

Establishing Industrial Advisory Boards Using a Practice Transfer Model

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Abstract

The Faculty of Mathematics and Physical Sciences at the University of Leeds established discipline-based Industrial Advisory Boards (IABs) with the support of the National HE STEM Programme. The Faculty was advised by the University of Sheffield, which had also recently established an IAB under the National HE STEM Programme. Using a Practice Transfer Adoption Scheme (PTAS), the University of Sheffield was able to share its experience and facilitate the process at the University of Leeds and at a number of other institutions nationally.

Separate advisory boards were established in the Schools of Chemistry, Mathematics and Physics, although there is some overlap in membership. Each of the IABs considers both teaching and research activities. There is a strong focus on developing a better understanding of skills development within the undergraduate programmes to meet the needs of employers. Industrial projects, case studies and guest lectures have all enhanced the curricula and provided students with some commercial insight. Opportunities for interaction between the board and current students, such as networking events, are being developed and piloted.

Practice Transfer Adoption proved to be a very effective and efficient model for initiating and implementing change. Through the sharing of good practice and mentoring, timescales for implementation were significantly shorter than the timescales required to implement new initiatives without a PTA model.

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Introduction

In recent years there has been an increased focus on the graduate destinations of students which, in turn, has focused attention on how well a degree programme prepares students for the world of work (CBI 2009).

There are well-documented and well-informed lists of skills and attributes that employers seek in graduate recruits, both in generic terms and from specific discipline areas (Hanson & Overton 2010, Inglis *et al.* 2012, Parker & Pulham 2012). Many of these skills can be built into the curriculum and much work has been focused on this area in recent years. However, another key determining factor for success in graduate job applications is whether students are commercially aware and have career focus (Wilkinson & Aspinall 2007, Thambar & Gilworth 2013). The most effective way for students to become commercially aware is for them to have some exposure to industry. There are well-documented benefits for students who spend time on an industrial placement (Bowes & Harvey 1999), but it is important that all students have access to opportunities to experience industry and commerce. Having employers who are willing to inform and contribute to the curriculum and provide networking opportunities for students can be invaluable in this endeavour. Many students are unaware of the vast range of career opportunities available to them as graduates of their discipline, and so having role models who can inspire their decision-making can be vital in helping students to develop their career focus (Baxter & Waldock 2012, Begum & Ye 2013).

The University of Leeds recognised that an employer's perspective was vital to the business of the organisation, and particularly with respect to student education. The connection between academia and industry was considered to be best established at a local/discipline level, as generic information could easily be obtained from alternative sources in terms of what employers typically look for in graduates (Saunders & Zuzel 2010, CBI 2012, 2013).

The Faculty of Mathematics and Physical Sciences (MaPS) consists of four schools: Chemistry; Food Science and Nutrition; Mathematics; and Physics and Astronomy. The School of Food Science and Nutrition already had a long history of working with industry, and had an established Industrial Advisory Board (IAB). The discipline has a very clear link to a recognised industrial sector and this, in turn, has paid dividends in terms of both graduate prospects and industrial research collaborations.

However, for the other three schools, whilst there were examples of interaction with industry in relation to both teaching and research, there was no

formal connection at a school management level. The creation of discipline-based IABs with support from the National HE STEM Programme sought to formalise and strengthen these links and to build new ones with employers and alumni for the benefit of the school and its students.

The IABs in each case had two broad aims:

1. to inform curriculum design to enhance the employability of graduates;
2. to increase external involvement in research, particularly with a view to the impact agenda associated with the UK's Research Excellence Framework.

With support from the National HE STEM Programme, the University of Leeds benefited from advice and mentoring from the University of Sheffield through an initiative known as the Practice Transfer Adopters Scheme. The support from the National HE STEM Programme was particularly timely as it coincided with a university directive to establish advisory boards at either a school or faculty level.

The Practice Transfer Adopters Scheme

The National HE STEM Programme was established in 2009 by the Higher Education Funding Councils for England and Wales with the aim of enhancing the way in which universities recruit students and deliver programmes of study within the science, technology, engineering and mathematics disciplines. The Programme set itself a challenging series of objectives (Grove 2013), several of which related to sharing effective practice and developing, then transferring more widely, innovative models and programmes of activity.

