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Professional higher education in Europe. Characteristics, practice examples and national differences

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PHE

EURASHE

**PROFESSIONAL
HIGHER
EDUCATION IN
EUROPE**

CHARACTERISTICS, PRACTICE
EXAMPLES AND NATIONAL
DIFFERENCES

EURASHE
European Association of Institutions in Higher Education

HAPHE

Harmonising Approaches
To Professional Higher
Education In Europe

Professional Higher Education in Europe
Characteristics, Practice examples and National differences

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List of Abbreviations

AHE	Academic higher education
ECTS	European Credit Transfer System
EHEA	European Higher Education Area
EQF	European Qualification Framework
HAPHE	Harmonising Approaches to Professional Higher Education in Europe
HEI	Higher Education Institution
HE	Higher Education
IUT	Instituts Universitaires de Technologie (French University Institutes of Technology)
PHE	Professional higher education
QA	Quality Assurance
R&D	Research and development
RDI	Research, development and innovation
SME	Small and Medium Enterprise
TT	Technology transfer
TT&I	Technology transfer and innovation
TTC	Technology transfer centre
UAS	University of Applied Sciences
UC	University College

About this Publication

Chapter 1 starts out with a short historical view on "academisation" and "professionalisation," illustrating how much professional higher education (PHE) in Europe has been in flux in the past years. With examples from France and Ireland, the chapter argues how a new spectrum of missions, differences in national organisation of PHE and a variety of denominations for PHE providers and programmes has slowed down a shared understanding of what PHE commonly characterises.

Chapter 2 gives information on research aims and methodology of the "HAPHE" (Harmonising Approaches to Professional Higher Education) initiative, which made this publication possible.

Chapter 3 is a central part of this book. The authors suggest a validated definition for PHE and present a structured set of characteristics (framework) including quality criteria. The three framework dimensions: policy and strategy, teaching and learning, and research, development and innovation are accompanied by examples of PHE from several European countries. Those examples where gathered from programmes and institutions that have developed a clear professional profile in all or most of the framework criteria.

Chapter 4 outlines differences in PHE systems in 15 EU member states for curricular requirements, PHE provision on EQF levels, the recognition of professional degrees, and, not less importantly, access to (research) funding.

Chapter 5 builds on the outcomes of all previous chapters and formulates recommendations to European and national policy-makers, the providers of PHE policy, and individuals/organisations working on quality development.

1

The challenge of a common understanding of professional higher education

The higher education landscape throughout Europe has changed dramatically over the past few decades. In order to respond to societal, technological and cultural developments, higher education has moved from being elite, to being mass, and finally universal. It has substantially diversified in terms of access of different age cohorts studying in different ways at a variety of levels of advancement and a variety of institutions. Yet, the purposes of higher education still remain largely those defined by the Council of Europe's "four purposes" of higher education: "preparation for sustainable employment, personal development, preparing students for active citizenship, and creating a broad advanced knowledge base and stimulating research and innovation."

There has appeared a diversity of different but equally recognised approaches to the way in which these tenets of the Council of Europe's "four purposes" are implemented by different institutions, providing a wide range of institutional missions, values, objectives and provisions in terms of curriculum design and delivery, levels of qualifications, research, development and community engagement. More emphasis is placed towards responsiveness to the societal requirements, employability characteristics among graduates, as well as enhancing the role of higher education within the lifelong learning concept and affiliation with corresponding structures. The European Higher Education Area (EHEA) has contributed significantly to the harmonisation of higher education in Europe.

Compared to traditional academic education, the "professional" higher education sector is still in significant flux and has not achieved the same level of integration into the EHEA. Furthermore, there appears to be no real consensus on the characteristics of "professional higher education" (PHE) across the various higher education actors in Europe. According to Camilleri et al.,[1] about 40% of internal and external stakeholders have a poor understanding of the term, although they report differences across countries.

