



# Recognizing non Formal Learning Experiences

*Top-down or bottom-up approaches for skills alignment?*

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# Context

- **Within the European education and training framework, lifelong learning is defined as:**  
*“all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competence, within a personal civic social and/or employment-related perspective”*
  
- **Adults have an active role in their own learning and training:**
  - Non formal and informal education is the cornerstone for a lifelong learning and career development;
  
- 1. **Higher (engineering) institutions award more and more their diploma also on the basis of a recognition of professional and life experience:**
  - based on previous experiences, the candidate prepares and provides a thesis and has to defend his/her profile, knowledge, skills, and competencies in front of a jury.
  
- 2. **Professional bodies also deliver some qualifications or certifications (e.g. chartered engineers)**

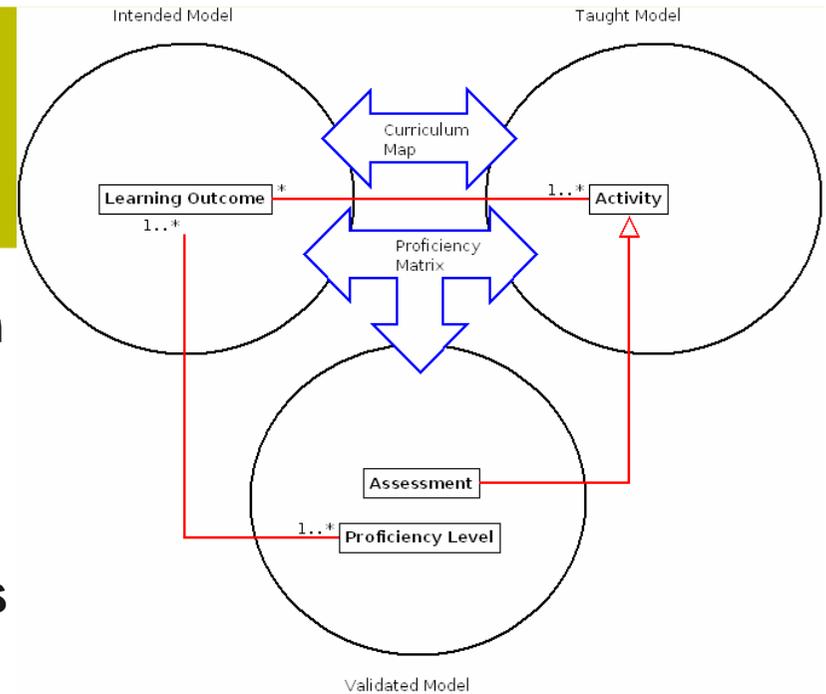


# Syllabus

- **Skills, derived from several years of professional experience, personal development, or continuous vocational training, are hardly recognized in the formal education arena (e.g. knowledge-oriented)**
  
- **Candidates for a diploma or qualification have to confront more or less to referenced syllabus:**
  - Learning outcomes
  
- **Knowledge, skills, and competency syllabus should be clearly defined and candidates have to overcome their complexity so as, ultimately, to try to align their profile therewith.**

# Constructive Alignment

- An educational program could rely on three main pillars, pursuant to constructive alignment principles [Biggs]
- Those pillars share concepts, such as learning outcomes.



- Whether regarding competencies verified by professional bodies to obtain a certification or as regards knowledge and skills verified by academics to obtain a diploma, the taught model is more or less missing.
- The candidate mostly has to rely on the reference syllabus formalizing the certification/qualification or diploma.



- **For a better classification and recognition of individual knowledge and skills, and a more effective definition of associated proficiency levels:**
  - guiding candidates in self-assessment;
  - facilitating knowledge and skills verification/validation by examination boards.



## Study

- **This study took place in the context of two distinct models (Master of Eng. Levels):**
  1. a professional certification where the candidate evaluation model was fully delegated to professionals (e.g. chartered engineer);
  2. a qualification of professional and life experience fully managed by an accredited public institution based on its classical syllabus for students.
- **Two approaches applied:**
  1. **Top-down:** the syllabus is initially presented to candidates
  2. **Bottom-up:** candidates define from scratch their own syllabus

## Top-down (1)

- **In France, some professional certifications are formally recorded in the *National Register of Vocational Certification*, such as the “*Technical Architect of Information Systems*”.**
  - For this profession, the competency syllabus is divided into five activity domains; each domain comprising approx. ten core competencies
- **Public or private educational institutions can propose dedicated education and training programs**
  - e.g. six months part-time apprenticeship or continuous vocational program
- **After several iterations, the candidate is able to position his/her knowledge and skills within the syllabus and to gain some confidence in covering the main required professional activity domains (‘tick the boxes’)**



## Bottom-up (2)

- **Get a diploma, initially associated to a formal curriculum, thanks to professional and life experience:**
  - Candidates have to convince a jury, comprising academic professors, that they have learned and developed a range of knowledge and skills, without being continuously assessed
- **Educational programs and syllabus are defined more or less rigorously which may lead to ambiguities among stakeholders having different concerns (e.g. the candidate, the jury)**
- **Archeology, analysis, and self-assessment:**
  - rooted in reflection-on-action principles [Shön], it proves to be more time consuming but to have a deeper impact on self-confidence and self-efficacy.

# Proficiency Matrix Example (Archeology)

	Being able to speak in public	Being able to justify your own choices	Being able to elaborate specifications	Having good writing skills	Being able to analyse	Being able to synthesise/summerise	Having good pedagogical skills	Being able to give instructions/guidance
In charge of the study, installation and test of towed sonars handling systems modifications		S		A		S	A	
In charge of the GRAFCET programming of energy data acquisition PLCs aboard submarines				A	A	A		A
Electronics instructor in an MoD technical training school	A			A	A	A	M	M
In charge of the computing subsystem of SENIT4 and 6 Naval Tactical Data System (NTDS)		A	A	M	M	M		M



# Conclusion

- **Two approaches applied with an alignment perspective, but a low sample of candidates**
  
- **They show that:**
  1. when candidates directly rely on a syllabus in a top-down approach, they tend to limit the scope of their potentialities;
  2. thanks to reflectivity using a bottom-up approach:
    - when candidates define from scratch their own syllabus, impacts on self-confidence and self-efficacy are much more significant;
    - individuals better underpin their lifelong learning and training, and thus enhance quality of personal employment management and actions plans.



## ■ Recognizing non formal learning experiences of students in engineering education?

- Skills from project-based learning experiences not always well-addressed in syllabus;
- Professional skills from internships taken into account in a formal manner (syllabus)?
- Extra curricular activities?
  - e.g. personal hobbies, engagement in student council, responsibilities in student office, entrepreneurship, organization of large social events/parties, etc.

## Top-down or bottom-up approaches ?



# Remarks or Questions?

