Nuclear Island Education Provider Day: Workshop Summaries

Delegates were asked to consider two of three topic areas each containing a number of questions. These were:

- Topic 1: How can Nuclear Island deliver the engineering needs for Nuclear New Build?
  - Can we deliver the key skill sets identified for new build civil engineering graduates?
  - How can this activity be part of your course?
  - Do you have enough awareness and understanding of Nuclear Industry and Safety and where to go for help?

- Topic 2: Is this programme attractive to your learning programme and how can we help to deliver it with you?
  - What do you do already?
  - What else could you do to add to the project?
  - Are you willing to flex your programmes to support this type of delivery?
  - How could you support your learners?

- Topic 3: How can I adapt my programmes for the New Build Sector?
  - What are the key topic areas you would be able to deliver for new build around mechanical or electrical engineering courses?
  - How can we encourage more input to future guard the project?

Following extensive discussion, feedback was taken from the four groups, leading to additional questions for the final joint meeting in Spring 2011.

FEEDBACK

Topic 1: How can Nuclear Island deliver the engineering needs for Nuclear New Build?

- **Can we deliver the key skill sets identified for new build civil engineering graduates?**
- **How can this activity be part of your course?**
- **Do you have enough awareness and understanding of Nuclear Industry and Safety and where to go for help?**

Group 1:

Can we deliver the skill sets identified for new build and how can they be part of a course?

Money could be a barrier for HE and FE students (~£450 = Constructionarium + Accommodation + travel). Constructionarium sites local to new build sites may help to reduce these costs on providers through reduced site costs and employers may subsidise accommodation in the local Site Accommodation Centres.

The Constructionarium concept adds some practical skills to civil engineering students but a question was posed on what "Nuclear" it would add. A great deal of the nuclear issues are tied into the facility design (e.g. higher specification of quality, surface finishes, levels of containment, seismic and extreme weather withstand), the substantiation of the design against those design requirements and the development of a specification via the safety case. The Project would also need to include the need for rigorous Quality Control and consideration of regulatory compliance.

While Constructionarium adds practical skills to a 2nd year student they would not be able to tackle these aspects of a project. This led to a conclusion of a range of Constructionarium projects could be developed:

- Post Grad and 3rd Yr Honours Degree Students would develop a 3 part project. Steps 1 and 2 in college and step 3 on-site. The steps are:
  - Against an outline specification, develop a buildable design including nuclear design principles;
  - Assess the design against safety assessment principles;
  - Construct on-site practising rigorous QA and demonstrating safety culture and regulatory compliance. It was envisaged that some form of regulatory non-compliance scenario (e.g. inability to complete a continuous pour of concrete) could be built into the programme to test out student's adherence to nuclear safety culture and regulatory compliance issues.

- 2nd Yr and FE students would only tackle the on-site construction element, demonstrating compliance with a rigorous specification.

- School students could also be engaged via an observation platform and briefing session.

Do you have enough awareness of nuclear safety issues and do you know where to get assistance?

It was considered that DVD and CD packages would greatly assist in enabling HE and FE lecturers to deliver the nuclear issues. In particular the National Skills Academy Nuclear 'Triple Bar' would assist in the delivery of the safety aspects and Contractor or Vendor packages on quality matters would be valuable. It was noted that this would need to be followed up and the costs, particularly of the 'Triple Bar' would need to be established.

Group 2:

There was overwhelming agreement that current civil engineering/Constructionarium courses could be adapted to cope with the nuclear new build requirements, but employers needed to show willing and capacity to help deliver and interact with course materials and delivery once the nuclear island concept was agreed. The differences, including quality, safety, construction process, planning and design, and decommissioning areas, needed thorough explanation so that academic staff could be able to deliver the expertise and knowledge required of this New Build concept.

The discussion turned to a model of up-skilling and knowledge enhancement with potential CPD for academic staff, particularly around health and safety, site specific functions and license requirements so that industry needs are met and matched to academic expertise.

The ability to inform students of careers in the sector was welcomed, and how we increase students engaging in graduate roles within the industry was questioned – is this the only route to attraction? The debate continued, but it was felt that this was one route that would raise industry attractiveness and knowledge to students.

The health and safety required for a new build site was also raised, with a proposal that the Health and Safety Executive might be engaged in the programme in the future. Colleagues from Manchester University are to liaise with Cogent on this matter.

Bringing forward some of the learning into earlier years was also suggested to attract students to the sector and to the Nuclear Island project, but this needed to be delivered through packages of employer informed CPD for academic staff who can relate this back to learning in the university environment initially, and prior to the site visit.