However, our review of legislation reveals that all concerned countries[2] that were involved in the respective study (see chapter 2 for information about the study) **distinguish a sphere of education as having a "professional character".** A legal distinction is made either for programmes (e.g., "professional programmes" in Croatia, "professional bachelor programmes" in the Czech Republic and programmes

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[1]Camilleri, A.F., Delplace, S., Frankowicz, M. & Hudak R. (Eds.) (2013). *Profile of professional higher education in Europe*. Brussels: European Association of Institutions in Higher Education. Retrieved from http://haphe.eurashe.eu/wp-content/uploads/2013/10/Profile-of-Professional-Higher-Education-in-Europe-FINAL.pdf
[2] Belgium (Flanders), the Czech Republic, Denmark, Estonia, Finland, France, Croatia, Ireland, Lithuania, Malta, Netherlands, Poland, Portugal and Slovenia.

with a "practical profile" in Poland) or for institutions distinguishing professional institutions from universities (e.g., Lithuanian law differentiates college higher education from universities, and Finland differentiates universities from polytechnics).

The lack of a broadly shared understanding of PHE limits overarching attempts to strengthen PHE sector at the European level. The consequences hinder integration into the EHEA in various ways. First, the lack of widely shared definition for PHE means that the sector cannot be analysed transnationally. Thus, policy instruments such as the open method of coordination are largely ineffective due to an inability to comparatively measure the impact of policy interventions. Second, the recognition of equivalent qualifications (as defined by mapping to the European Qualification Framework) by employers is hampered, especially in a cross-border context, if the qualifications are issued by institutions that do not necessarily have an obvious local equivalent. Third, but not less important, peer learning and best-practice sharing are more sporadic and cumbersome.

This initial chapter will give an overview on reasons why a common understanding on what PHE denominates has not evolved yet across the various stakeholders of higher education in Europe.

Higher education in flux: Academic and professional drift

In the past decades, we could witness various convergent and divergent processes in higher education, which have had an influence on what is perceived as PHE versus AHE (academic higher education). On the one hand, an "academic drift" pushed "many non-academic" institutions to profile themselves as (near) equivalents to the traditional universities, often quite successfully (e.g., "Fachhochschulen" are increasingly becoming universities of applied sciences in Germany). This out of a fear to be considered second-class entities compared with research universities by prospective students and employers in the world of higher education.

On the other hand, the explosion of the technological and commercial sectors dating back to as far as the 1970s, in combination with a rise of income for middle-class families, led to a steep rise of student numbers, which were to be trained in the newly established polytechnic type of institutions especially in Western European countries. Some of them developed into new "red-brick" universities after gaining their autonomy from local authorities, as was the case in the UK.

Soon, a rationale for such type of institutions was developed in both government and employers' circles with the "employability" factor at its centre: A skill-oriented training is a guarantee of prospective careers in a well-defined job. This rationale has been upheld until recent times, only to be shattered by the economic and financial crisis that hit the world in 2009.

Traditional universities adopted this reasoning in the last decades - first reluctantly and then increasingly - and provide more professionally orientated programmes. Hence, a "vocational drift" became apparent in a large number of research universities. The national qualification frameworks that have been developed for the past few years have strengthened this process, and even highly academic programmes felt compelled to include practical elements into curricula and the formulation of learning outcomes.

Those parallel developments meant that the boundaries between originally purely academic trainings (in some disciplines at least) and the original professional ones became blurred.

Unitary, dual and mixed systems of PHE provision in Europe

A second challenge for the harmonisation within the sector is that PHE programmes are now found in a variety of settings. In many cases, a dedicated institution offers professionally oriented programmes, but in other contexts, programmes are affiliated to or integrated into a "comprehensive institution" running vocational programmes next to academic ones.

In our survey of legislation in 15 European countries, we found three models of PHE provision.

In **binary/dual systems**, AHE is provided by universities and PHE is provided by specialised institutions. That is the case in Lithuania, Estonia, Belgium (Flanders), Czech Republic, Malta, Netherlands, Finland, Portugal,[3] Denmark,[4] Slovenia and Germany.

Mixed systems do not make a clear-cut distinction between universities and other institutions (i.e., universities may offer PHE or PHE institutions may offer academic education as in Poland[5]).

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[3]A few universities run polytechnic schools, mainly nursing schools. Handful exceptions exist for historically unrepeated reasons where other types of schools were integrated into universities. In general, country experts consider PHE provision in Portugal part of a binary/dual system.
[4]In Denmark, some dual universities also offer some PHE programmes, such as journalism.
[5]In Poland, there is a legal distinction between HEIs and PHEIs. HEIs commonly offer professional programmes and vice versa.

