerate and enrich their academic workforce by appointing capacity-building research professors and increasing the numbers of early- and mid-career academics.

This nationally driven agenda for quality and accountability in teaching permeates also the micro level of engineering education, since the demand for enhanced academic standards and learning outcomes requires both a strong advocacy for a shift to an authentic, collaborative, outcomes-focused education and the mechanisms to support academics in transforming their professional thinking and practice. Outcomes-focused education means giving greater attention to the ways in which the curriculum design, pedagogy, assessment approaches and teaching activities can most effectively make a positive, verifiable difference to students' learning. Such education is authentic when it is couched firmly in the realities of learning environments, student and academic staff characteristics, and trustworthy educational research. That education will be richer and more efficient when staff works collaboratively, contributing their knowledge, experience and skills to achieve learning outcomes based on agreed objectives. We know that the school or departmental levels of universities are the most effective loci of changes in approaches to teaching and learning practices in higher education (Knight & Trowler, 2000). Heads of Schools are being increasingly entrusted with more responsibilities—in addition to setting strategic directions and managing the operational and sometimes financial aspects of their school, they are also expected to lead the development and delivery of the teaching, research and other academic activities. Guiding and mentoring individuals and groups of academics is one critical aspect of the Head of School's role. Yet they do not always have the resources or support to help them mentor staff, especially the more junior academics.

In summary, the international trend in undergraduate engineering course accreditation to move to demonstration of attainment of graduate attributes poses new challenges in addressing academic staff development needs and the assessment of learning.

This paper will give some insights into the design and implementation of a Fellow-In-Residence Engagement (FIRE) program, as a model for achieving better engagement of academics with contemporary issues and effectively enhancing their teaching and assessment practices. It will also report on the program's collaborative approach to working with Heads of Schools to better support academics, especially early-career ones, by utilizing formal and informal mentoring.

Further, the paper will discuss possible factors that may assist the achievement of the intended outcomes of such a model, and will examine its contributions to engendering an outcomes-focussed thinking in engineering education.

Teaching and pedgogic training

The importance of good teaching is highlighted by research that suggests that learning happens at a deeper and more sustainable level when teaching is of a high calibre (Dunkin and Precians 1992). Knowledge acquired at an expert level by a seasoned researcher must be translated into a form appropriate for undergraduate or graduate acquisition (Kinchin & Hay 2007). Kane, Hambrick and Tohulskil (2004) distilled these attributes from the literature into five dimensions of tertiary teaching: Subject knowledge; Skills (including communication skills and preparation); Interpersonal relationships (respect, caring for students' needs, and mentoring); Research/teaching nexus (research and the pursuit of excellence) and Personality (characterised by enthusiasm, enjoyment, sense of humour, approachability, and passion for their work). These five dimensions are arranged like spokes of a wheel with reflective practice as the hub (Kane et al 2004, p. 284). The practice of engaging in reflection in order to integrate the five dimensions of quality teaching was validated through the results of an empirical study.

Not all of the above qualities can be improved simultaneously, but they can be fostered through development programs that focus on improving teaching and learning. Although such academic staff development programs can be found at many universities, participation in them is often low except in countries where it is mandatory (Groccia, 2010, p. 13). According to Felder, Brent, and Prince (2011), this is because academics whose students perform inadequately do not acknowledge that the quality of their teaching may have anything to do with it. If their students receive mediocre grades and/or give teachers low ratings, they argue that the students are incompetent or unmotivated, or that, as instructors, they maintain rigorous standards and high ratings only go to easy graders. Additionally, many academics are unaware that alternatives exist to the traditional lecture-based approach with which they were taught. As long as they believe that their teaching is appropriate and that poor student performance and low teacher ratings only reflect deficiencies in the students, they have no incentive to get involved in pedagogic training. Felder, Brent and Prince (2011) also add that an exacerbating factor is that academic staff development is often provided by social scientists, and hence, in the absence of discipline-specific examples, it is easy for engineers to dismiss program content as irrelevant to their courses subjects, students, and problems (Felder et al, 2011).