To share effective practice, both that which already existed and that which had been developed through the Programme's projects and activities, several formal mechanisms were established, each with the common feature of sharing through partnership and collaboration. During the final year of the Programme's operation (2011/12), a focused opportunity was offered that allowed universities which had not previously participated in a particular project, but now wished to do so, the opportunity to 'adopt' the original intervention for themselves. This Practice Transfer Adopters (PTA) Scheme was deliberately designed to be an active form of dissemination, or uptake, resulting in the outcome of an activity originally developed in one university then being visibly embedded within the practices of another. Recognising that for any such transfer of practice to be successful it was likely the adopting university would need to modify the activity, for

example to allow alignment with institutional frameworks or processes, an adaptation phase was incorporated into the timeframe to allow customisation to meet specific individual institutional needs.

The support framework for the PTA Scheme consisted of three elements: financial resource was provided to the adopting university to enable them to adapt and embed the activity within their curriculum; financial support was provided to the lead of the original project to make materials, resources and guidance documents available; and, perhaps most significantly, to also enable them to provide ongoing mentoring and support throughout the process to the adopters thereby allowing learning and experiences to be shared. Where several universities were each adopting a particular intervention, the lead of the original project was asked to provide support through a networking approach to allow the adopting universities to work collaboratively and learn from each other.

Practical implementation of the PTA Scheme consisted of members of the National HE STEM Programme team working to identify activities that were sufficiently well progressed to have demonstrated success (a key requirement of selection), that had potential for wider transfer based upon demand and interest from others, and whose project leads were willing to support those from other universities to embed these activities locally. From a significant list of potential projects, 25 were identified for 'adoption' that met these key criteria, and advertised to the higher education community. Universities wishing to adopt an intervention were asked to complete a competitive and reviewed application that demonstrated their rationale for wanting to undertake the activity and their likely commitment to its longer-term continuation.

Through the PTA Scheme the 'adoption' of 85 activities was initiated, including the establishment of IABs at nine universities, among them the University of Leeds as described here.

Critical success factors

Throughout the development of the IABs, a number of factors have been identified as being important to ensuring their success, both initially and in the longer term. These critical success factors are as follows:

1. It is vital to appoint a proactive and senior figure as chair. An external chair is preferable, but an internal deputy, who will follow through on actions, is a good idea. The constitution of the IAB is critical; its membership must be closely linked to its aims and carefully chosen, for example to represent key sectors for school graduate destinations or areas of applied

research interest. The list below outlines a recommended constitution of an IAB:

- Head of School
 - Teaching representative (Director of Teaching)
 - Research representative (Research Director)
 - Industrial placements tutor
 - Internal chair (may be one of the above)
 - At least 10 external members, from a range of sectors (reflecting subject relevance and graduate destinations)
 - Professional body representative(s)
 - Current students
2. In the first instance, it is a good idea to convene a small group of 'reliable members' to ensure the board establishes itself. Recruit members who have sufficient subject knowledge to comment on the curriculum (both subject and skills). The most effective route to establishing an initial group of members is to recruit from existing contacts within the school. Alumni of the school are an excellent source of contacts, and have the added benefit of understanding the school from the perspective of both students and employers.
 3. It is important that the school decides what it wants to achieve by establishing such a board from the outset. This vision can (and should) evolve over time. It is a good idea to establish initial terms of reference, but keep them simple. For example, they might be:
 - Improve student employability and higher level skills;
 - Explore ways in which students and staff can increase their understanding of how the external environment operates and what employers expect in terms of mindset, professionalism and motivation;
 - Explore the possibility of stakeholder input in terms of work experience, placements, and externally-led sessions in the curriculum;
 - Increase student awareness of personal development, career options and recruitment opportunities;
 - Explore possible areas of collaboration for research projects, and
 - Obtain external input and advice on the future direction for the school.

This will help in recruiting board members, as they will know what the school's expectations are. The mutual benefits should be made visible

to members, to the outside world and to current (and prospective) students. Employers should also see where their input is being utilised and so it is important to report on how the advice of the IAB has been acted upon.

4. There should be a number of benefits for the employers, too. These include, but are not limited to, access to graduates, influence on the curriculum, a better understanding of the capabilities of students/graduates, easier access to the research capabilities of the institution, including access to grants (e.g. CASE awards), access to university facilities (either on a consultancy basis or through student project work) and the opportunity for involvement in undergraduate research projects (useful for curiosity research that is not 'mission-critical'). Such activities allow employers to raise their company profile amongst students, and provide an opportunity for networking with other employers and university colleagues, which can lead to additional (e.g. research or commercial) outcomes.
5. Equally, there are many real benefits for the school in engaging with an external advisory board. These include a better understanding of what employers are looking for in new graduates (that is specific to a particular discipline), the ability to put the discipline into a 'business context', opportunities to embed employer engagement and commercial awareness into the degree, input into curriculum and careers events, and the ability to demonstrate the relevance of what we teach to students, employers and ourselves. An additional benefit is that employers can reinforce the message about the importance of skills development from Year 1 and provide an external appraisal of the curriculum. Further benefits include the opportunity for placements and networking and to find industrial projects/problems for students to work on.
6. One of the most critical factors for success is setting the right tone at the first meeting. It is vital to ensure that the agenda addresses the needs of all stakeholders. There should be an opportunity to establish what input employers might be able to offer and to exchange understanding of what each can bring to the board. The first meeting should also establish the remit and terms of reference of the board, although these may evolve over time.
7. To sustain the IAB there needs to be visible high-level support and endorsement. The advisory board minutes should feed into the management meetings of the school. It is important regularly to review the membership

