engineering Gateways

Flexible Pathways to becoming a Professional Engineer: a DIUS Gateways Development Fund Project

Number 6 **March 2008**

Stage 1 is complete. Stage 2 starts now!

- Editorial

Now that Stage 1 is complete, members of the Project Team are enthusiastic about Stage 2. With the final quarterly report having been provided to the Office of Public Management (OPM), agents for the Government's Department for Innovation, Universities and Skills (DIUS), all is now set for rolling out the programme. Since the last issue, members of EC[UK] staff have discussed the project with senior staff at the RAeS, the IET and the IMechE who are enthusiastic about the project and have confirmed that they want to help it develop to fruition. A CEng Guide has been produced ready for publication in April and a similar document for IEng is expected to be published by EC[UK] soon afterwards. Several more Professional Engineering Institutions (PEIs) and Higher Education Institutions (HEIs) have indicated their interest to be involved in Stage 2.

Promoting the Project's outcomes, particularly in regard to employers, is high on the Project Team's list of priorities for Stage 2, and this eG Newsletter will play an important part in that.

This process starts with this issue, with articles about employers and participants and their needs. Engineers from a wide range of industries have enrolled and are participating in the MSc Professional Engineering. More participants are anticipated during 2008.

Participants in Industry

– Bill Glew describes the position at Kingston University

Participant numbers at Kingston University are growing in line with expectations. So far 24 engineers have joined the KU programme from a wide variety of back-grounds. Whilst the majority are from the South East we have also recruited people from the North East, from the Midlands, the North West, the South West, and from Northern Ireland. About half the participants are under 30 and see the programme as a way of rapidly developing their progression to CEng registration. The other participants are using the programme to enable them to achieve their CEng registration by underpinning their practical engineering experience with theoretical knowledge and understanding. Their employers represent a range of industries: from the aerospace industry, general manufacturing and firms of consulting engineers. Two of the participants are engineering company owners. Big companies are also expressing interest, with one major group enrolling three of their engineers this month.

One senior manager expressed his support for the programme as follows:

> *"My feedback is very simple ... It's simply fantastic that we can now recognise and support through professional development and work-based learning those individuals who deliver tremendous value and skill to our organisations, despite not having had the opportunity to attend universities for whatever reason, via this programme.*
>
> *We should never overlook the fact that some of our best and most capable individuals achieve their knowledge and skill-sets in the work-place, and we can now, through work-based development, not only give them the professional recognition they deserve, but add value to our organisations at the same time."*

Bill Glew is Work-based Learning Facilitator at Kingston University

The Employers Perspective – *from Ray Flower*

The prospect of progressing through professional life without actually attaining some recognition, spurs many people to seek out academic redemption. In this short journey many discover hidden talents and learn how to use them effectively to the benefit of their organisation. Many do not even see the opportunities and languish in semi-obscurity and fail to make use of their dormant aptitude. To me this is a waste.

Against this background, several years ago, Professor Andrew Self from Kingston University and I set out to align the Commercial Aircraft Engineering License to the new Foundation Degree and articulate to a Bachelors degree with Honours. In some small way we saw this as meeting some of the missing academic elements so desperately needed in Aircraft Engineering. Both these qualifications have been accredited by the Royal Aeronautical Society to IEng status, something that further enhances the professional status of an Aircraft Engineer and helps with recruiting.

When asked to Chair the Project's Steering Committee, I was provided with a brief as to its vision and aims. I was immediately struck by the prospects offered by such a relatively simple concept not only to the individual but to every engineering organisation across the country. Here, at last, is a mechanism to draw out and recognise the latent talent that we know exists in every engineering organisation, and to provide employers with the opportunity to develop this talent in a way as to benefit the organisation too.

The imperative is that this project must succeed if we are to feed the pioneering engineering society we inhabit, with the talent UK plc needs and deserves. This is a shared imperative involving the Engineering Council (UK), the Professional Engineering Institutions and, most importantly, the many employers of engineers out there.

