D2.2. Definition of Qualification Framework – the "EuroTeQ Learning Professional"

24 November 2022

Author: Lisa Hasenbein (TUM)

Other contributors: Members of the BoostEuroTeQ Work Packages 2 and 3

Project start date: 01.09.2021

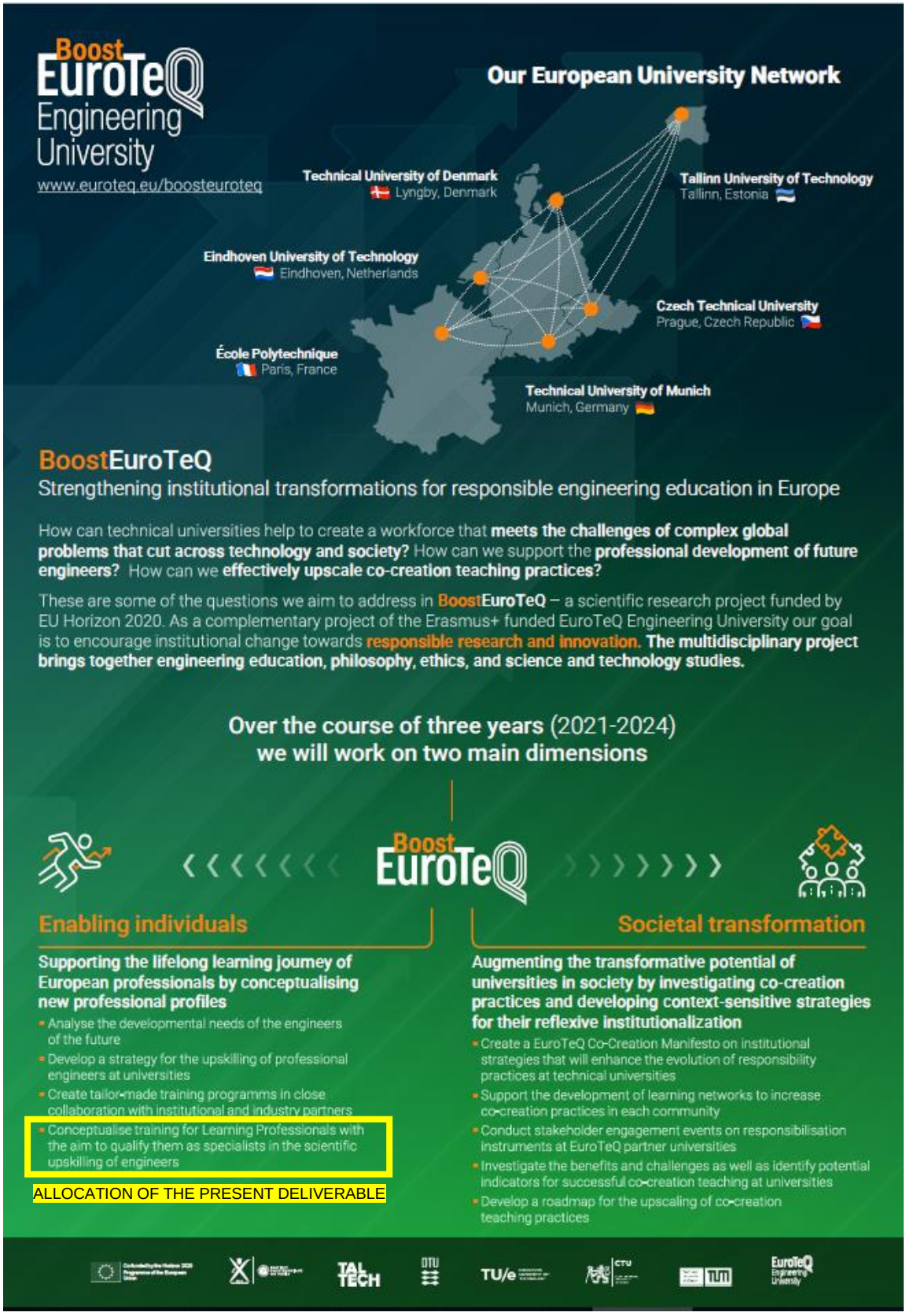
Duration: 36 months

Date of issue of this report: 30.11.2022

Contact:

Lisa Hasenbein, Work Package Lead (TUM): lisa.hasenbein@tum.de

Sandra Dirnberger, Project Manager: sandra.dirnberger@tum.de


Boost EuroTeQ Engineering University
www.euroteq.eu/boosteuroteq
Our European University Network
Technical University of Denmark
Lyngby, Denmark
Tallinn University of Technology
Tallinn, Estonia
Eindhoven University of Technology
Eindhoven, Netherlands
Czech Technical University
Prague, Czech Republic
École Polytechnique
Paris, France
Technical University of Munich
Munich, Germany
BoostEuroTeQ
Strengthening institutional transformations for responsible engineering education in Europe
How can technical universities help to create a workforce that meets the challenges of complex global problems that cut across technology and society? How can we support the professional development of future engineers? How can we effectively upscale co-creation teaching practices?
These are some of the questions we aim to address in BoostEuroTeQ – a scientific research project funded by EU Horizon 2020. As a complementary project of the Erasmus+ funded EuroTeQ Engineering University our goal is to encourage institutional change towards responsible research and innovation. The multidisciplinary project brings together engineering education, philosophy, ethics, and science and technology studies.
Over the course of three years (2021-2024) we will work on two main dimensions
Boost EuroTeQ
Enabling individuals
Supporting the lifelong learning journey of European professionals by conceptualising new professional profiles
Analyse the developmental needs of the engineers of the future
Develop a strategy for the upskilling of professional engineers at universities
Create tailor-made training programms in close collaboration with institutional and industry partners
Conceptualise training for Learning Professionals with the aim to qualify them as specialists in the scientific upskilling of engineers
ALLOCATION OF THE PRESENT DELIVERABLE
Societal transformation
Augmenting the transformative potential of universities in society by investigating co-creation practices and developing context-sensitive strategies for their reflexive institutionalization
Create a EuroTeQ Co-Creation Manifesto on institutional strategies that will enhance the evolution of responsibility practices at technical universities
Support the development of learning networks to increase co-creation practices in each community
Conduct stakeholder engagement events on responsibilisation instruments at EuroTeQ partner universities
Investigate the benefits and challenges as well as identify potential indicators for successful co-creation teaching at universities
Develop a roadmap for the upscaling of co-creation teaching practices

EXECUTIVE SUMMARY

This report presents Deliverable D2.2 of the BoostEuroTeQ work package 2 (WP2) “Define EuroTeQ Learning Professional”. It aims to sharpen the understanding of the role and necessary competences of the “EuroTeQ Learning Professional”. To avoid confusions about the role and qualification caused by its name, the so-called “Learning Professionals” are referred to as “EuroTeQ Experts for Learning and Professional Development” (Experts for L&PD) in this Deliverable and future work of this WP. In short, the EuroTeQ Experts for L&PD are to be specialists in the scientific upskilling of engineers and are responsible for the facilitation of knowledge transfer and co-creative innovation activities between the EuroTeQ partner universities and industry.

The present Deliverable is based on the analysis of the status-quo of Experts for L&PD at EuroTeQ partner universities (i.e., background, activities, tasks and qualification; Deliverable D2.1) and offers a unifying qualification framework taking into account the existing differences at the partner universities regarding training offers and respective structures with regard to this role. The comprehensive qualification framework was developed based on insights from Deliverable D2.1 and an iterative process of integrating feedback from different interlocutors involved in professional education and/or learning and development activities at the partner universities or in industry.

To describe the required competences of Experts for L&PD, the present Deliverable uses the competence model that has been introduced in EuroTeQ D4.1 and that has also been adopted to design the upskilling strategy for the future EuroTeQ engineer within BoostEuroTeQ work package 3. It differentiates between specialized-methodological, social-communicational, personal, and activity and realization-oriented competencies. For the EuroTeQ Experts for L&PD, relevant competences in all four areas are outlined and respective learning outcomes are formulated, specifically focusing on specialized-methodological competences (e.g., the assessment of professionals’ developmental/learning needs, didactics and adult pedagogy and the use of educational technologies) and social-communicational competences (e.g., audience-tailored communication and interdisciplinary cooperation) which are considered most important for the qualification of Experts for L&PD within EuroTeQ.

Lastly, the present Deliverable closes with implications and suggestions for a training program derived from the work on the EuroTeQ Expert for L&PD qualification framework presented in this report, which will serve as the groundwork for the training concept to be developed in the next Deliverable D2.3.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 3

TABLE OF CONTENTS 4

1. INTRODUCTION 5

2. OVERALL APPROACH AND FRAMEWORK 6

The role of the „EuroTeQ Learning Professional“ 6

Methodology and approach 7

The theoretical competence framework 8

3. QUALIFICATION FRAMEWORK FOR THE “EUROTEQ EXPERT FOR LEARNING AND PROFESSIONAL DEVELOPMENT” 10

Core competencies of Experts for L&PD 10

Learning outcomes for Experts for L&PD in line with the European Qualification Framework (EQF) for Lifelong Learning 12

4. IMPLICATIONS FOR THE CONCEPTUALIZATION OF A TRAINING PROGRAM FOR THE “EUROTEQ EXPERT FOR LEARNING AND PROFESSIONAL DEVELOPMENT” 14

REFERENCES 17

1. INTRODUCTION

Today's working world is changing more dynamically than ever before. In this fast moving environment, professionals face a host of new and complex challenges. To address and overcome these – i.e., to make Europe a competitive and dynamic knowledge-based economy –, lifelong learning is essential (Commission of the European Communities, 2001; Council of the European Union, 2002). To provide professionals with the required lifelong learning opportunities, we need experts that know the current developments and are at the forefront of change – but we do not only need experts in a specific subject; they also need to know about how to develop effective educational courses and programs. We call these people "Learning Professionals" or – more specifically – "Experts for Learning and Professional Development". Their key task is to design professional development programs and learning opportunities for professional engineers that consider both latest research findings and current needs of the industry. This means their role is to serve as key actors between academia and the wider eco-system (i.e., they are "bridge builders", so-called "brokers"; Burt, 2004; Burt & Soda, 2021).

> In other words, the EuroTeQ Experts for Learning & Professional Development are specialists in the scientific upskilling of engineers and facilitate knowledge transfer and co-creative innovation activities between the university and industry.