Group 3:

The group consisted of a cross sector of Higher education providers, including specialists in Nuclear, Civil and Mechanical and Electrical Engineering, all of which thought that with the right information and evidence from employers, interest would drive this project forward as a collaborative area. Learning could be brought forward into earlier undergraduate years to increase awareness and knowledge of the sector, and attract students to the Nuclear Island project in a multidisciplinary manner.

The concept of the “Formula Student” was used to show how active competition could aid in engagement and involvement across the engineering subject areas. This could also be used to attract FE learners into the project, and help in delivering skills suitable across the learner range.

An employer led framework of knowledge and expertise was required by the academic partners to increase understanding and awareness across the new build concepts in each engineering area, but a framework that allowed innovation in delivery.

The concept of “train the trainer” was welcomed as part of this package, offering sustainability to the concept whilst breaking down entry barriers.

It was questioned if the Health and Safety Executive might be able to delivery additionally to the programme and potential funding or government support to raise the profile of the project – Cogent ought to work with Manchester University to progress this concept.

There was general agreement that the Nuclear Island could be taken to a number of education providers to increase and provide employer led provision, but questions around timetabling and affordability were paramount for successful delivery.

Topic 2: Is this programme attractive to your learning programme and how can we help to deliver it with you?

- **What do you do already?**
- **What else could you do to add to the project?**
- **Are you willing to flex your programmes to support this type of delivery?**
- **How could you support your learners?**

Group 1:

The programme is attractive to all levels of education. Currently FE colleges teach basic biblical skills with HE delving into the theories of design but neither undertake practical construction of scaled down structures.

A site could be developed to not only allow students to participate but with viewing platforms at the site potential students could be motivated and attracted to the industry.

It was felt that specific new programmes at FE level need to be non trade specific so that students gain a wider understanding of the quality issues. There is also a need to fully understand at both FE and HE levels the necessity for zero tolerance in all aspects of construction in the nuclear sector. (Currently work placements can lead to students learning how to cut corners.) The implications of failure too need to be understood.

To supplement theoretical training and teaching, the input from industry current practice would be valuable, particularly in reaching the requirements for a "Nuclear Passport".

Group 2:

The need for an interdisciplinary approach e.g. civil, mechanical, electrical engineering was thought to be highly desirable so that operational as well as construction issues could be put into context. In contrast, currently at HE level, architecture, construction management and civil engineering course run independently one from another yet all are aimed at the construction industry.

There is a need, but not yet a desire, to share or redesign timetables. FE colleges felt that they are currently limited by funding and the need to satisfy qualification bodies. The FE involvement in all subjects would go unto level 3 and they would welcome the input from specialists of modules into their courses aimed at new build.

Encouragement from nuclear employers could not only help the theoretical aspects but also the practical aspects of the education process including this project.

Group 3:

This group felt that the concept of Constructionarium could be easily be modified within their programmes to meet the needs of the nuclear new build, and also bringing together academic expertise to support the curriculum development and delivery.

There is a responsibility to the student to deliver on risk assessment and industry awareness through this programme, building in field trips for students and academic staff also.

It was felt that some knowledge and skills training would be required for academic staff, so that teaching could be maximised, so a range of CPD options would be welcome. There was also agreement that industry talks could be delivered to academics and students alike, and reduce the culture barriers that have grown in UK universities. The discussion also considered a French way of working – where the industry is more engaged with the university projects as a whole. Perhaps this could be investigated a little further.

Topic 3: How can I adapt my programmes for the New Build Sector?

- **What are the key topic areas you would be able to deliver for new build around mechanical or electrical engineering courses?**
- **How can we encourage more input to future guard the project?**

Group 1:

<u>What are the key topic areas you would be able to deliver around M&E?</u>
It was considered that the Nuclear New Build programme would be a major part of UK Civil Engineering and therefore nuclear issues should be an integral part of HE can FE course, not a bolt-on. This again raised the issue of provision of the relevant guidance and materials from the industry to training and education deliverers to ensure this was built into education programmes. The need for safety behaviours and rigorous quality and safety elements of design also applied equally to M&E and Civil engineering courses.

<u>How can we provide more input to future guard the project?</u>
Identifying sites that can host a Constructionarium project local to the new build site may assist in providing more employer input, as Consultant Engineers and Contractors vying for work on a site would see benefit in providing training in that locality and also could be more willing to provide materials and plant from that already contracted for the new build. Contractors could also assist through freeing up past Constructionarium students in their employ to assist in supervising projects. Constructionarium Ltd would provide oversight and advice to ensure consistency of outcome.