In **partial unitary systems**, PHE is provided by specialised institutions located within universities (e.g., France and Slovenia). In a full **unitary system**, all types of higher education would be offered by the same institutions with significant crossover between "professional" and "academic" activities. However, in the countries we surveyed, we found independent PHE institutions operating within universities; hence, we consider them "partial unitary."

Now, we will look into two systems in detail.

Partial unitary system in France

A typical example of PHE in a partial unitary system is the "Instituts Universitaires de Technologie" (IUT's) in France. IUTs are more or less autonomous faculties or affiliated institutions of a university. The first institutions of that kind were created in the 1960s (11 IUT offerings provide 25 programmes). Today, most public universities have at least one, and hence, prospective students can choose from more than 100 IUTs all over France. They provide what they call a training offer of "proximity", which is adapted to the presence of targeted groups, such as disadvantaged groups in a region. To enable them to carry out this specific mission, they have twice as many teachers per aggregate number of students. As IUTs are university-based, they are entitled part of the university budget for research and focus on "innovation" and "advanced technologies." IUTs cooperate closely with companies in the region and have established international partnerships with other regions that offer mobility opportunities inside and outside Europe. There is a national representation called "Association of Instituts Universitaires de Technologie" (ADIUT).

The main challenges for PHE institutions in this system are to maintain and develop close links with research, which is at the core of its mission, including close links with local SMEs. The IUTs strive to find a balance between the need of developing local networking and an international/European perspective. In addition to this, many French universities are in the process of "professionalisation" of their programmes, which leads to an even higher unification of the system.

Reconfiguring the dual model in Ireland

Building tertiary programmes with a technical focus commenced in the 1960s as in France. Nine regional technical colleges were established between 1970s and 1990s. Today, Ireland has a binary system with 14 institutes of technology (IoTs) offering PHE. Some developed from amalgations of regional technical colleges; others are new institutions.

For the past decade, changes are ongoing in Irish higher education, which also concern the very nature of the binary system. In the past, the Higher Education Authority (HEA), the statutory planning and development body for higher education and research, was only concerned with the university sector, while the IoTs were governed by the Department of Education and Science.[6] This difference in governance has been abandoned with the Institutes of Technology Act in March 2006. Now, the HEA administers and regulates both AHE and PHE, and thus, IoTs have the same internal governance arrangements as universities. The PHE sector achieved a greater institutional autonomy (e.g., institutions themselves can now decide upon the level of expertise and qualification of staff needed for the different positions).

In recent years, one could observe the duplication of courses and an increase of very specialised programmes within the particular disciplines despite cuts in public spending after the strong manifestation of the financial crisis in the country. This has been followed by policy-led restructuring of the higher education sector. The 2011 "National Strategy for Higher Education to 2030"[7] states that the dual system "should be strengthened by the development of regional clusters of collaborating institutions (universities, institutes of technology and other providers), and by institutional consolidation that will result in a smaller number of larger institutions. There should be a particular focus on encouraging the emergence of stronger amalgamated institutes of technology. Central to the envisaged regional cluster model will be universities and amalgamated institutes of technology operating as collaborative partners to deliver on jointly agreed strategic objectives. The diversity of mission that has served Ireland well to date should be maintained."

In different words, the new strategy aims to create larger professionally oriented institutions through mergers. This development is incentivised by (a) a new funding model with clear advantages for institutions with high student numbers and (b) the possibility to gain the status of a new type of university the "technological university" fulfilling criteria set by the HEA. On the one hand, the binary system shall be maintained and strengthened, since mergers between IoTs and universities "should not in general be considered: this would be more likely to dilute the diversity of the system."[8]

[6]Hazelkorn, E., Massaro, V.: A Tale of Two Strategies for Higher Education and Economic Recovery: Ireland and Australia. IMHE General Conference, OECD, Paris. September, 2010. Retrieved October 2014 from http://arrow.dit.ie/cgi/viewcontent.cgi?article=1007&context=csercon.
[7]DoES (2011). National Strategy for Higher Education to 2030. Report of the Strategy Group. Dublin: Department of Education and Skills. Retrieved October 2014 from http://www.hea.ie/sites/default/files/national_strategy_for_higher_education_2030.pdf.
[8]DoES (2011). National Strategy for Higher Education to 2030. Report of the Strategy Group. Dublin: Department of Education and Skills.