In order to achieve this, Experts for L&PD need knowledge about the subject but also a number of specialist-methodological competences (e.g., how to design, conceptualize and evaluate educational programs for working professionals) and social-communicational skills (e.g., how to communicate science findings in an audience-tailored manner).

Within the BoostEuroTeQ work package 2, we aim to develop and implement a concept for training these "bridge builders" (in the following referred to as "Experts for Learning and Professional Development" or in short Experts for L&PD) at universities. Deliverable D2.1 has provided an overview of the status-quo of Experts for L&PD at EuroTeQ partner universities (i.e., background, activities, tasks and qualification). Taken together, Deliverable D2.1 showed that the current situation varies greatly among the partner universities. Whereas all partners acknowledge the importance of Experts for L&PD in general, the topic of offering professional education (in addition to providing regular study programs) is very differently present at the partner universities; hence, the specific role/position of Experts for L&PD only exists in some universities and respective training activities for this role are scarce. Overall, the interviews showed a lack of coordination and respective structures with regard to this role. This is in line with existing literature on the competence profiles and standards for adult learning staff in general which are known to be considerably different depending on institutions and regions (e.g., Bechtel, 2008). Against this background the aim of the present Deliverable D2.2 becomes even more apparent: It presents a framework that aims to serve as a guideline on how to qualify Experts for L&PD at universities. It considers the current situation (see Deliverable D2.1) and includes implications for the further development of a respective training program for Experts for L&PD (upcoming Deliverable D2.3).

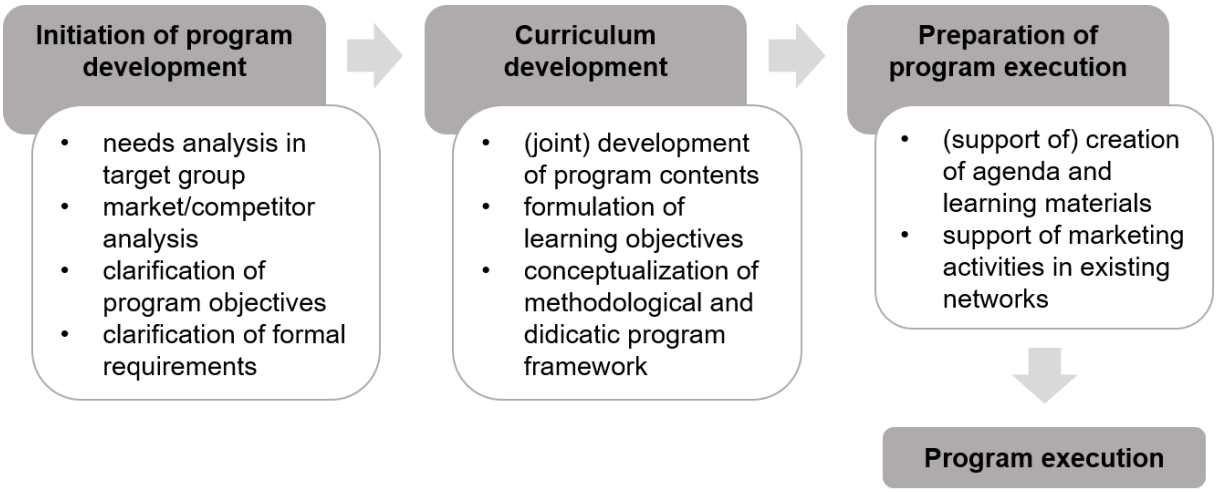
The present Deliverable is structured as follows: First, considering the qualification as Expert for L&PD as an additional qualification (and potentially alternative career path) for academics in the engineering disciplines, the proposed qualifications framework uses the same competence model as it was introduced in EuroTeQ D4.1 to map the competencies of the current and future European engineer (see summary of framework and approach in Chapter 2). In a next step, the identified core competencies for Experts for L&PD are described and aligned with the European Qualifications Framework (EQF; Chapter 3) to define measureable learning outcomes. Important implications for the design of the training program (Chapter 4) and general considerations (Chapter 5) are discussed in the end.

2. OVERALL APPROACH AND FRAMEWORK

The role of the „EuroTeQ Learning Professional“

The original BoostEuroTeQ proposal speaks of “EuroTeQ Learning Professionals”, however, to be very clear about the role and a respective qualification[1], we refer to them as “EuroTeQ Experts for Learning and Professional Development” (Experts for L&PD) in the following. This is to emphasize that the qualification is about expertise regarding *the whole learning process that leads to professional development* (including needs analysis and program development) rather than only training for effective learning design and good teaching practices (see Fig. 1).

Figure 1. The task areas of the Experts for L&PD in the development of professional education offers



[1] Interviews showed that there were misunderstandings with the original name “Learning Professional” that led to confusions (a) with regular teaching staff that is already present and trained for teaching students at universities and (b) with engineers as the “EuroTeQ Professionals” that are being upskilled (see work package 4 in EuroTeQ).

