Global Trends in Continuing Professional Development for Engineers

Ragna Ann Berge, Norwegian University of Science and Technology
Soma Chakrabarti, International Association for Continuing Engineering Education
Errol La Grange, CPDlive Pty. Ltd.
Cheng Wang, China Chuanglian Education Financial Group, Ltd.

Moderator: Kim Scalzo, The State University of New York
Agenda

• Introduction
• About IACEE – Kim Scalzo, IACEE Past President
• Focus on Four Regions
  • Australia – Errol la Grange, IACEE Vice President
  • China – Cheng Wang, IACEE Council Member
  • Norway and Northern Europe – Ragna Ann Berge, WC2020 Chair
  • North America – Soma Chakrabarti, IACEE President
• Panel, moderated by Kim Scalzo
• Questions and Answers – with the Audience
• Wrap Up
IACEE’s Global Presence

39 countries
6 continents

364 Members:
3 Regional Leader Organizations
4 Professional Societies
12 Industrial Institutions
66 Academic Institutions (average 3 professional members per institution)
146 Individual Members
What Does IACEE Do?

IACEE: Growing an active global community of diverse educators and innovators, learning from and with each other through developing and participating in programs and initiatives to create meaningful impact around the world.
Porto Declaration
May 20, 2016

Whereas the International Association for Continuing Engineering Education (IACEE) was founded in 1989 to foster a global network of organizations promoting lifelong engineering education

Whereas the IACEE recognizes the scale and complexity of the gap between existing solutions and the needs facing our planet and that the IACEE is uniquely placed to act on this opportunity

Whereas the IACEE seeks to pivot the organization to connect individuals, universities, industry, government and NGO organizations to meet the grand challenges facing humanity

Now therefore in keeping with its dedication to leading lifelong learning, the IACEE will develop global initiatives to address those 21st century challenges threatening the survival of human kind through collaboration, design, creative thinking and engineering

We the undersigned do hereby declare this at the IACEE 2016 Global Conference in Porto Portugal and pledge our commitment in actioning this call to service.
Tell Your Story on Sustainability Education
And Research IN Action at http://serina.iacee.org

Follow the Stories on Facebook: @serina.iacee
Global CEE Leadership Trainings

Products and Services

- Quality Program based CEE Leadership Training curriculum development
- Chinese translation
- Presentations of training at CACEE in Beijing, China
- 140+ CEE Managers took training in two years
- Data gathered for international benchmarking
World Conference on CEE

1979 – Mexico City, Mexico
1983 – Paris, France
1986 – Orlando, FL, USA
1989 – Beijing, China
1992 – Helsinki, Finland
1995 – Sao Paulo/Rio de Janeiro, Brazil
1998 – Turin, Italy
2001 – Toronto, Canada
2004 – Tokyo, Japan
2006 – Vienna, Austria
2008 – Atlanta, GA, USA
2010 – Singapore, Singapore
2012 – Valencia, Spain
2014 – Stanford, California
2016 – Porto, Portugal
2018 – Monterrey, Mexico
2020 – Trondheim, Norway
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CIEC New Orleans 2019

Trends in Continuing Engineering Education Australia

Errol la Grange
IACEE Vice President, Global Sustainability Initiative
Australian Fact – It is bigger than Texas
Changing education trends for changing work requirements

2 examples from IACCE members in Australia

Masters of Professional Practice in Engineering
Deakin University

Institute of Public Works Engineers Australasia
Professional Certificate in Asset Management Planning
Masters in Professional Practice Engineering

University and Professional Association Collaboration

https://www.deakin.edu.au/course/master-professional-practice-engineering
Collaboration

• In collaboration with Engineers Australia, Deakin has developed a new pathway to recognize and develop professional expertise in the field.

• This model will enable experienced practitioners who successfully complete the requirements to be awarded the professional certification of Chartered Engineer from Engineers Australia plus receive a Master’s degree in Engineering from Deakin University.
Deakin Masters in Professional Practice

• Deakin’s Professional Practice credentials offer a new way to recognise the skills and knowledge developed through work and learning. Credentials warrant expertise to employers.

• Credentials recognise core employability skills, such as communication and problem-solving, to leadership and technical knowledge like data analytics and customer experience.

• Deakin credentials are developed in consultation with industry experts and are aligned to global education frameworks.

• Form part of the formal Australian Qualification Framework, AQF
Professional Certificate

Professional Association and Private Business Collaboration
Professional Certificate Asset Management Planning

- Outside of the formal qualification framework
- Meeting demand in market in an innovative way
- Industry recognition
- 8 week international collaborative online program
- Practical application to the workplace
- Final assignment the production of an asset management plan of the employer organisation
Professional Certificate Asset Management Planning

Skill rating by participants

- 5 Expert
- 4 Proficient
- 3 Competent
- 2 Advanced beginner
- 1 Novice

*Average competency self-assessments of 145 participants surveyed that completed course #6 in 2017*
Thank you !! : )
CIEC New Orleans 2019

Trends in Continuing (Engineering) Education
Nordic Countries/ Norway

Ragna Ann Berge, Norwegian University of Science and Technology
Chair of the 17th IACEE World Conference, Trondheim, Norway, 26-29 May 2020
Continuing (Engineering) Education in Nordic countries/ Norway

Similarities

• In general higher education is free – with some exceptions
• High rate of higher education in the population (33%): Most of these in the CE courses
• All countries offers Continuing Education/ professional development both free and with payment
• The regulatory legal framework is not clear
• CE/ LLL: Both economic and non-economic activity

Differences

• Regulations around external financing varies, makes an impact on the development
• Sweden has the strictest regulations regarding external financing of CE/ LLL
• Sweden offers more MOOCs than Danmark, Finland and Norway
• Danmark, Finland and Norway offers more CEE on undergraduate/ graduate level then Sweden (credit based courses)
Continuing (Engineering) Education in Nordic countries/ Norway

General discussion Nordic Countries:

-How do we make the transition towards a more digital world/workforce?
-What is the role of Higher Education Institutions in this, both ordinary education and CEE in closing the knowledge gap?