Group 2:

A modular programme could be developed to cover the key areas of knowledge, skills and understanding, incorporating health and safety – this could also be mirrored as CPD for staff across HE and FE.

It was felt that the programme needed champions in departments, to ensure people worked on this cross discipline project as a whole, and to engage with colleges and schools to capture the imagination of younger learners. It was felt that there needed to be a significant push to bring academic and faculty heads together to facilitate cross discipline activity.

Support resources for a range of staff including academics, teaching assistants, lab technicians could be delivered as part of recognised CPD framework, building in expert advisors, and case studies, as well as on site footage once available. Careers information might be considered as part of this also.

PLAN ME A PROJECT

A final discussion around what a project might include followed these group discussions. A brief video of an existing construction project was shown as a potential exemplar to start final thought discussions.

Questions were raised as to the timetabling of the project – did it have to be a 5 day programme, or could we expand it to be a longer or shorter period? Discussions agreed that from the academic perspective it was a good and solid amount of time, but timetabling issues may arise with a number of academic partners. Delegates were also reminded of the pre- and post-site learning that supports this project also, making the module a viable credit bearing option for students, and could be utilised as a top-up option for those wanting to meet the Bologna Agreement in future years.

There was some concern on keeping the project on a scale that is deliverable for civil engineering at this time, but there was great interest in considering a solid fixed structure that could be used to expand employer engagement in a facility that would tackle the fitting out of a nuclear reactor core, engaging a wider audience of mechanical and electrical engineering areas.

The idea of an existing model was tabled, and discussion around integrating mech/elec engineering into the programme, followed by a deconstruction project was also addressed. However, in general, although the idea was welcomed, there may be significant issues in delivering such a back to back concept if anything went wrong in the previous week programme of activity. The concept of having a Mech/Elec project that could be shipped into the Constructionarium site was also addressed. This area is to be considered as a potential area to explore, particularly if the site was set up with logistics issues to overcome.

A local solution for some providers was also noted, which was also recognised by FE providers and employers. It was agreed to look into this as an option for taking the project forward if suitable funding and partners could be identified.

The delegates were asked if they would consider continued engagement in the project – the response was in agreement, with delegates seeking a combined employer and provide event in early 2011.

This event is to consider:

1. The outline of a potential project
2. The academic learning outcomes
3. The entities of mechanical and electrical engineering
4. Flexibility in delivery options
5. Partnerships

ACTIONS AND NEXT STEPS

Following these discussions, the project team explained the next steps in terms of project plan. This included hosting a joint meeting in early 2011 to bring together employers and providers to consider the determination of the civil project to be trialled at Constructionarium, alongside a wider project plan to seek funding to secure a fixed facility option for mechanical and electrical engineering aspects.

All feedback from these events will be emailed to delegates and information placed on the web portal at: **www.cogent-ssc.com/Higher_level_skills/nuclearisland.php**

MORE INFORMATION

For more information, please visit:
www.cogent-ssc.com/Higher_level_skills/nuclearisland.php

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DELEGATE LIST

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2.	Amir Alani	University of Greenwich
3.	Bill Askew	University of Nottingham
4.	Andy Berry	Bridgwater College
5.	Malcolm Booth	Aston University
6.	Keith Brister	Sussex Coast College
7.	Lawrence Coates	University of Birmingham
8.	Tim Cribbens	Mace and EDF
9.	Clare Drysdale	Imperial College London
10.	Steve Franklin	ECITB
11.	Tony Gaskell	Magnox
12.	Costas Georgopoulos	Kingston University
13.	Tim Green	Imperial College London
14.	Kamel Hawwash	University of Birmingham
15.	Robin Holsworth	Constructionarium
16.	Allison Hunt	National Skills Academy Nuclear
17.	Neil Hyatt	University of Sheffield
18.	Hal Igarashi	RAE
19.	Ivana Kraincanic	London South Bank University
20.	John Lonsdale	University of Central Lancashire
21.	Chris Mason	Construction Skills
22.	Liz Miles	Coventry University
23.	David Price	Coleg Menai
24.	Christopher Smith	Llandrillo College
25.	Clive Smith	Cogent SSC
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27.	Peter Storey	University of Manchester
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The project team would now like to send their thanks for the time, consideration and effort from the delegates to consideration of the project as a whole and we look forward to starting off the Nuclear Island in early 2011.

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