The program execution may or may not be a task of the Experts for L&PD; it is likely that their role includes the facilitation of some program elements, but depending on potential collaborating experts in the program development, this might also be taken over by others. All administrative tasks associated with the program execution (i.e., participant and event management, learning infrastructure and overall coordination) is per definition not part of the Experts for L&PDs' tasks.[2]

When we speak about Experts for L&PD at the EuroTeQ partner universities (and beyond), we refer to Subject Matter Experts (SMEs) in different engineering disciplines that additionally are qualified as specialists in the scientific upskilling of professional engineers. They are responsible for (supporting) the design of professional development programs and learning opportunities for engineers that consider both latest research findings and the needs of industry. To this end, this role can be fulfilled by either (a) engineering researchers at universities or (b) professional engineers in the industry; however, regardless of their working environment, Experts for L&PD need to be well versed in both the academic and professional world to serve as "bridge builders" between universities and the industry sector. Importantly, depending on the background of the Expert for L&PD (i.e., working at the university/in engineering research vs. working in industry as a professional engineer) the need for qualification centers on different competencies (see implications for the actual training program in Chapter 4).

Methodology and approach

Based on the initial definition in the BoostEuroTeQ proposal and the insights gained from the interviews regarding the status quo at the partner universities (see Deliverable D2.1), a list of necessary competencies for the Expert for L&PD was compiled and then further developed into a comprehensive qualification framework.

In a number of iterations, we contacted the interlocutors from the partner universities that were interviewed for Deliverable D2.1 again to present them the (preliminary) qualification framework and adapt it to their (country-specific) feedback. In addition, interlocutors from the industry (i.e., HR staff responsible for professional development of engineers in the firm) were asked to provide feedback on the qualification framework to make sure the resulting profile for Experts for L&PD fulfil the needs of the final target group (i.e., professional engineers). Moreover, we contacted additional interlocutors involved in training activities at the partner universities to provide feedback on the qualification framework and potential synergies with existing qualification offers at the partner universities.

Considering the different sources of feedback, we followed an iterative procedure that lead to the final version of the qualification framework as it is presented in this Deliverable.

[2] Considering the current situation at the partner universities, some already have existing structures that cover the management and administration of professional education programs centrally; others may still have to implement respective structures and workflows.

The theoretical competence framework

Before outlining the qualification framework for the EuroTeQ Expert for L&PD, we would like to clarify the central terminology used.

Following the council recommendation on the European Qualifications Framework (EQF) for lifelong learning (Council of the European Union, 2017), we understand a *qualification* as the outcome of an assessment and validation process which determines that an individual has achieved learning outcomes to given standards. According to the EQF, learning outcomes should refer to the acquisition competences.

> *Competence* hereby means the proven ability of a learner to use knowledge[3] and skills[4] autonomously and with responsibility (i.e., in work or study situations and in professional and personal development).

In this definition, the council of the European Union (2017) highlights that the level of autonomy and responsibility largely depends on the working environment and overall context (on the one hand, the number of activities that one is in charge of; on the other hand, the level of autonomy that one has in their own work in general). By doing so, the EQF definition acknowledges what many competence definitions refer to as context-specificity or as a "functional relation to specific situations and challenges in certain domains and contexts" (Klieme & Leutner, 2006, p. 879; see also, Pittich, 2014). In this vein, the definition highlights that competences are based on both, cognitive and functional aspects (i.e., involving knowledge and skills), as well as interpersonal attributes related to the social and organizational context (see also Buiskool et al., 2010; Cedefop – European Centre for the Development of Vocational Training., 2014; Council of the European Union, 2006).

To describe the competences of an Expert for L&PD, the present Deliverable uses the competence model that has been introduced in EuroTeQ D4.1 to map the competences of the current European engineer and to set the baseline for the further analysis and identification of the future developmental needs of the European engineer. The model (see Fig. 2; Erpenbeck et al., 2017; Pittich, 2014) distinguishes between

(a) *specialized-methodological competences* (also referred to as technical-methodological competences; T) that reflect the skills and knowledge related to mastering a specific discipline,
(b) *social-communicational competences* (S) that reflect the skills and knowledge enabling a person to interact with others,
(c) *personal competences* (P) that reflect the skills and knowledge relating only to a person themselves, and

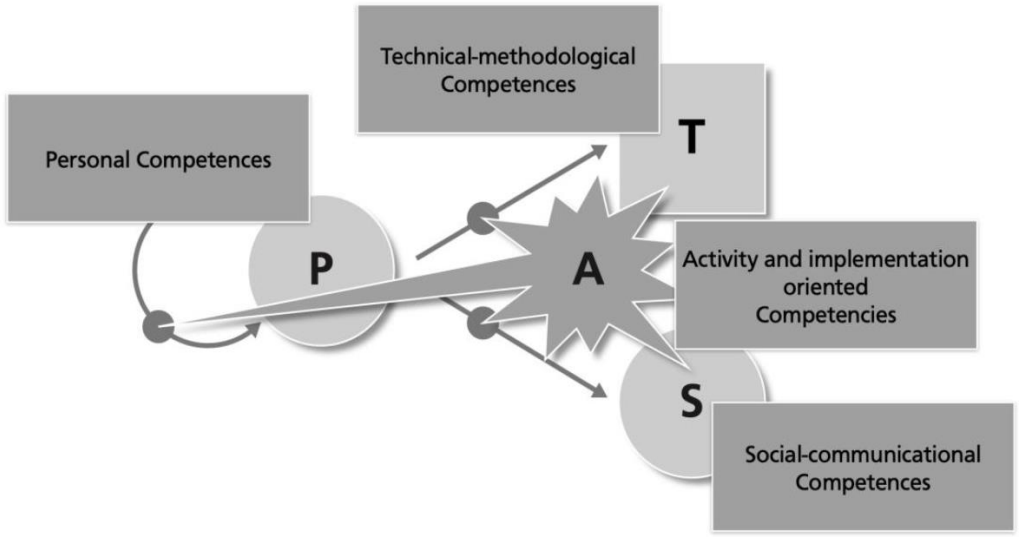
[3] *knowledge* means theoretical and/or factual information (i.e., a body of facts, principles, theories and practices) that is acquired through learning (Council of the European Union, 2017).