Ray Flower is Training Manager at KLM Engineering, based at Norwich and is Chairman of the Project Steering Committee

Participant Profile – *Dave Pearce introduces a new University of Hertfordshire participant*

One of the first participants to join the MSc at the University of Hertfordshire is Neil Afford who works for Glaxo Smith Kline at the company's research and development site in Ware, were he is an Equipment Engineer in the Device Technology Group. Neil was previously a part-time student at the university and was awarded his BEng degree in Manufacturing Systems Engineering with first class honours in 2005. Neil will develop his experience in plastic mould design to incorporate component stress analysis and other developing technologies through the programme. This will enable Neil to evaluate in more detail the requirements of product moulding in relation to the structural design of the company's pharmaceutical products.

Neil Afford

The nature of Neil's current role lends itself to a work-based learning approach as regular attendance at lectures would be difficult. By selecting various aspects of each of the projects he is currently involved with he hopes to fulfil the requirements of the MSc Professional Engineering modules. His aim is to further his career development and competences in order to eventually obtain Chartered Engineer status through the Institution of Engineering and Technology.

Dr Dave Pearce, a Project Team member, is based at the School of Aerospace, Automotive and Design Engineering at the University of Hertfordshire: http://perseus.herts.ac.uk/uhinfo/info/wbl/wbl_home.cfm

Managing the Project – Deborah Seddon has taken over from Paul Bailey as Project Manager. Details were provided in eG Newsletter No 5. Here Paul reminisces while Deborah reports on the DIUS conference.

The first 18 months…..

– Paul Bailey reflects

As we come to the end of the project's DIUS funding period, I thought it useful to look back at the last 18 months, from my viewpoint as Project Team Chair and as someone who's been involved from the project's very inception.

The last 18 months has seen a great deal of work in such a short space of time. In particular, I take a great deal of satisfaction knowing that since approaching DfES (now DIUS) in 2006 and initiating the Project in October of that year, we are now in a position of having an increasing number of participants on the programme.

Confidence was always high and the demand for such a programme was there, but to see growing levels of participation at this stage is very gratifying. The project has surpassed expectations – and DIUS targets – on the number of candidates starting the MSc Professional Engineering. Such success has been largely due to the positive collaboration between the project stakeholders, exemplified, I feel, by the work between the PEIs and the HEIs. All this work has been well coordinated by the Project Team, the meetings of which have been very well supported. In turn, guidance has been provided by the Project Steering Committee, again well supported by PEIs, HEIs and employers; the project is grateful to Ray Flower of KLM for chairing this important committee which provides a strategic steer to the project.

However, there is still work to be done; from ensuring that applicants can achieve Incorporated Engineers and Engineering Technicians registration through work-based routes to identifying further project partners, both from the PEIs and the HEIs (although I'm pleased to report that the level of demand here is growing!). Continuing engagement is also needed with employers, whose support is essential to the ongoing success of the project. With regards to where we currently are, recent work on marketing has produced some great results and I am pleased to report that the project's website is about to be revamped.

I began chairing the project whilst at the EC^{UK}, and have continued now I am at the RAeS, one of the partner PEIs. I hope the fact that I remain chairing the Project Team provides a positive indication of the project's continuing success and the impact I know it will make to many people wishing to become professionally recognised.

Paul Bailey is Project Team Chair and Deputy Chief Executive, RAeS

DIUS Gateways Conference

– Deborah Seddon discusses recent Strengthening Partnerships between Professional Bodies, Sector Skills Councils and Higher Education Institutions

This important conference held on 7 and 8 February provided an excellent showcase for this Project as one of eight DIUS funded Gateways to the Professions projects. This Project was chosen to lead on workshops and was the best attended. After a presentation by myself and Marguerite Lipscomb about the progress, challenges and lessons learnt so far, over 50 people from a range of professions and type of organization engaged in a lively discussion. Delegates were impressed by the strong partnership approach used in developing our model. There was much interest in the approach of integrating education with supervised work-based professional development and several indications that others may explore the possibility of emulating this approach.

The overall aims of the Conference were to explore the issues around strengthening partnerships, building commitment and sharing learning. The scene was set by Bill Rammell MP, Minister of State for lifelong Learning, Further and Higher Education. He used data on skills shortages and the findings from the Leitch Report to underline his vision of every university helping the UK to achieve its goals: one where employers are active participants in HE, not just passive consumers.

Delegates heard a presentation about the emerging findings from a DIUS-commissioned 'broad brush' mapping of the roles and responsibilities of SSCs, HEIs and Professional, Statutory and Regulatory Bodies (PSRBs).