Effectiveness of workshops

Engineering academics, and especially the early- and mid-career ones face very high expectations in research performance and increasingly substantial responsibility for producing a workforce of competent professionals. Many of these academics have relatively little teaching experience or teaching skills, and need support. Thus, it is important not only to appropriately design the engineering courses and address the manner in which they are delivered (with particular emphasis on pedagogy and assessment), but also to address the preparedness of academics to engage with the academic standards and implement them in their day-to-day teaching practice.

With this in mind, many universities provide staff with an opportunity to participate in introductory programs on teaching (ECARD program at). These programs usually provide an overview of teaching and learning theory and practice and assist the academics to develop basic teaching strategies to deliver lectures, teach in small or large groups and assess student learning.

The types of programs and the breadth of theory and practical assistance vary between institutions. However, for many new academics, such programs have to be squeezed into a schedule that is dominated by research agendas, administration duties and the actual preparation and delivery of lectures. Some may question whether these programs are worth their time (Jacob and Goody, 2002).

The work of Jacob and Goody (2002) is described in some detail here because of its relevance to the model introduced below. They conducted a study for evaluating a series of workshops implemented as part of an introductory development program called Foundations of University Teaching and Learning at the University of Western Australia where all new academic staff are expected to participate. General demographic information was collected and questions were asked that required the participants to reflect on their experience with the program and the applicability of its content.

Jacob and Goody (2002) relate that in their study, participants were asked which semester they had participated in Foundations, their faculty affiliation, the number of years teaching experience they had, how much teacher training they had prior to Foundations, and why they enrolled in the program. They were asked further questions about their post-Foundations teaching experiences. Participants were asked to assess how much Foundations had enhanced their teaching practice and to identify specific activities that have aided them or they have used in their own classrooms. Further they were asked if they had encountered any significant barriers to implementing the teaching and learning strategies they had learned and if so, to identify those barriers. Conversely, the survey asked participants to assess whether they thought they had been able to influence the quality of teaching in their school, and to identify the teaching and learning development activities they had participated in, and the frequency and nature of contact they had with other Foundations participants.

In addition to the survey, feedback forms completed by all participants at the end of a workshop and follow-up sessions were scanned for any relevant comments that might contribute to the information collected (Jacob and Goody, 2002).

As an outcome of this study for evaluating the effectiveness of the staff development programs examined, it is reported that it appears that what is missing is the provision of some form of evaluation of the transfer of learning to the participants teaching practice. They found that there is no follow-up in the medium to long-term to check the extent to which participants have implemented strategies into their teaching, nor is there any formal opportunity for them to reflect on their progress (Jacob and Goody, 2002).

Fellow-In-Residence Engagement (FIRE) program

The drive for quality should not stop at the mandates of governments or external quality assurance organisations, such as TEQSA. For lasting positive enhancements, a continuous quality improvement system needs to be put in place in such a way that it is owned and driven by those who can effect change at the local level (Harvey, 1996; Knight & Trowler 2000; Newton, 2000). It is therefore important to encourage and support academics at the coalface, through various approaches.

Purpose

Given the limitations of teaching workshops (Jacob and Goody, 2002), it is anticipated that having a nationally recognised academic staying in residence at an institution, can lead to better engagement and enhanced practice. This claim led to the design and trialling of a Fellow-In-Residence Engagement (FIRE) Program. The FIRE program was implemented within the framework of a National Teaching Fellowship aiming to achieve the following objectives:

- Assist the higher education sector in moving to the next stage of academic standards development, with a focus on mapping program outcomes onto appropriately aligned assessment tasks.
- Identify and evaluate relevant international and Australian initiatives for effective teacher engagement and curriculum reform, in the light of research findings and in the context described above.

- Establish a developmental model for identifying, trialling and evaluating assessment tasks capable of providing evidence of students' achievement of program outcomes.
- Facilitate the development of academics in teaching as well as research, with attention to the needs of early- and mid-career academics in general, and those of women academics in particular.
- Build a framework for establishing authentic, collaborative, outcomes-focused thinking through advocacy and support mechanisms, working as a shadow mentor with Heads of Schools as they mentor their academic staff, and
- Provide an enhanced means of engaging academic staff in target schools through a Fellow-in-residence engagement program.