[4] *skill* means the (cognitive and/or practical) ability to apply knowledge and use know-how to complete tasks and solve problems (Council of the European Union, 2017).

(d) *activity and realization-oriented competencies* (A) that reflect the skills related to a person's inner motivation and willingness to act.

Activity and realization-oriented competencies thereby serve as a connecting element for the model, as they are a requirement for any of the other competencies to develop and generally come into play.

Figure 2. Framework of specialized and interdisciplinary competences



For the Experts for L&PD as the specialists for the scientific upskilling of engineers, it is important to have certain competences in all these areas. Importantly, the present qualification framework focuses on the necessary competences in the context of continuing/professional education. This means that, the Experts for L&PD all are assumed to have a strong academic background in an engineering discipline (i.e., associated with well-developed specialized-methodological competences in the specific subject); the profile of the Experts for L&PD focuses on additional competences that go beyond those associated with expertise in a specific engineering subject. The next chapter provides details on the competencies that are at the focus of the present qualification framework.

3. QUALIFICATION FRAMEWORK FOR THE "EUROTEQ EXPERT FOR LEARNING AND PROFESSIONAL DEVELOPMENT"

Core competencies of Experts for L&PD

Based on the interviews (see D2.1.) and feedback from different experts as well as based on empirical studies in the field of professional/adult education, the following competences were identified as central in the qualification of Experts for L&PD (see Table 1).

Table 1. Relevant knowledge, skills, and competences of Experts for L&PD in different areas

Competence area	Relevant knowledge, skills and competences
Specialized-methodological	• Assessment of professionals' developmental / learning needs • Market / competitor analysis regarding professional education offers • Didactics and adult pedagogy (incl. dealing with heterogeneity) • Use of educational technologies • Program evaluation and competence assessment
Social-communicational	• Science communication (i.e., audience-tailored communication) • Presenting and moderating • Networking and (interdisciplinary) cooperation
Personal	• Self-organization and self-regulation • Conceptual thinking • Flexibility, adaptability and openness
Activity/realization-oriented	• Empowerment, motivation • Enthusiasm

As mentioned before, with regard to the ***specialized-methodological competences***, the present qualification framework focuses on those referring to the development of learning and professional development opportunities (i.e., upskilling offers for engineers) which present an addition to specialized-methodological competences in the experts primary subject of expertise (i.e., an engineering discipline). We consider our target group of prospective Experts for L&PD as experts in their specific field of study; the specialized-methodological competences listed here describe an additional qualification on top of the individual engineering subject knowledge. As we define the Expert for L&PD as someone who is responsible not only for teaching but for creating learning opportunities for professionals in general, they need competence about every step of the development of an professional education program; starting with (a) the assessment of the developmental / learning needs of professional engineers (see an example in the BoostEuroTeQ WP 3, Deliverable D3.2) and the analysis of the industry (and training) context for the specific developmental need, to (b) principles of adult pedagogy and didactics, specifically how to deal with very diverse and heterogeneous learners and how to use educational technologies for innovative and engaging learning formats, to (c) a final program evaluation and competence assessment. These competences are based on

factual knowledge as well as knowledge for processes and conceptual knowledge that facilitate specific and variable actions, respectively (Pittich, 2014). With the ultimate target group of working adult learners in mind, it seems particularly critical for (prospective) Experts for L&PD to be able (a) to recognize diverse backgrounds and individual learning needs of these professionals and (b) to react to them with flexible learning opportunities utilizing the affordances of educational technologies (Farokhzadian et al., 2022; Jen & Hoogeveen, 2022; Keshavarzi et al., 2022; Liu et al., 2022).

Social-communicational competences are central for Experts for L&PD as they serve as "translators" and "bridge builders" between the world of academia and industry. This means that Experts for L&PD need to be well versed in how to interact and communicate with different stakeholders (especially also those "outside their bubble"), including the use of an appropriate language tailored to their audience and competences in presenting, moderating and cooperating. Studies have shown that an open, interactive and bidirectional communication that fosters collaboration between academics and professionals and considers an appropriate presentation of information tailored to the target group substantially contributes to the success of knowledge transfer and professionals' learning (de Wit-de Vries et al., 2019; Gold & Pedler, 2022; Mitton et al., 2007).

In addition, there are certain personal competences and activity/realization-oriented competences that are required to succeed as an Expert for L&PD. Important ***personal competences*** entail general competences like self-organization, self-regulation and conceptual thinking. Moreover, to work at the intersection of academia and industry and to function as a "bridge builder", Experts for L&PD need to be able to adapt quickly and generally be open to different experiences and perspectives. With regard to ***activity/realization-oriented competences***, Experts for L&PD are required to empower professional learners and motivate them for their own professional development.