On the other hand, granting university status to large (mergers of) PHE institutions will eradicate more major differences between the two sectors of state-funded higher education.

The Irish Ministry for Education and Skills has prepared the legislative provisions for technological universities in early 2014 and approved three groups of IoTs to proceed towards detailed planning of the formal applications to receive university status.

Spectrum of missions, providers and new denominations: Elusive terminology

Country	Classification	Institutions Offering Professional Higher Education
BE (FL)	Dual	Universities (through professional bachelor degrees), Hogescholen (UAS) provide professional bachelor degrees and level 5 in PHE, Hoger Beroepsonderwijs
CZ	Dual	Vyssi odborne skoly (tertiary professional schools), Vysoka Skola Neuniverzitniho Typu (Higher Education Institutions of the non-university type)
DE	Dual	Fachhochschulen (universities of applied science), Duale Hochschulen (universities od applied science), Duale – Hochschulen (cooperative universities)
DK	Dual	Erhvervsakademier (Academies of Professional Higher Education), Professionshojskoler (University Colleges), DualUniversities are also offering PHE e.g. Journalism)
EE	Dual	Rakenduskorgkool (Universities od Applied Sciences),ÜLIKOOL (University Colleges)
FI	Dual	Polytechnics
FR	Partial Unitary	Primarily institutes universitaires de technologie (technological university institutes), Professional Masters in AHE.
HR	Dual	Visoke Škole (Colleges), Veleučilišta (Polytechnics)
IE	Dual	Institutes of Technology (to become Technological Universities under announced reforms)
LT	Dual	Kolegija (Colleges)

MT	Dual	Institution of tourism Studies, Malta College for Arts, Science and Technology
NL	Dual	Hogescholen (Institutions of Higher Professional Education)
PL	Mixed	Uczelnie zawodowe (Professional higher education institutions)(Non-University HEIs)
PT	Dual	Ensino Politecnico (Polytechnic)
SI	Dual, Partial Unitary	Higher Vocational Colleges, Higher Professional Colleges (within universities)

Table 1: PHE classification and institutions offering PHE by country

At present, different concepts of higher education institutions (HEIs) co-exist in the academic range of institutions from the post-Humboldtian "ivory tower" to the "entrepreneurial university." "Dual learning" institutions came into existence in some of the federal German states on the model of the long-established vocational trainings. The so-called dual universities with sometimes mixed "ownership" of the management are mostly public institutions that provide a system of shared responsibilities between the public authorities and private companies. The latter take care of the technical or practical aspects of the training while paying the student, who is for this part considered an employee, a salary [an example of the Baden-Württemberg Cooperative State University (DHBW) with the title "Employment is a must-Companies send their staff to PHE in southern Germany" can be found in chapter 3]. Such joint initiatives are rare in other countries, as they can only be offered if the prevailing economic conditions of a country allow so even during the current economic and financial crisis.

This new spectrum of missions rather than a clear divide of AHE versus PHE institutions poses a third challenge for a common understanding of the sector because of the subsequent diversity of terms used in different countries. Terminology differs regarding the name of the institutions, their programmes and degrees. The table gives an overview of institutional denominations in different EU countries.

Along with the diversification of missions and the "academic shift" as described above goes a name shift of institutions with a clear and long-standing vocational or professional orientation. "University of Applied Sciences" (UAS), for example, is a relatively new name, which is gradually substituting the term "University College" (UC), the latter being still in use in the UK and other countries that tend to follow the

English example. University colleges are the former colleges, which were either mono-disciplinary and teaching advanced and specialist vocationally oriented trainings, or else multidisciplinary colleges that had not (yet) reached university status for several reasons: less than five faculties or disciplines, under 5.000 students, no doctoral degrees, etc. Nowadays, the term UC is mainly in use in the UK for HEIs that are in the above described position and feel comfortable in it, as they have established a close connection with the world of employment for the specialist trainings they are offering.