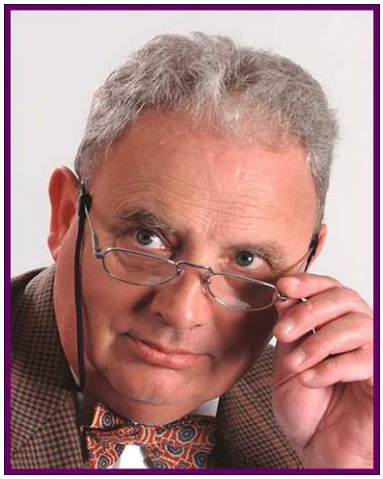
The purpose is to inform the policy to strengthen partnerships between these sectors and influence higher level provision. One case study presented was the engineering network led by the Higher Education Academy's Engineering Subject Centre that supports collaborative work between these stakeholders and others with an interest in HE level engineering education.

Further details about the other 'gateways' funded projects can be found at:

http://www.dfes.gov.uk/hegateway/hereform/gatewaystotheprofessions

Deborah Seddon is Project Manager and Senior Executive for Higher Education at EC^{UK}

Don't Separate Learning from Earning – Andrew Self talks with the editor



JL: This is the first interview with key players in this project. What would you like to come out of it?

AS: Learning and Earning are often wrongly seen as two sequential activities. Many intelligent non-graduate, full-time workers learn more and at a higher level than they would otherwise have done if they had gone to university. I am a case in point: as a fireman, I studied part-time for my HNC in electronics and went on to win the MSc prize at Cranfield. I have learnt from all my jobs from RAF guided weapons specialist to university professor and Pro Vice-Chancellor and now Vice-Chancellor with many journal publications. I want work-based learning to be formally recognised as a means of gaining an academic award, competences and professional recognition.

JL: As the project director can you say something of the background to your involvement?

AS: In 1995 I noticed that MSc project dissertations were often seen by industrialists as just interesting studies rather than providing the necessary underpinning knowledge for the next generation of products. In contrast, the knowledge resulting from individually designed, work-based, MSc programmes by learning contract were particularly valued by industrialists and resulted in students growing in competence and delivering strategic company goals. Since then over 400 intelligent in-company project champions have an MSc by this route. One early example of a company wanting this for its staff was Astrium where 12 related WBL projects resulted in the individuals gaining the competence to reduce the time from designing satellites to them being space-ready, from 30 months to 14 months. In 2005, Andrew Ramsay, the EC^{UK} Chief Executive contacted me about Sir Alan Langlands's report. He was looking for flexible routes to registration and the individual work-based learning contract approach fitted perfectly. Industrially based engineers who cannot afford the time or money to complete a taught MSc can, through an individually designed work-based programme, meet the knowledge and competence requirements for registration without substantial time away from their employment. Since then three PEIs and four HEIs have become involved, recruiting is exceptional with a high level of company and professional body sponsorship.

JL: You seem to have vision!

AS: Yes, I sometimes have visions which come true in years ahead. For example, I had a vision about Kingston University being a major CEng provider.

JL: The first time I met you was at an accreditation visit at Kingston in 1998. I'd never seen such a well-organised 'base-room'.

AS: The Self-Assessment Documents must show justification and evidence so I assembled a base room that did that. I believed my School of Engineering was good and it was a matter of getting staff to believe that too and collate the evidence, so that any question that was asked could be speedily and accurately referenced. The outcome was a 24/24 QAA inspection rating and continued IMechE, RAeS and IET accreditation.

JL: Have you ever risked your career at any stage?

AS: Yes often, when I was head of engineering I wanted to turn the old labs into aircraft hangers. This caused a bit of consternation in a 'traditional' risk-averse university, but it led to the award of European Centre of Excellence, the development of a degree which provides over 80% of all UK EASA licensed aircraft engineers. It's the strange or disruptive ideas that take things forward in a profound way. Risk is scary and unfortunately, good leaders often become unpopular because of it.

JL: Where do you go from here?

AS: I am working on two projects in Oman. The first is to bring all the Army, Navy Air Force and MOD Civil resources into one technological university which also serves industry. The second is employer engagement. I know the Oman captains of industry personally, and am designing an industry driven country-wide engineering polytechnic strata. Comparative success, in a global economy, can only be achieved if a nation's knowledge and competence base is developed and exploited to the full and these projects are aimed at just that.