Notably, many of the potential Experts for L&PD at the partner universities are likely to have made experiences similar to those envisioned for the Expert for L&PD, however, most likely with a clear focus on the target group of students as learners. To work with the target group of professionals, distinct/additional competences are necessary as professionals have specific spaces where they act and implement the learning content that substantially shape their expectations and developmental needs. In other words, when we speak of competences related to didactics and an understanding of pedagogical principles, we assume that academics who teach have qualifications in this area already (and as Deliverable D2.1 showed, many universities provide respective trainings for their teaching staff); whereas university students and professionals both fall in the category of adult learners (compared to learners in primary or secondary school), the qualification of Experts for L&PD highlights even more the specificities of professionals as adult learners, in particular in comparison to higher education at universities aimed at university students.

We would like to point out that the knowledge, skills and competences described (see Table 1 for an overview) are generic in nature, which means that they reflect what is generally relevant

for experts in the adult learning and professional development sector (see classification made by Buiskool et al., 2010). Beyond these, there are other competences that are particularly linked to specific arrays of activities that may or may not fall within the responsibility of Experts for L&PD depending on the work environments and structures at place. These competencies include, for instance, advisory and counselling, mediation, leadership, marketing and public relations and IT troubleshooting. We argue that the outlined generic competences (see Table 1) serve as a necessary – and oftentimes sufficient – qualification for these more specific activities and will therefore focus on them in our qualification framework. Generic competences as such provide the advantage that they are applicable to different contexts (Buiskool et al., 2010) and therefore can account for different backgrounds and profiles of prospective Experts for L&PD and their learner target groups.

Learning outcomes for Experts for L&PD in line with the European Qualification Framework (EQF) for Lifelong Learning

The EU initiative to create a European Qualifications Framework (EQF) attempts to provide a reference point for development in the individual member countries on the basis of eight reference levels. What is new here compared to previous approaches is above all the focus on competencies acquired in the sense of an outcome orientation. Formal, non-formal and informal acquisition of competencies are assessed in the same way. It is therefore not decisive which qualification someone has, nor how and where they acquired it. The only thing that matters are the competencies and the respective levels of competency that someone possesses.

The primary goal of the EQF is to increase transparency between the member countries with regard to the qualifications and competencies of professionals, and thus to promote mobility within the EU. Nevertheless, the orientation towards learning outcomes, which are to be described in terms of knowledge, skills and competences, and the explicit definition of what is to be understood by the terms, can also help actors at institutional, regional and national level to agree on what profile is needed for a particular field of activity (Bechtel, 2008; Council of the European Union, 2017).

In line with this, we aim to describe specific measurable learning outcomes that the qualification of Experts for L&PD entails (see Table 2). Importantly, all learning outcomes for the Expert for L&PD refer to competence levels of 5 and higher, according to the EQF (Council of the European Union, 2017, p. 22). These specifically entail

- *knowledge* that is comprehensive and involves critical understanding as well as awareness of its boundaries and issues (also at the interface with other fields),
- *skills* to develop creative solutions to abstract, complex and unpredictable problems as well as to integrate knowledge from different fields to extend and redefine practices, and
- *responsibility* and *autonomy* to review and manage professional development of individuals and groups including the development of new processes and approaches.

Table 2. Central learning outcomes for the qualification of Experts for L&PD

	General description of relevant qualification	Overarching learning outcomes (selection)
T	Assessment of professionals' developmental / learning needs	• Knowledge and skills to conduct qualitative and quantitative needs analyses (e.g., interview and survey methods) • Knowledge of central trend studies in the respective field of expertise
T	Market / competitor analysis	• Knowledge of key actors in the relevant training industry (i.e., central providers of professional education and re-/ upskilling offers in the specific field of expertise)
T	Didactics and adult pedagogy (incl. dealing with heterogeneity)	• Knowledge about basic principles of adult learning and pedagogical psychology • Knowledge about principles and formats of individualized and personalized learning • Knowledge and skills to develop and design tailor-made learning offers
T	Program evaluation and competence assessment	• Knowledge about quality criteria of professional education programs • Knowledge and skills to design and implement assessments for program evaluation • Knowledge and skills to assess individual learners' progress and to guide self-evaluation
T	Use of educational technologies	• Knowledge of current trends in professional learning and development • Knowledge of state-of-the art technologies to support professional learning and development • Skills to use and implement digital tools in learning journeys
S	Science communication (i.e., audience-tailored communication)	• Understanding the target group and central questions that need to be addressed in a common language • Skills to break down complex topics and apply them using practical examples • Knowledge and skills how to communicate the relevance, relativity and uncertainty of science
S	Networking and (inter-disciplinary) cooperation	• Knowledge about professional networks to reach relevant target group • Knowledge and skills for interdisciplinary exchange and how to promote joint work

Note. T = Specialized-methodological competences. S = Social-communicational competences.

