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

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

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.

METHOD

A case study approach is used in this investigation, where the Fellow (the first author) 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 (FIRE) program

ACKNOWLEDGEMENTS

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 towards the 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 conceptual design, implementation and empirical effectiveness to date, of a Fellow-In-Residence Engagement (FIRE) program. The program is proposed 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.

Pedagogic training and its Effectiveness

Engineering academics, 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 QUT). 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).

Rust (1998), presented a review of the literature and conducted a study on the effectiveness of a number of workshops conducted over a period of four months, using qualitative and quantitative data. The study suggests that conducting workshops can be useful of staff development and the evaluation data collected from participants can be used to gauge impact. This has been presented with a cautionary note indicating that the sample size used in the study was small, and that the characteristics of how workshops are run, the topics they cover can also influence the outcomes. Most of the studied workshops focussed on practice rather than concepts and analysis.

The authors suggest that comparative analysis of the usefulness of workshops need to consider workshop duration, the topics covered, whether attendance is voluntary or compulsory, and whether attendees consist of similar or different disciplines.

As an outcome of a study for evaluating the effectiveness of some staff development programs conducted by Jacob and Goody (2002), they 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).

Stes, Clement and Van Petegem (2007) conducted an exploratory study for evaluating the long-term individual and institutional impact of a training program for academics at the University of Antwerp in Belgium. They aimed to find out if the program resulted in changes in their teaching practice and if there were effects at the institutional level. They concluded that the data they collected suggested that the contextual elements have greatly influenced the long-term impact of the training program.

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.

Given that the studies presented above demonstrated that there are varied levels of success and impact of academic staff development workshops, the following section introduces a

complementary approach designed to facilitate more engagement of academics with pedagogic training activities.

Fellow-In-Residence Engagement (FIRE) program

The design and trialling of a Fellow-In-Residence Engagement (FIRE) Program is built on the premise that having a nationally recognised academic staying in residence at an institution can lead to better engagement and enhanced practice. The first author proposed the FIRE program 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 academic institutions. These have been selected to represent the diversity of university types around Australia: ECU (New Generation), JCU (Regional), QUT (Australian Technology Network, ATN), Adelaide (Group of Eight), and La Trobe (1960's -70's). Being in Western Australia, ECU was also selected to represent the geographical spread of the universities.

The program consisted of two rounds of visits by the Fellow (first author) to each of these institutions, with each visit lasting for one to two weeks. The second author provided the critically important organisation, coordination and technical and administrative support for the

program. 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 maximising relevance and benefit.

Two main areas were considered: Curriculum alignment and evidence-based assessment, and; academic mentoring. The FIRE program 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 accreditation criteria, 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?
- 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 the Fellow 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 second visits, the Fellow met with Heads of Schools, Assistant Deans, as well as individual and small groups of academics. These provided opportunities for follow up and consolidation. At each institution, a workshop was also conducted, focussing on practical implementation of an assessment design process, and addressing the Stage 1 Competency standards.

As part of the FIRE program, 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. During the first round of visits only eighty-one different meetings, and eighteen 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 were held. These were either leading to further 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, through their direct involved or briefing sessions.

As indicators of the impact of the FIRE program, formal and anecdotal feedback was obtained. At the conclusion of each workshop, feedback was obtained from participants. Additionally, formal feedback and comments were obtained from Heads of Schools, Assistant Deans, and some of the academics that participated in individual discussions. The initial analysis of this data show very strong support for the program, and provides evidence of impact at school and individual academics' levels. Further and detailed analysis is underway.

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.

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, thus taking it beyond a networking context to a structured program of professional development and mentoring. 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 makes it likely to have a long-term impact. The availability of the Fellow for extended periods of up to two 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.

The anecdotal evidence obtained so far gives confidence in the validity of the FIRE program as a model for staff development, with a stronger positive impact than relying only on workshops. A cursory examination of the formal evidence of impact obtained from key participants seems to also agree with this conclusion. Further analysis of the FIRE program and its impact, in view of the existing literature is currently underway.

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

Knight, P., and 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.

Rust, C. (1998), "The impact of educational development workshops on teachers' practice," International Journal for Academic Development, Volume 3, Issue 1.

Stes, A., Clement, M. and Van Petegem, P., (2007). "The Effectiveness of a Faculty Training Programme: Long-term and institutional impact," International Journal for Academic Development, Volume 12, Issue 2.

Copyright statement