JL: Do you have any regrets?

AS: Yes, I wish I was delivering the Oman progress for UK plc

JL: Thank you very much. Do you have a maxim you could quote?

AS: I think I should quote from Huxley: "Action through doing, knowledge is not enough; action without knowledge is barren, but knowledge without action is worse."

Professor Andrew Self OBE FIET FRAeS is director of the project. He was previously Head of Engineering and Pro-Vice Chancellor at Kingston University. He is now Vice Chancellor of the Planned Technological University Oman.

The Kingston University Boeing 737 at the Newcastle Campus

EASIMAP – a Flexible Solution to Mapping and Recording the Achievement of Learning Outcomes – *Alan Maddocks explains*

The **EASIMAP** Project is managed by the Higher Education Academy Engineering Subject Centre, and supported by both the EC[UK] and the Engineering Professors' Council and has developed an online electronic tool to link the assessment of learning outcomes with students' personal development planning (PDP) records/e-portfolios.

The EASIMAP Tool assists academic tutors and programme/course designers to engage in three key processes:
- Mapping of programme/module/assignment intended learning outcomes to UK-SPEC
- Recording student attainment of programme/module/assignment learning outcomes
- Providing assessment data (for students PDP records/e-portfolios)

The EASIMAP Tool is currently being piloted across three higher education engineering departments, and it is anticipated that it will become available to the engineering academic community from September 2008.

EASIMAP brings a number of benefits to the project's key stakeholders. For **Professional Engineering Institutions** it:

- Provides evidence that higher education engineering degree programmes are providing students with the opportunity to demonstrate learning outcomes in line with UK-SPEC/Professional/Industry requirements
- Encourages future graduates to engage with personal/professional development processes through evidencing competence, reflection, and planning

For **the higher education engineering academic community** it:
- Assists in the design of new degree programmes that align with UK-SPEC
- Maps existing degree programmes, identifying in the process both gaps in the coverage of learning outcomes and over-assessment of learning outcomes
- Provides evidence - for accreditation, programme review, institutional quality assurance - of the attainment by students of intended learning outcomes
- Helps record and monitor assessment and feedback

For **engineering students** it:
- Provides assessment and feedback data in readiness for transfer to their PDP records/e-portfolios
- Enables the evidencing of competence, and learning attainment
- Helps relate learning attainment to professional engineering standards
- Encourages engagement with personal development processes such as reflection

EASIMAP may be of particular benefit to those offering degrees in non-tradition ways, especially programmes which are predominantly work-based. EASIMAP could enable tutors to effectively record where learning outcomes are being delivered in a flexible way. It would also assist in capturing evidence of individual student competences and attainment of learning outcomes achieved in differing environments. Moreover, by capturing such outcomes EASIMAP would generate the kind of evidence required to assist programme leaders to meet accreditation requirements.

Alan Maddocks is the EASIMAP Project Manager, based at Loughborough University. Further details at either from:
A.P.Maddocks@lboro.ac.uk or at: http://www.engsc.ac.uk/er/pdp/easimap.asp

Getting to know about the Engineering Gateways Project

The Project website is being re-designed to provide all stakeholders with up-to-date information on the Project. In the meantime, you can still access the information about the project at: www.engineeringgateways.co.uk
Earlier eG Newsletters can also be accessed on the website and this issue will appear there in the near future.

Press Release Information. Until the Engineering Gateways Project re-designed website is up and running the Project Team will be happy to supply copy for articles in relevant journals and magazines**.** The Institution of Highways and Transportation (IHT) has recently published details of the Project in the January/February 08 edition of its magazine, Transportation Professional. There have been recent expressions of interest in the project from the Institutions of Civil Engineers (ICE) and Chemical Engineers (IChemE) and also Loughborough, Manchester Metropolitan, Portsmouth and London South Bank Universities.
Please contact Deborah Seddon for further information – see below.

Editor's Note

The next edition of this newsletter will be published in June 2008. Please send requested articles to the Editor, Jonathan Ling, EC[UK] WBL Consultant at JLing@EngC.org.uk and to Kathryn Baird, Assistant Editor at k.baird@kingston.ac.uk by Friday 30[h] May 2008.

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