We consider some competences, particularly the personal and activity/realization-oriented competences (see Table 1; e.g., self-organization/-regulation and conceptual thinking), as characteristics that are already developed in academics and/or targeted by more general offers for professional development (e.g., also presentation skills). We moreover consider some of these characteristics as drivers to take part in a training program to be a qualified Expert for L&PD (e.g., being enthusiastic about professional education is something that can hardly be taught). Therefore, the central learning outcomes for the qualification as an Expert for L&PD focus on the specialized-methodological and the social-communicational competences.

It should be noted that the formulated learning outcomes (see Table 2) reflect a selection of overarching learning goals in the qualification framework of Experts for L&PD. That is, Table 2 should not be considered an all-encompassing list, but rather an overall guideline and overview of the most central aspects that need to be further broken down and specified when designing training activities.

4. IMPLICATIONS FOR THE CONCEPTUALIZATION OF A TRAINING PROGRAM FOR THE "EUROTEQ EXPERT FOR LEARNING AND PROFESSIONAL DEVELOPMENT"

In line with suggestions by the European Centre for Development of Vocational Training (Cedefop, 2014), we intend to design the training program for the EuroTeQ Experts for L&PD as a formal learning offer (i.e., an offer in an education institution that is explicitly designated as learning and has respective objectives, times and resources) based on the present qualification framework. The next steps towards conceptualizing the training program will be to identify the most central learning outcomes, initiate collaboration with partners for the program development, design the first pilot activities, and recruit participants at the partner universities to take part in the qualification program for Experts for L&PD.

Following Hauser et al. (2020), who contested that universities need "to start, conduct, and evaluate personnel development programs for academics addressing topics beyond their specific fields" (p. 13), the aim within the BoostEuroTeQ work package is to pilot first activities and evaluate

Leadership training programs evaluated by a team of academics and practitioners exhibited greater learning and transfer outcome compared to those evaluated by academics or industry experts only. The scientist-practitioner model is necessary for producing superior work. (Lacerenza et al., 2017)

Speaking to the specific working environments of our Experts for L&PD, it needs to be noted that the field of professional education and corporate learning and development is currently evolving. We consider the qualification and planned training program for Experts for L&PD suitable for subject matter experts employed by universities (i.e., researchers in the

engineering disciplines) but also for subject matter experts employed by industry partners (i.e., professional engineers with a strong research background). However, it is important to consider that, based on the individual background of prospective Experts for L&PD, different prerequisites are given and certain learning outcomes become more/less important in the training. For a start, the qualification of Experts for L&PD within EuroTeQ will focus on subject matter experts at the universities (i.e., academics and researchers) that aim to engage in professional education and the scientific upskilling of engineers, ultimately facilitating knowledge transfer and co-creative innovation activities between the university and industry.

The interviews conducted for feedback in the scope of the present Deliverable yielded a number of important aspects to consider when conceptualizing the training program. As an outlook, we will outline them in the following:

- Accounting for the different structures and respective differences in existing training and qualification offers for academic staff at the partner universities, the future training program for Experts for L&PD needs to account for a variety of prerequisites and prior experiences in the potential participants; hence, a modular structure with elective elements has been suggested repeatedly (additionally accounting for the limited time resources of potential participants among academics).

- Suggestions on the format of the training program for Experts for L&PD have repeatedly included to not only rely on “classical” / “traditional” teaching, but to rather focus on short sessions with central inputs (e.g., keynotes to spark interest) and to embed these in other formats that support “learning by doing”, knowledge sharing and exchange (e.g., sparring partners, feedback structures).

- One point that has been raised in almost all of the feedback that was collected for this qualification framework, highlighted that it needs to be clear for potential Experts for L&PD why to participate in the training program because the incentive structure at universities do not necessarily promotes engagement in such activities (i.e., bridge building to industry, professional education).

- Regarding the content of the training program, specifically *specialized-methodological competences*, it has been highlighted that many academics have competences related to teaching students (e.g., they know didactical basics, get training regarding the use of certain educational tools), however, the partner universities differ with regard to the “required” or promoted pedagogical/didactical training and qualification of teaching staff; most importantly, academics need to be made aware of the specific differences when working with professionals compared to their usual target group of students (e.g., learning journeys of professionals need to be more individualized and personal compared to the fixed study curriculum for students at the university, as professional engineers differ greatly in their background and professional experience and seek training offers addressing their daily challenges on the job.

- Almost all feedback on the qualification framework has highlighted the importance of fostering *social-communicational competences* in the training of Experts for L&PD (specifically the communication of science topic in an audience-tailored manner and respective moderation and presentation skills); it has been mentioned that the importance of these competences equally applies to people with different subject-specific backgrounds, however, at the same time it might be helpful to exchange experiences and best-practices within groups of the same subject area to address subject-specific issues in the knowledge transfer between the university and industry.

Lastly, it is important to note that not all implications apply equally to all EuroTeQ partner universities. Depending on the country- and university-specific structures and regulations, resulting in diverse learning environments and cultures, the points mentioned need to be adapted. For example, at some partner universities, it is more common to have teaching staff that is part-time lecturing at the university and part-time working in the industry, which presents different opportunities for the training of prospective Experts for L&PD. Moreover, it might be necessary to adopt country-specific adaptions in the training program when collaborating with chambers, industry stakeholders and partners (e.g., English might not always be the best working language).