The term "Universities of Applied Sciences" is a translation of the German "Hochschule für angewandte Wissenschaften."[9] Both Switzerland and Austria use the same denomination, and the example has been followed by the Netherlands, Finland and the Baltic countries. Other countries, like Lithuania, only use the term to paraphrase their own denominations in an international context, but never at "home," as their own legislation exclusively reserves the term "university" for the "research university." The same holds true for countries like Portugal (where the "native" term is "Polytechnico") and Ireland (where the "native" term is "Institute of Technology"). In both countries, UAS is considered a suitable translation in an international context. Others, like Denmark and Belgium (mainly Flanders), continue to use the term "university college," as the term "applied sciences" seems to exclude the human sciences (except for economics) and also the schools of arts. Croatia appears to adopt a middle-of-the-road solution by choosing the term "University Colleges of Applied Sciences."

[9]In fact, "Hochschule" is a generic term in Germany for all institutions awarding academic degrees in higher education, rather than "university."

The study -
Aims and
methodology

This publication has been authored in frame of HAPHE (**H**armonising **A**pproaches to **P**rofessional **H**igher **E**ducation) initiative led by the European Association of Institutions in Higher Education (EURASHE) in partnership with 10 organisations active in the field of PHE around Europe.

Objectives and aims: Stronger PHE through mapping and guidance

The overall objectives of the initiative and this publication are to improve the transparency of the PHE provision and consequently strengthen the PHE sector. In doing so, our hope was to enhance the employability of European higher education graduates as a whole, contribute towards a more cohesive EHEA and support the modernisation of European HEIs through a higher responsiveness of PHE to the needs of enterprises and society.

In more specific terms, the HAPHE team aimed, among others, to

- map PHE in Europe (How is PHE provided? What are similarities and differences?)
- Define PHE and develop a set of characteristics that can be used for institutional development, which are specific to PHE (distinct from traditional PHE)
- propose guidance for national and institutional policy

Research in the frame of the HAPHE initiative

Two methodological steps were taken in order to achieve the above aims.

Gathering input through desk research and large-scale surveys across Europe

Our team conducted a **desk research on PHE in Europe** to identify relevant secondary data sources on PHE in Europe 'in order to' shape and complement the below described survey. In particular, we found two sources most useful: the general report of another initiative looking specifically into PHE [namely, "Bachelor for the Labour Market (BaLaMa)"[10] and data on higher education systems in the Eurypedia[11]], which

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[10]The outcomes of the project were accessed here: https://drive.google.com/folder-view?id=0B841P4yDYEDsZmZhMTM2ZjAtZjIzNS00ODNkLTlkMTktNjBiN2MxMjllOD-My&usp=drive_web&ddrp=1&hl=en_US.
[11]The Web site can be accessed here: http://eacea.ec.europa.eu/education/eurydice/eurypedia_en.php.

offer comprehensive descriptions of 38 European education systems. The latter is operated by the Education, Audio-visual and Culture Executive Agency.

A **qualitative survey on PHE in Europe** was circulated among representatives of the associations of PHE or by education-system researchers in 15 countries (Belgium-Flanders, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Lithuania, Malta, Netherlands, Poland, Portugal and Slovenia). Respondents answered a range of open questions on the organisation and structure of PHE in their respective countries, defining elements, requirements for curriculum and teaching, requirements for research, etc. Subsequently, a **quantitative survey on PHE in Europe** was conducted in the spring of 2013. It was made up of two stakeholders surveys, with the purpose of determining attitudes towards PHE and actual practices of PHE in countries across Europe. The first survey was targeted to HEI s (academic universities, universities of applied sciences, higher education colleges and tertiary vocational education institutions) and associations of HEI, ministries of education and national education councils. The second survey was dedicated to chambers of commerce, student representations, public and private companies, and student councils. Overall, we received 671 responses from 18 countries.

Defining PHE and developing a set of characteristics through stakeholders consultations

In order to develop a framework for further growth and harmonisation of the PHE sector, semistructured interviews were led with a wide range of stakeholders via telephone, and several smaller focus groups (face to face) were held. Based on the input received, a draft of the framework was proposed by a group of experts, which subsequently underwent an extensive review with various groups of stakeholders in regional and national validation workshops.

The HAPHE initiative is committed to open data and makes its entire database progressively available through its website http://haphe.eurashe.eu. The interested reader is invited to access the survey forms and interactively compare the input received from different stakeholders across countries.

3

Characterising PHE

This chapter will first argue that PHE is best viewed as a **sector** of higher education with commonalities between higher education programmes and institutions. Given this basis, a definition and a guiding framework are presented to define PHE **characteristics** - an outcome that has been achieved through various consultations, as outlined in chapter 2. Following the three dimensions of the proposed framework, we present **examples** from different European countries and PHE institutions.

