Filling Skills Gaps in Blue Industry by Radical Competence Boost in Engineering VET

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.
RADICAL
Filling Skills Gaps in Blue Industry
by Radical Competence Boost in Engineering VET

Comparison of European educational models as input to RADICAL’s
ENGINE model development
Thomas Röhr, Head of International Relations
trohr@esta-groupe.fr
Objectives

- Analyse European academic-industrial cooperation models in (Sales) Engineering degrees
- Create a basis for the development of the new ENGINE model at TUAS
- Only organisational and administrational aspects are subject of this study: the ENGINE model’s pedagogic program is not subject of discussion here
- The content of the new degree remains identical with the existing Bachelor of Engineering in Industrial Management and Engineering
Input data

- Industry – Higher education models from
  - Germany
  - France
  - Finland

- Survey results from 14 Finnish companies
  - Five micro and small sized companies employing up to 50 persons
  - Three medium sized companies employing between 51 and 200 employees
  - Six large sized companies employing over 200 employees
  - Seven worked with manufacturing
  - Five worked with designing and consulting
  - Two with engineering and services
Academic-industrial cooperation in France – the ESTA example

- Five thematic placements (Min. 20 month)
- Regular & punctual lectures by industrial specialists
- Practical studies for companies as part of the study programme
- Networking events, Business breakfasts, Company visits & Conferences
- ESTA – Industry Partnership Programme

Academic socle:
Science & Technology – Sales & Marketing – Business & Management – Personal Skills & International
The process

Analysis of existing cooperation models in DE, FI and FR

Interviews with companies

Interviews with other stakeholders (student counseling, UAS legal advisor, staff members, head of the regional apprentice office in Turku)

Comparison

Development of ENGINE model
Question 1: Choice of Companies and Students

- Three parties: company – student – HEI
- Existing application process does not consider companies’ expectations or needs
- Companies’ selection of ‘their’ student can take place
  - Before entering the HEI, at the beginning or even after some months at the HEI
- When companies choose their candidate, HEI must ensure that quality and access standards are respected
- In all cases:
  - HEI must check that a student respects all access requirements to get the right to study
  - Final choice for a student must be in the responsibility of the company
Evaluation of student’s selection processes by companies

Evaluation of the five options for the selection process of students

1: Company chooses student from the whole...
2: Company proposes student for education
3: Student applies for open positions
4: HEI places students to companies
5: HEI, student and company find a common...

Number of answers:
- Not good
- Somewhat
- Fairly good
- Good
- Excellent
- no answer
Question 2: Scheduling of studies

- Existing models
  - Alternating every three month
  - Alternating weekly, three days per week at the HEI and two at the company
  - Company training during teaching free periods
  - Several internships integrated into the academic program

- Possibility of mixing RADIACAL and traditional students must be considered, otherwise additional costs are engaged

- The choice of the scheduling model are key to success of the model

- Seven alternatives have been presented to the companies
Companies’ answers to scheduling models

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of ‘Good’ or ‘Excellent’ answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. First year at HEI, following years time-sharing between company and HEI</td>
<td>9</td>
</tr>
<tr>
<td>2. Every week 3 days at HEI and 3 days in the company (= 6 days week)</td>
<td>3</td>
</tr>
<tr>
<td>3. Every week 3 days at HEI and 2 days in the company (= 5 days week)</td>
<td>6</td>
</tr>
<tr>
<td>4. Every other week student is at the HEI and in the company</td>
<td>5</td>
</tr>
<tr>
<td>5. Every other month student is at the HEI and in the company</td>
<td>4</td>
</tr>
<tr>
<td>6. Student studies 3 months in the University and 3 months in the company</td>
<td>4</td>
</tr>
<tr>
<td>7. August to December at HEI and January to June in the company</td>
<td>3</td>
</tr>
</tbody>
</table>

- One additional model has been suggested by a company during interviews
  - 1\textsuperscript{st} year: 100\% at HEI – 2\textsuperscript{nd} year: 75 \% – 3\textsuperscript{rd} year: 50 \% – 4\textsuperscript{th} year: 25 \%
Question 3: Agreements

- An employment contract is the absolute minimum of legal binding.
- A cooperation agreement HEI – company is needed to ensure education.
- Mixing up employment contract and cooperation agreement is estimated to be too complex.
- Companies must be involved in the student’s selection.
- Rules and a fallback solutions are needed for students and companies.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of ‘Good’ / ‘Excellent’ answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Contract between student and company</td>
<td>4</td>
</tr>
<tr>
<td>2. Contract between HEI and company</td>
<td>6</td>
</tr>
<tr>
<td>3. Contract between student, HEI and company</td>
<td>8</td>
</tr>
<tr>
<td>4. Contract between company and HEI; student has a working contract with the HEI</td>
<td>8</td>
</tr>
</tbody>
</table>
Additional aspects/results to be considered

- Companies must be able to assign a qualified instructor
- Some instructors will need training to guide students
- Regular meetings shall be installed (requirement of companies)
  - Bi-monthly (5 answers) or twice a year (4 answers)
- Possibility of companies
  - To provide required tools for students
  - To offer work life related assignments that support learning outcomes
  - To offer thesis works
- Interest/possibility to an extended exchange period abroad
Conclusion

Experiences from existing cooperation models + Feedback from companies = Large and valuable basis for the ENGINE model development