

*The Institution
of Structural
Engineers*

ICE/IStructE/ACED Annual Meeting

Civil Engineering Skills

for a Changing World

27 April 2010

Overview of IStructE Related Activities

- Recent Membership Trends
- Education Panel
- Annual Academic Conference
- Support for Academia
- Industry Requirements
- Dissemination of Best Practice

...and two post scripts

Recent Membership Trends

Strategic objective: to increase graduate & student membership

- Student membership increased by 13.4% in 2009 [24.7% increase in 2008]
- Graduate membership increased by 1.7% in 2009 [11.2% increase in 2008]
- Numbers entering the PRI are increasing and the CM Exam entries have increase 15% over the last 2 years.
- Revised Research and Development route to CM Membership in 2009 with threefold application increase in 2009 and fourfold, so far, in 2010

IStructE Education Panel

- Formed in 2009
- Has developed Education Policy and Priorities
 - To understand and make clear the requirements of industry/practice/society for potential engineers
 - In collaboration with other professional bodies to seek to raise the standards of teaching in structural engineering
 - To support the JBM in raising standards
 - In collaboration with other bodies to seek to influence government policy on education
- Produced 2010 Careers Brochure
- Encourages Young Member's Panel with their presentations at secondary and tertiary education levels

www.istructe.org

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Other useful links

Arup

www.arup.com

Aurecon (Te Puni Village)

www.aurecongroup.com

Buro Happold

www.burohappold.com

Conservation Accreditation Register of Engineers

www.careregister.org.uk

Engineers Against Poverty

www.engineersagainstpoverity.org

Engineering Council

www.engc.org.uk

Expedition Engineering (Infinity Footbridge)

www.expedition-engineering.com

Fast + Epp (Richmond Olympic Oval Roof)

www.fastapp.com

Foster & Partners (Masdar City)

www.fosterandpartners.com

Henry Fagan & Partners (Mapungubwe National Park Interpretive Centre)

www.fagan.co.za

Royal Academy of Engineering

www.raeng.org.uk

RedR

www.redr.org.uk

Structural Engineering:
an opportunity to transform
our world

STRUCTURAL
ENGINEERING
CAREERS

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IStructE Annual Academics Conferences

[Inaugural Conference in 2009]

Objectives of 2009 Conference

- To improve relationship with those teaching structures
- Improve support for education in structural behaviour, analysis and design
- Encourage academics to be professionally qualified

Objectives of 2010 Conference [Provisional]

- Define Industry requirements
- Dissemination of Best Good Practice

Actions from 2009 Academic Conference

- Institution to clarify industry requirements and expectations
- Through JBM to review curriculum and syllabi
- Provide facility for the sharing of best practice
- Study Group established to review 'structural analysis and design education'
- Encourage greater engagement between universities and branches
- Project to review teaching tools and texts in understanding 'structural behaviour'

Support for Academia

- Education Officer acts as contact between universities and Institution
- Newly appointed Branch liaison officer to improve contact between universities and local Branches.
- Research and Development Route to CM rationalised and applications have increased.
- Institution encouraging academics to become professionally qualified members with presentations/discussions at a number of universities
- Increased engagement between JBM and universities to simplify accreditation process.

The Future: Industry Requirements

- The 4 Cs:
- **Curiosity** Observation & Info gathering
 - **Creativity** Concept, Behaviour, Models
 - **Communication** Oral, Written, Sketched, Crits
 - **Checking** Validate, Verify, Scaling & Appreciation of failures
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- Knowledge of underlying structural principles before use of analysis software allowed
 - Greater appreciation of behaviour of structures
 - 1st year statics to be reinforced in later years

The Future: Dissemination of Best Practice

Some suggestions?

- Need to include creativity [and fun] with open solutions
- Start with concept design rather than detailed design of elements
- Observation/Information gathering/Fieldwork
- Presentation for critique by peers
- Learning from failures, scaling factors, extrapolation
- Relieve curricula by jettisoning 'processes' that are best left to IPD training
- Model building/testing expanded with different groups responsible for design, checking, building & forensic research of model

The Future: Use of CM exam questions as template for project work?

CM Examiners experienced in setting open Questions

- Holistic problem relating to a complete structure
- Focuses on concept with need for multi solutions
- Code neutral [i.e. code irrelevant]
- Requires written and sketched communication
- Highlights real design challenges with late changes/construction management issues
- Analysis based on hand calculations
- Possible support from local branch CM exam course providers as industrial tutor input?

Post Script 1



Post Script 2

My degree is in Architectural Engineering whilst my graduate training was with a County Council Engineering Department.

Non alignment of university electives and early career experience lead to a greater rounding of overall knowledge and skill base.

Need to ensure that we do not become over prescriptive...

Overview of IStructE Related Activities

- Further details from Darren Byrne, Director of Membership and Education
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