Why look at PHE as a sector?

Our survey among higher education stakeholders asked to characterise PHE by choosing from a set of predefined statements. None of the statements received an overwhelming consent from respondents, further indicating the confusion that exists as to the nature of PHE. However, the highest rated statements were the following:

- [PHE is characterised by a] strong focus on practical application of study (59%)
- The curriculum [in PHE] emphasises practical aspects and elements for development of skills and competence (56%)
- The study programme [in PHE] includes extended phases of practical experiences in the form of internships and/or work experiences (56%)

The following statements were agreed to by less than half of the respondents, namely:

- Combining academic and professional elements (45%)
- The study programme is focused on practical aspects of the specific job profile (44%)
- Collaboration between HEIs and the industry going beyond higher education provision but also covering research and education (42%)
- Strong focus on practical application of research (40%)
- Higher education providing education and training for update/upgrade of qualifications of students with working experience (e.g., in-service training) (33%)
- Higher education providing qualifications to nontraditional groups (adult learners and disadvantaged groups with flexible arrangements) (13%)

Those raise an important question: If no common terminology has emerged in the EHEA and there seems to be no consensus about PHE profiles, why should we look at PHE as a sector and not just some variety among higher education (also regarding the diversification of institutional missions)?
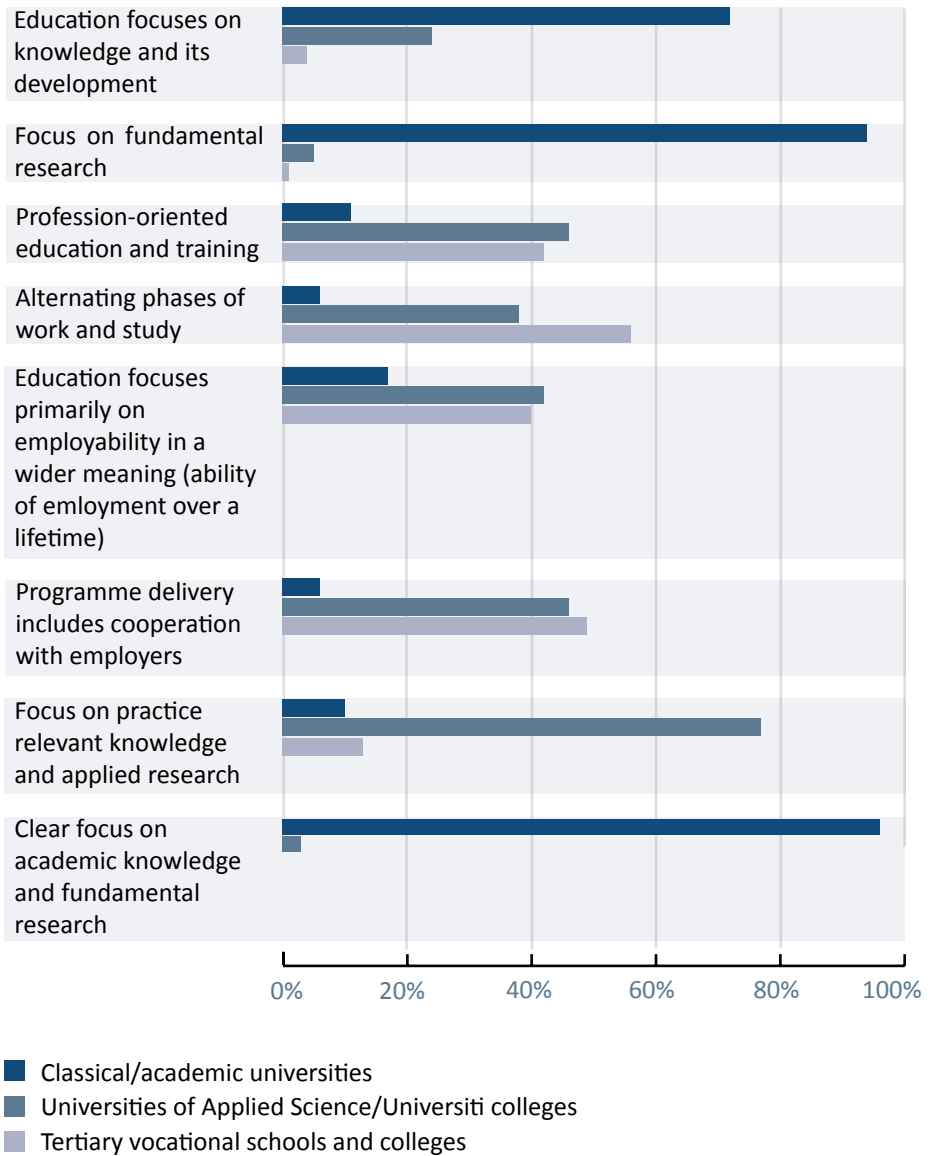
Figure 1: Institution most associated with specific characteristics (forced choice of one type of institution)