It was envisaged that the FIRE program could be utilised as a model for achieving better engagement of academics with contemporary issues and effectively enhancing their teaching and assessment practices.

Methodology

The objectives and activities of the FIRE program have been developed rigorously within an established action–research approach to educational reform called professional practice research. This is defined as 'critically-informed, politically-activist and action-oriented' investigations in a range of educational settings, systemic priorities and policies and global contexts (Macpherson, Brooker, Aspland and Cuskelly, 2004 and 2010). The approach is critically-informed because it situates itself within global and national trends in Engineering education; politically-activist in being an agent of curriculum change; and action-oriented in involving Heads of Schools as key mentors of Engineering education academics.

The FIRE program was implemented at five different academic institutions around Australia (ECU, JCU, QUT, Adelaide, and James Cook universities). It consisted of two rounds of visits to each of these institutions, with each visit lasting for one to two weeks. The activities conducted at each of the participating universities were determined mainly by the objectives of the Fellowship program. However, the details were discussed with each institution with a view to maximise relevance and benefit to each particular university.

Two main areas were considered: Curriculum alignment and evidence-based assessment, and; academic mentoring. So far, only the first round of the FIRE program visits to the participating institutions have been completed and will now be described and discussed.

Curriculum alignment and evidence-based assessment

During the first visit, a seminar was presented with focus on aligning assessment with program and course objectives, and developing evidence-based assessments (as a step towards addressing Academic Standards), This seminar, which was also open to other universities in the region, provided an opportunity for the participants to become familiar with the fellowship objectives and those of the FIRE program. The seminars were presented as early as possible during the first visits in order to facilitate meeting personally with members of the university leadership and the academics of the universities and faculties.

Following this, the fellow was available for drop-in sessions with academic staff and leaders as individuals or in small groups. He worked closely with Heads of Schools, and conducted one-on-one discussions with academics, small group round table discussions, mini-workshops with small groups of academics, and program and discipline leaders. At some

universities discussions were also held with Leadership advisory groups and casual (part-time) academic staff.

While the main focus points are evidence based assessment, and mentoring, these sessions were opportunities for discussions on specific matters determined by individual academics. The focus of the one-on-one sessions was on selecting certain course objectives, linked to the Engineers Australia Stage 1 Competency Standards, and the design of assessment tasks capable of providing evidence of student learning. The following is a list of the possible issues suggested for discussions and exploration:

- How can assessment be used for learning?
- Designing specific assessment tasks,
- How can classroom activities encourage student learning?
- What are possible resources (websites, papers, books, packages, etc.)?
- What are teaching for learning needs and possible ways to meet them?
- Networking opportunities,
- Being part of a learning community,
- How to achieve steady enhancement without too much overhead, and
- Ideas on balancing teaching and research, etc.

In addition, meetings with senior academic leaders were arranged either prior to the commencement of the FIRE program or during the visits. Among those met were teams possibly consisting of the Assistant Dean Learning and Teaching and Program Coordinators, or equivalent; A representative from the university's Staff development unit or equivalent; A small number of academics, with representation from the professoriate.

During the visits, meetings were also held with senior university leaders and administrators, beyond the engineering schools and faculties. The purpose of these meetings was to create an environment of shared and consistent goals and objectives both vertically with all ranks of the university hierarchy, and horizontally at the school level among the engineering academics at the coalface.

Academic mentoring

One of the major issues targeted by the FIRE program was exploration of available mentoring programs and how they are achieving their objectives. This issue was addressed in addition to academic standards and the design of assessment that provide evidence of learning. So, what is mentoring and why do the Heads of School's have a key role in achieving its objectives?

While there exist many definitions of mentoring, in this paper we base our definition on the one given in Dhiem, (2010). Mentoring is a reciprocal and collaborative learning and development relationship between an academic mentor and a mentee. It aims to support mentees to plan and realise learning goals, compile a portfolio of evidence of achievement and enhance critically reflective academic practice. This is realised through guidance, direction, feedback, dialogue, reflection, inquiry and action.

