

Programme Outcomes and International Recognition of Engineering Programmes.

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Topics

- **AHELO Feasibility Study**
- **ENAEE/IEA comparison in Eugene project**
- **Some consequences for international recognition**
- **Engineering context**
- **Conclusions**

AHELO

Assessment of Higher Education Learning Outcomes.

- **Started in 2007, supported by OECD within Tuning.**
- **Is it possible to develop international measures of Learning Outcomes in Higher Education?**
- **Four strands, engineering, economics, general skills, and ‘value-added measurement from a research perspective’.**
- **Engineering First Cycle Learning Outcomes identified in preliminary study : ‘A Tuning-AHELO Conceptual Framework of Expected/Desired Learning Outcomes in Engineering’.**
- **Subsequent AHELO Feasibility Study in all four strands involving 17 countries, 249 HEIs, 4900 faculty, 23000 students.**

AHELO

- **AHELO Feasibility Study Report (2012):**
 - **Vol 1: Design and Implementation (272 pages).**
 - **Vol 2: Data Analysis and National Experience (197 pages).**
 - **Vol 3: Proceedings of the Conference in Paris in March 2013: Measuring Learning Outcomes in Higher Education: Lessons Learnt from AHELO Feasibility Study and Next Steps.**

- **Brief Conclusions:**
 - **Validity: reasonable for three of four aspects.**
 - **Reliability: fair to good.**
 - **Scientific feasibility: reliable and valid across countries, languages, cultures, institutions.**

AHELO Technical Advisory Group

Comments from Report Volume 2:

- **Good features: administration, data analysis, instrument design, co-ordination.**
- **Not so good: resources, too difficult for many students, reporting complex, contracts.**
- **Overall: soundly executed, many lessons for international assessments.**
- **Additionally, more stakeholder participation, full-scale pilot of instruments and administration, better integration with academic community.**

EUR-ACE/IEA Comparison

- **EUGENE project (2009–2012) Line C investigated European and World standards of engineering education and mutual recognition.**
- **Included a comparison of the Programme Outcomes (at 1st and 2nd Cycle) of EUR- ACE Framework and the Graduate Attributes of the Washington and Sydney Accords.**
- **Structural and some semantic differences, but Content similar.**
- **Level is identified by Forefront in both frameworks, but some uncertainty about equivalence.**
- **IEA has carried out a parallel comparison.**
- **Similarities and differences in the two frameworks suggest that fruitful dialogue is possible.**

Consequences for International Recognition

AHELO assessed achieved outcomes, EUR-ACE and IEA Accords specify outcomes.

Frameworks appear to agree on specification of Content of programmes for qualified engineers.

Is the interpretation of Frameworks consistent, and independent of language and culture?

Need to develop tools for identifying Level accurately and consistently within accreditation.

Need to accommodate different profiles of engineers

Should accreditation expand to include programme development and possibly ranking of programmes?

Engineering Context

- **Purpose of accreditation is to ensure the quality of engineering. Accreditation is a means and not an end.**
- **Accreditation is necessary to ensure quality of engineering but is not sufficient (other factors include political will, public demand, finance, etc).**
- **Significant time-lag between students entering an accredited programme and graduates practicing as engineering professionals.**
- **Are current accreditation frameworks and procedures relevant to future engineering technologies?**

2023 Technologies?

- **Data engineering**
- **Synthetic biology, DNA engineering**
- **Materials engineering, nano-materials**
- **Energy use and storage**
- **Medical engineering, implants**
- **Robotics**
- **?**

Some questions

- **Global standards may be possible but would they inhibit innovation in teaching methods, programmes in emerging technologies, new evaluation processes?**
- **Should we restructure accreditation towards programme enhancement?**
- **Is mutual recognition value for money? Is progress towards global mutual recognition best achieved through expanding two-sided agreements?**
- **Are accreditors the best people to answer these questions?**

Thank you for your attention.

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