Developing VET Practice- and work-based higher education
- within a lifelong-learning framework

Vocational education and training in Europe: Taking stock and looking ahead
Vienna, November 2018
Practice based reflection

Professor of Industrial Design (on creative merits - as a non-linear, lifelong learner)

Formerly:
• Industrial design professional
• Guest lecturer teaching real work-world connected design & development projects.
• Establishing practice-oriented studies, BA & MA level, industry and research cases
• Dean; managing higher education

Presently:
• Teaching EPS; cross-disciplinary & multi-national, industry- and research connected, Erasmus+ exchange study employing PBL
• Entrepreneurship in creative studies
• Research group for lifelong learning
• Developing dual education solutions for engineering studies

Based on my experience, I’ll present a development path for HE VET for discussion, with a main focus on higher education.
Lifelong Learning perspective

Situation snapshot:

• Oil price fall 2014-2016 sends 40,000 employees from the highly specialized Norwegian oil-industry into a job-market with just 2.7 million jobs increasing the unemployment rate with 1.5%

• Immediate need for offering competence adjustments; as for instance:
  • Up-qualifying existing competences – to move to positions in other industry
  • Re-qualifying to change direction – for instance to become teachers.

Build on existing competence, add new, change problem to value creation!
Respond to change

More people will need re- or up-qualification at different levels in their careers and at different ages.

Calls for a new perspective to lifelong learning that might lead to more mixed student groups.

Group-internal learning and experience exchange might be activated as a core value and challenge the traditional thought curriculum in favour of mediated and coached group-learning.

15.11.2018

Professor Petter Øyan
Three cases and a concept proposition

Move from novice to expert combined with scientific, research-based approaches

• Possible?
• Necessary?

What are the characteristics of increasing specialisation:

<table>
<thead>
<tr>
<th>T-shaped specialist</th>
<th>Delta shaped specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>deep</td>
<td>wide</td>
</tr>
<tr>
<td>focused</td>
<td>diversified</td>
</tr>
</tbody>
</table>

Strong need for communication and interaction skills
Continuous competence development
Case 1; professional

Oslo Airport express train
Ticket pay-point
Design of pay-as-you-go touch-screen

Competence development was needed on areas such as:
• use of touch screens
• user interaction requirements for a new and not yet familiar technology (1999)
• readability
• reduction of situational stress
• multi-disciplinary teamwork needed
Multi-disciplinary teamwork model from industry practice
Supports competence exchange and collective learning
Case 2; educational

Student participation in Shell Eco Marathon

To build a car, students needed to:

- identify practical challenges
- acquire theoretical competence
- apply it directly

Project characteristics:

- teambuilding (up to 62 students)
- coordination of all necessary competences
- technology
- logistics
- marketing

Success factors were:

- supportive, multi-competence teacher teams
- integration of courses
- high level of student responsibility
Shell Eco Marathon – practice & problem based learning

Industry interaction:
- Engine and parts
- Materials
- Carbon monocoque moulding
- Sponsoring

Students engage in extended self-learning:
- Wide - new subjects
- Deep - special competences
- Teamwork and collaboration – soft skills
- Documenting acquired extra-curricular competences

Complexity:
- Commitment & full student project responsibility
- Structured, cross-disciplinary, multi competence teams
- Absolute deadline; race in France (3000 km from campus)
- Media exposure

Teaching requirements:
- create team of dedicated teachers
- commitment
- entrepreneurial skills
- planning & re-planning
- risk tolerance
- improvisation
- coaching
- financing

Student workload individual:
- Min. 3 ECTS, one obligatory assignment
- Max. 50 ECTS, 2 complete courses + bachelor thesis

Career opportunities:
- Prestigious master studies
- Strong job applications

Collaborations:
- AHO Research Project;“Rapid Prototyping”
- Collaboration with NMBU & Eidsvoll VGS
Project group for car project set up as a professional project organisation

Project supervisors and support
- Designers
- Marketing
- Electronic engineers
- Mechanical engineers
- Project coordinator

Finance

Project report
- 10 ECTS

Student 1
Student 2

Facilitates competence exchange and collective learning

Competence development

Project reports
- 50 ECTS

Identical to industry project
European Project Semester
Case 3; educational

WAYFINDING
APPLICATION GUIDELINES

EPS is:
• realistic projects
• industry relevant
• problem solving
• research focused

European Project Semester
Case 3; educational

Following this rules, the numbering system created to name a room is:
Name of a building + . + Letter of the wing + Number of the floor + Number of the room.
For example, the general classroom number 12 located in the wing B in the second floor of the P32
building has the name "P32.B212" (Figure 55).

P32. B 212

Previous part
Name of the Building

Letter of the wing
Floor number
Room number

dot

EPS is:
• realistic projects
• industry relevant
• problem solving
• research focused

Annex 9 - Hi-Fi prototype screens
The “Supporting Courses” provides a fixed curriculum, and in addition a flexible coaching and support function that is delivered when needed to groups as well as to individual students.
Summing up the cases;

The experiences from practice- and work-based education cases indicate that HE can accommodate for the VET learning challenge.

Success factors in work-life projects correspond to student projects:

- Collaboration across disciplines
- Well functioning multi-competence teams
- Responsibility for own learning
- Industry collaboration provides relevance
- Realistic challenges motivates
- PBL motivates

Courses needs to be designed for practice- and work-based higher education

Supporting courses may offer the flexible solutions necessary to help students succeed.

Combining practice- and work-based education with theory development is manageable.
Strengthening the cooperation and permeability between the HE-sector and the work-world

Mind-set needs to open up to think different and create creative solutions:

- Strengthen the dialogue between the world of work and the HE-sector
- Increase competitiveness for the private sector as well as HE-partners
- Establish business relevant research
- Contribute to product development based on current theory and knowledge
- Entrepreneurship & innovation integrated in the studies
- Students also develop «Worklife Skills»

- Recruiting: fast transition from studies to productive work
- Employees from partner enterprises can update their own competence and contribute to the education with professional practice

Challenges:

- Establish long-term, dedicated work-life relationships
- Establishing mutual confidence
- Training the trainers
Prepare for an increasing number of non-linear students

We are facing educational challenges:
• the employment landscape is increasingly dynamic
• demands constant competence development and re-qualification

Facilitate for different entering competences
Provide for an individualized study progress
View students with different
  • backgrounds
  • age
  • competence mix
- as a value for learning

Provide students opportunities to learn:
• what is needed
• when it’s needed
• as an individual
• as an employee within the work-context
• as re-qualification
• expanding and deepening knowledge
Challenge students with the opportunity to perform!

Set up the HE-VET education to provide a research inspired project organisation:

• HE provides individual learning paths for students
• Problem Based Learning; theory and hypothesis driven action
• Learning the research approach by working in projects
• Increasing complexity step by step to move from entrance level to expert
• Facilitating the students’ learning experiences through feedback and iterations
Build a HE-VET ecosystem...  
- for integrated, university level work-based learning

Formal
Informal
Non-formal

Enterprise work integrated in weekly schedule and university holidays
Continuous exchange of staff and competences between university and enterprise partners
Bachelor Thesis work coordinated

80% time in the university
20% time in the enterprise

Entry to study via application to university
Study and work tasks coordinated during studies
Qualified for employment as well as for master studies

Education qualifies for HE
Accreditation of formal and informal competence
Pre-qualifying required

Supporting courses & Trisemester concepts

Up-qualifying opportunities

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