and identify any gaps. It is also advisable to encourage colleagues to propose new members as appropriate. The work and findings should help inform the 'core business' of the school and this should be clearly communicated back to the members of the IAB. Ideally, two meetings should be held per year, with a mechanism in the interim to maintain interest, enthusiasm and interaction.

Curriculum design and delivery

There are many benefits in establishing an IAB with respect to the curriculum. Firstly, the employers can act as a test-bed for new ideas, whether at a module or whole programme level. The external perspective can add legitimacy to claims that a particular innovation may enhance employability, for example.

IABs have also proved very useful in testing out ideas relating to new programmes, and particularly in establishing the elements of the degree programme that are of greatest value. This is where having a reasonably large advisory board is important and also good representation of the wide range of sectors in which graduates from a particular discipline area may find their careers.

Two particular examples of involvement in curriculum delivery can be highlighted from different schools at the University of Leeds. The School of Chemistry involved members of the IAB in the delivery of a module on developing commercial awareness in a chemistry context. Having a member of the board at the first workshop of the module had a huge impact on the engagement of the students (referred to by many in their reflective summaries) in terms of putting the module into context, providing inspiration and increasing authenticity. As one student stated, "Both the innovation and marketing workshops were led by employees of P&G and this inspired me to apply for consumer goods company placements including P&G, Reckitt Benckiser and Unilever. I am now looking forward to my secured year in industry placement at Unilever in research and development, a placement I was driven to apply for because of this module."

Advisory board members were also involved in the assessment of the presentation pitches at the end of the module. The School of Physics and Astronomy sought projects from its advisory board membership for a new Group Industrial Project module (King 2013), a model that was adopted from Durham University, also under the National HE STEM Programme PTA Scheme. In addition, other project sponsors were subsequently invited to join the advisory board, thus closing the loop.

Student engagement

Each board includes student members who are drawn from among both undergraduate taught students and research postgraduate students. It is important to ensure that the views of all stakeholders are represented. A number of additional activities have also taken place to allow for interaction between the IAB and students. A speed-networking event was organised and all students in the School of Chemistry were invited. Feedback from the students indicated that it was very valuable to obtain insight from industrial members on their future career directions, with a number of students feeding back that they hadn't fully realised the breadth of career options available to chemists, and the varied career routes that can be pursued. Equally, the board members appreciated the opportunity to talk in detail to a wider range of students about their experiences on the course and their future career plans. This interaction allows the IAB to make more insightful comments regarding the development of courses within the school.

In the School of Physics and Astronomy, the IAB members were invited to attend the Summer Research Interns Symposium. Students either delivered a poster or a short presentation on their research work. Members of the board assessed the presentations and awarded a prize to the best presenter. There were benefits for all parties – the board gained insight into the research work of the school, and for the students there was increased kudos attached to participating in the event.

Evaluating effectiveness

The IABs are increasingly becoming part of the business of the University's schools; the willingness of members to continue to engage suggests that the boards are of value to all stakeholders. Feedback on the speed-networking event in Chemistry was very positive from all participants. There are currently plans underway to hold 'careers talks', to be given by the advisory board members, and in collaboration with Chemsoc (the student chemistry society). There is already clear evidence of the benefits of employers becoming more involved in the delivery of teaching, with improved student feedback scores, particularly in Chemistry, for modules where appropriate employer engagement has been increased. The first tranche of undergraduate industrial research projects has proved successful and popular with students, and this is an area that has great potential for growth in the future across all levels of research, within taught courses, as summer research projects and at research degree level.

The IABs have enabled industry and other stakeholders to engage with the university at a subject-specific level in a meaningful way. There has also been a notable change in culture within the schools, in terms of employer engagement in the curriculum. Employer input is considered across the spectrum of activities and incorporated into modules whenever appropriate, which is a change from practice before the IABs were established. The IAB has provided a source of willing volunteers who have been able to bring their expertise into the curriculum, whilst having the benefit of understanding how their input contributes to the whole programme through their membership of the IAB.

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