The literature shows that the school or departmental levels of universities are the most effective loci of changes in approaches to teaching and learning practices in higher education (Knight & Trowler, 2000). Heads of Schools are being increasingly entrusted with more responsibilities. In addition to setting strategic directions and managing the operational and sometimes financial aspects of their School, they are also expected to lead the development and delivery of the teaching, research and other academic activities. Guiding and mentoring individuals and groups of academics is one critical aspect of the Head of School's role. Yet they do not always have the resources or support to help them mentor staff, especially the more junior ones. The mentoring role of such leaders is crucial in

creating and maintaining authentically collaborative outcomes-focused thinking among engineering academics. Therefore, during the visits, the fellow acted as a shadow mentor assisting the Heads of Schools and fostering a culture of collegiality and care.

At each of the participating institutions, the fellow met with a number of early- and mid-career academics. They were encouraged to engage in discussions and explore ideas, prompted by the open invitation offered at the seminar presentation, the Heads of Schools, or their own colleagues after meeting with the fellow.

It must be pointed out here that the learning and benefits from these discussions were two-way and the fellow has gained much insight and a better understanding of the dynamics of the university environment, as seen by these relatively new-comers to the system. The discussions provided a wonderful picture of enthusiastic academics eager to improve and contribute. They shared their experiences of how care in teaching brings great levels of satisfaction, in spite of the various demands on their time and the ever-increasing expectations of research performance.

This also highlighted the importance of providing mentoring to these academics, as a vital mechanism to support and help them choose and navigate their career paths with confidence.

Discussion

Taking established, researched, and tried and tested pedagogical techniques to academics at the coalface, is a primary objective of the FIRE program. While there are common issues to address in learning and teaching, individuals have their own needs and challenges. These are best addressed also at an individual level.

The FIRE program provided the opportunity for discussions with individuals, over an extended period of time, with flexibility in meeting times and durations. This is a distinct feature of the program, as compared with the workshops that run for a few hours after which the facilitators would not be available for follow up.

Another advantage of the FIRE program is that it provided opportunities for the Fellow to experience the local environment and influence it. While the scheduled meetings with individuals and groups addressed the pedagogical aspects, the informal discussions and interactions allowed deeper connections and exchange of views and experiences.

Of particular importance were the discussions with the Heads of Schools. These allowed the Fellow to work with them as a shadow mentor. They also highlighted the specific learning and teaching issues of interest to the schools. These included strategic alignment of program and course objectives; the alignment of assessment with course objectives; demonstration of student learning for accreditation purposes; and mapping of graduate capabilities of the universities with those of Engineers Australia's Stage 1 Competency standards.

The levels of engagement observed so far are a strong indication of how well the FIRE program has been received. Excluding one university, where the FIRE program is currently well underway, 79 different meetings, and 16 repeat meetings were held across the collaborating universities. Each of these meetings lasted between half an hour to one and a half hours.
In addition, small group discussions or mini-workshops involving 5 to 10 participants lasted between one and three hours. These were either leading to individual discussions or

resulting from them and organised as a follow up. This is another feature of the FIRE program demonstrating a much deeper level of engagement. Heads of Schools and Assistant Deans were kept informed of the important issues arising from the discussions, either by being directly involved or through briefing sessions.

A number of factors are thought to contribute to how well staff development modelled on the FIRE program can achieve their intended outcomes. In this case, the starting point came from climate readiness. The drive for quality both in research and teaching, the ALTC standards project, the Australian Qualifications Framework (AQF), and the Tertiary Education Quality and Standards Agency (TEQSA) have meant that the participating institution already had plans that coincided with those of the FIRE program.

The program received support from the top leadership of the participating universities at the levels of Vice Chancellors, and Deputy Vice Chancellors, Deans, and very importantly, the Heads of Schools. This ensured not only the preparedness of the institutions but also its chances of having sustained success beyond the life of the FIRE program. The extent of how such a program can create lasting positive changes rely heavily on the Heads of Schools, where direct interaction with academics and students takes place.