REFERENCES

Bechtel, M. (2008). Competence profiles for adult and continuing education staff in Europe. Some conceptual aspects. In E. Nuissl & S. Lattke (Eds.), *Qualifying adult learning professionals in Europe* (pp. 45–61). Bertelsmann.

Buiskool, B. J., Broek, S. D., van Lakerveld, J. A., Zarifis, G. K., & Osborne, M. (2010). *Key competences for adult learning professionals: Contribution to the development of a reference framework of key competences for adult learning professionals* [Final report]. Research voor Beleid.

Burt, R. S. (2004). Structural holes and good ideas. *American Journal of Sociology*, *110*(2), 349–399. https://doi.org/10.1086/421787

Burt, R. S., & Soda, G. (2021). Network capabilities: Brokerage as a bridge between network theory and the resource-based view of the firm. *Journal of Management*, *47*(7), 1698–1719. https://doi.org/10.1177/0149206320988764

Cedefop – European Centre for the Development of Vocational Training (2014). *Terminology of European education and training policy: A selection of 130 key terms*. Publications Office of the European Union. https://data.europa.eu/doi/10.2801/15877

Commission of the European Communities (2001). *Making a European area of lifelong learning a reality*. Communication from the Commission.

Council of the European Union (2002). *Council resolution of 27 June 2002 on lifelong learning*. Official Journal of the European Communities.

Council of the European Union (2006). *Modernising education and training: A vital contribution to prosperity and social cohesion in Europe—2006 joint interim report of the Council and of the Commission on progress under the Education & Training 2010 work programme*. Official Journal of the European Union.

Council of the European Union (2017). *Council recommendation of 22 May 2017 on the European Qualifications Framework for lifelong learning and repealing the recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning*. Official Journal of the European Union.

de Wit-de Vries, E., Dolfsma, W. A., van der Windt, H. J., & Gerkema, M. P. (2019). Knowledge transfer in university–industry research partnerships: A review. *The Journal of Technology Transfer*, *44*, 1236–1255. https://doi.org/10.1007/s10961-018-9660-x

Erpenbeck, J., Rosenstiel, L., Grote, S., & Sauter, W. (2017). *Handbuch Kompetenzmessung: Erkennen, verstehen und bewerten von Kompetenzen in der betrieblichen, pädagogischen und psychologischen Praxis*. Schäffer-Poeschel. https://doi.org/10.34156/9783791035123

Farokhzadian, J., Nematollahi, M., Dehghan Nayeri, N., & Faramarzpour, M. (2022). Using a model to design, implement, and evaluate a training program for improving cultural competence among undergraduate nursing students: A mixed methods study. *BMC Nursing*, *21*, Article 85. https://doi.org/10.1186/s12912-022-00849-7

Gold, J., & Pedler, M. (2022). Bridging research to practice via action learning. *Action Learning: Research and Practice*, *19*(1), 3–18. https://doi.org/10.1080/14767333.2021.2018288

Hauser, A., Weisweiler, S., & Frey, D. (2020). Because 'happy sheets' are not enough – a meta-analytical evaluation of a personnel development program in academia. *Studies in Higher Education*, *45*(1), 55–70. https://doi.org/10.1080/03075079.2018.1509306

Jen, E., & Hoogeveen, L. (2022). Design an international blended professional development model for gifted education: An evaluation study. *Evaluation and Program Planning*, *91*, Article 102034. https://doi.org/10.1016/j.evalprogplan.2021.102034

Keshavarzi, M. H., Azandehi, S. K., Koohestani, H. R., Baradaran, H. R., Hayat, A. A., & Ghorbani, A. A. (2022). Exploration the role of a clinical supervisor to improve the professional skills of medical students: A content analysis study. *BMC Medical Education*, *22*, Article 399. https://doi.org/10.1186/s12909-022-03473-w

Klieme, E., & Leutner, D. (2006). Kompetenzmodelle zur Erfassung individueller Lernergebnisse und zur Bilanzierung von Bildungsprozessen. Beschreibung eines neu eingerichteten Schwerpunktprogramms der DFG. *Zeitschrift für Pädagogik*, *52*(6), 876–903. https://doi.org/10.25656/01:4493

Lacerenza, C. N., Reyes, D. L., Marlow, S. L., Joseph, D. L., & Salas, E. (2017). Leadership training design, delivery, and implementation: A meta-analysis. *Journal of Applied Psychology*, *102*(12), 1686–1718. https://doi.org/10.1037/apl0000241

Liu, C., Wu, Q., Liang, Z., Karimi, L., Ferrier, J. A., Sheats, J., & Khalil, H. (2022). Adaptation strategies in transnational education: A case study of an Australian Master of Health Administration Course offered to Chinese managers. *BMC Medical Education*, *22*, Article 52. https://doi.org/10.1186/s12909-021-03097-6

Mitton, C., Adair, C. E., Mckenzie, E., Patten, S. B., & Perry, B. W. (2007). Knowledge Transfer and Exchange: Review and Synthesis of the Literature: Knowledge Transfer and Exchange. *Milbank Quarterly*, *85*(4), 729–768. https://doi.org/10.1111/j.1468-0009.2007.00506.x

Pittich, D. (2014). Dispositional approaches for measuring professional competence. *Journal of Technical Education (JOTED)*, *2*(2), 95–116.