Little general knowledge about CEE concerning:

- Delivery models
- Financing
- Market differences
- The ability to define the needs of the workforce – and translate it into new deliveries (with or without credits)
Continuing (Engineering) Education in Nordic countries/ Norway

2018: The year Continuing Education/ Lifelong Learning came on the AGENDA

Large expectations on delivering more CE from Higher Education Institutions
Develop more (relevant) online courses (credit and non credit based)
In general in Norway: Long tradition of cooperation between the trade unions, the employer unions and the government
Less tradition of cooperation between unions/ employers and higher education institutions

This means: we do not understand each others differences/ challenges

We need to develop new ways of cooperation between trade unions, employer unions, the government and the Higher Education Institutions to be able to develop the right offers to the right markets.
Including knowledge about the different business models/ financing system
Continuing (Engineering) Education in Nordic countries/ Norway

My university, Norwegian University of Science and Technology, 2018:

Two Working Groups on the development of LLL/ CE:
1. Strategy/ organisation/ business models and financing
2. Develop CE in the area of digitization + establish NTNU CE Office in Oslo (capital)
Group members: deans, vice deans; faculty leaders of the institution (goal: to make them understand/ discuss Continuing Education)

Resulted in two papers with 30 recommendations
Main goal: Increase the Continuing Education activity by min 100% within two-three years – to contribute to fill the knowledge gaps in the workforce of Norway
Model 1: An attempt of simplification of the connection between financing and the complexity in the various "market areas" for CE/CPD.
One reason/example of why this is not easy: Regulatory framework CPD Norway

LIVSLANG LÆRING

Etterutdanning/kurs
uten studiepoeng

Videreutdanning/fag, emne
med studiepoeng

Tilbud
- Mot betaling unntak a
- Gratis
- Mot betaling unntak b og c
- Mot betaling unntak d

Aktivitet
- Økonomisk aktivitet
- Økonomisk aktivitet
- Ikke-økonomisk aktivitet
- Økonomisk aktivitet

Betaling
- Totale kostnader pluss fortjeneste
- Totale kostnader pluss fortjeneste
- Inntil 49% av kostnader
- Totale kostnader pluss fortjeneste

Kostnader beregnes med ny TDI modell for utdanning fra UHR

Kostnader = KDs finansieringskategori
Unntaksvis kan TDI modell benyttes

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But we still love working with CEE!

Thank you!
|| Trends in North America ||
Continuing Professional Development for Engineers

Soma Chakrabarti, PhD
President
International Association for Continuing Engineering Education
Contributing Factor - Technology

Technology is changing faster than we can keep track of.
Routine tasks will be automated.

We will need to learn new skills everyday.

Source: Brookings analysis of BLS, Census, EMSI, Moody's, and McKinsey data
Contributing Factor - Demographics

Projections of the Older Adult Population: 2020 to 2060
By 2060, nearly one in four Americans is projected to be an older adult.

<table>
<thead>
<tr>
<th>Years</th>
<th>Millions of people 65 years and older</th>
<th>Percent of population</th>
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</thead>
<tbody>
<tr>
<td>2016</td>
<td>49.2</td>
<td>15</td>
</tr>
<tr>
<td>2020</td>
<td>56.1</td>
<td>17</td>
</tr>
<tr>
<td>2030</td>
<td>73.1</td>
<td>21</td>
</tr>
<tr>
<td>2040</td>
<td>80.8</td>
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<td>85.7</td>
<td>22</td>
</tr>
<tr>
<td>2060</td>
<td>94.7</td>
<td>23</td>
</tr>
</tbody>
</table>


Older adults will outnumber young population by 2030-35.

We will need to train a number of young population.
Contributing Factor – Mobility and Migration
Contributing Factor – Geopolitical Situation
The Result – Many Jobs, Lifetime Learning

Typical employees will have more than $10^1$ distinct jobs in their careers.

Source:
http://www.clearmgmt.com/careers.htm
TREND - University-Industry Partnership for Mass Upskilling and Reskilling

Example: Arizona State University – Starbucks
Example: University of Memphis - FedEx
TREND - Low-Cost (MOOC-based) Degrees

Online, Cheap -- and Elite

Monday, March 26, 2018

https://www.cc.gatech.edu/news/604289/online-cheap-and-elite
TREND - Personalized Learning

- Skills Development
- Pick & Choose

Anytime
Anywhere
Exactly the way I want
I control my learning
I am the captain of my ship!
TREND - Non-Formal and Informal Learning

Validation

(Alternative) Credentialing

Badges
Certificates
(and, that’s all!)
Thank You!
soma.chakrabarti@iacee.org

Soma Chakrabarti, PhD
President
International Association for Continuing Engineering Education