Since engineering faculties and schools operate within a network of national bodies and associations, the support and connection with those entities ensures national relevance. Therefore, various ways of connecting with Engineers Australia, the Australian Council of Engineering Deans and relevant national projects form a critical success factor.

The fact that the FIRE program was part of a nationally funded fellowship gave it the credibility thought to be necessary for engaging academics. Academic staff development programs run by professional development staff at each university have a very important role to play. However, the FIRE program model has the advantage of being facilitated by an engineering academic. This makes participating academics more likely to engage with it, offering many opportunities to explore actual discipline based learning and teaching issues.

The program organisation, scheduling and logistics formed a vital and critical factor in making all academic activities possible. From the fellowship program management side, the enthusiastic, sincere and professional support provided by the Fellowship project manager, paying attention to all the details, provided the backbone of all activities. This was complimented by the excellent quality of the professional support offered by the schools' administration staff at each of the participating institutions.

Conclusions

This paper presented a model for enhancing assessment and teaching practice at the coalface through a Fellow-In-Residence Engagement program. The model has a set of distinctive features that make its likely to have a long term impact. The availability of the Fellow for extended periods (1 – 2 weeks) provided more opportunities for discussions, reflection and informal interactions.

The extended period of residency also made it possible to meet with individuals and groups, with a wide range of ranks, roles and responsibilities, thus maximising the impact of the FIRE program on the whole institution. This was done with a conviction that effecting change at the coalface cannot be sustained without strong buy-in and support from the leadership.

While this paper reported on the first round of residencies in four of the five participating institutions, more insights will be available at the time of the conference.

References

Australian Bureau of Statistics, (2006)

Diehm, Rae-Ann. (2011). A Mentoring Program Framework for the Graduate Certificate in Academic Practice: A Review of the Literature. Brisbane: Queensland University of Technology.

Dunkin, M. J. & Precians, R. P. (1992) Award-winning university teachers' concepts of teaching. Higher Education, 24 (483 - 502).

Felder, Richard, Brent, Rebecca and Prince, Michael J. (2011). Engineering Instructional Development: Programs, Best Practices, and Recommendations. Journal of Engineering Education 100. 1 (Jan 2011): 89-122.

Groccia, J.E. (2010). Why faculty development? Why now? In A. Saroyan, and M. Frenay. (Eds.). 2010. Building teaching capacities in higher education: A comprehensive international model. Sterling, VA: Stylus

Harvey, L. (1996). Editorial, *Quality in Higher Education,* 2(2), 89-903.

Jacob H & A Goody, (2002), Are Teaching Workshops Worthwhile? Proceedings of the ICED 2002 conference: Spheres of Influence: Ventures and Visions in Educational Development, Perth, Western Australia.

Kane, M. J., Hambrick, D. Z., Tuholski, S. W., Wilhelm, O., Payne, T. W., & Engle, R. W. (2004). The generality of working memory capacity: A latent-variable approach to verbal and visuospatial memory span and reasoning. Journal of Experimental Psychology: General, 133, 189– 217.

Kinchin, I. M., & Hay, D. B. (2007). The myth of the research-led teacher. Teachers and Teaching: Theory and Practice, 33(1), 43-61.

Knight, P., & Trowler, P. (2000). Department-level cultures and the improvement of learning and teaching. Studies in Higher Education, 25(1 25(1), pp. 69–83.

Macpherson, I., Brooker, R., Aspland, T., & Cuskelly, E. (2004)., Constructing a territory for professional practice research: some introductory considerations. *Action Research, 2,* 89–106.

Macpherson, I., Brooker, R., Aspland, T., & Cuskelly, E. (2010). Constructing a territory for professional practice research: Some introductory considerations. In *Action research in education: Fundamentals of applied research,* Vol. 1, Sage Publications Ltd. (ISBN 9781848606838)

Newton, J., (2000)., 'Feeding the beast or improving quality? Academics' perceptions of quality assurance and quality monitoring', *Quality in Higher Education*, 6(2), pp. 163ff.

.