- University (academic)
- PHE Institutions
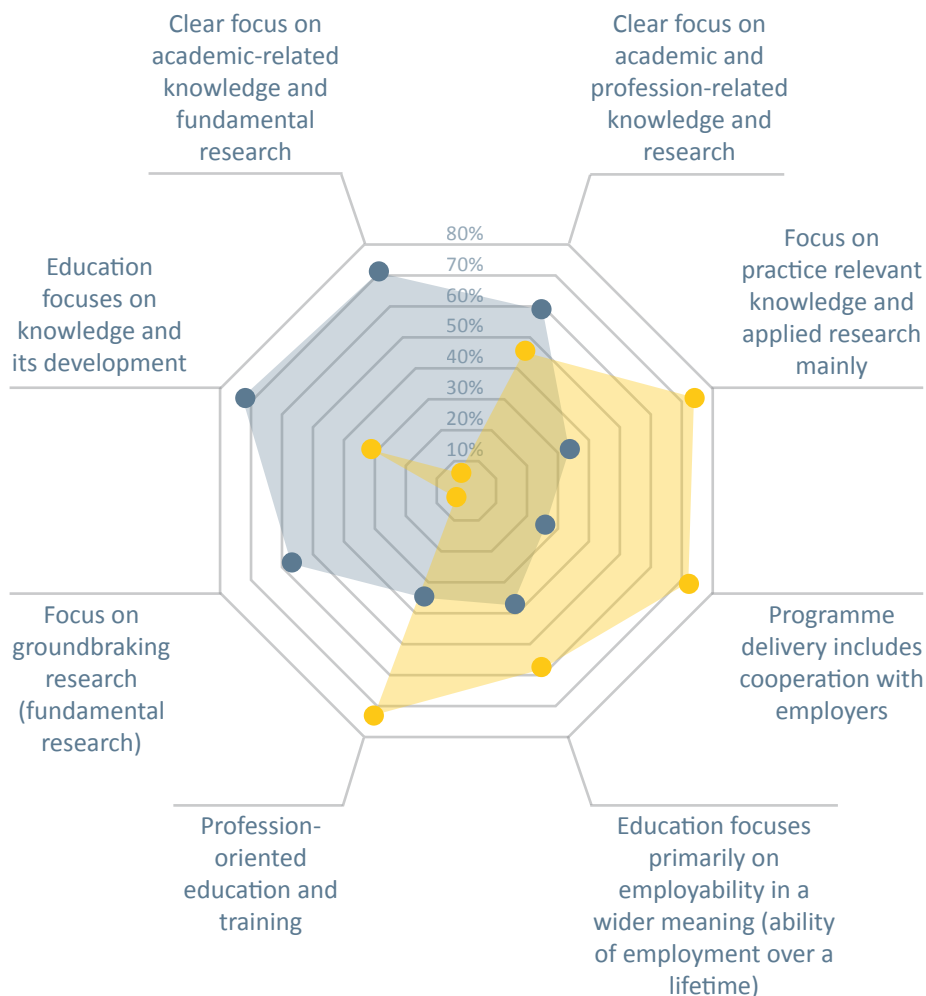
Figure 2: Self-image of academic and professional higher education

A clearer picture emerged when the same respondents were asked to position a number of characteristics primarily within the academic universities, universities of applied sciences, or tertiary vocational schools and colleges. The below figure shows that participants predominantly consider AHE to have different characteristics than PHE. Equally, if not more relevant, is the result that the staff from AHE and PHE have different perceptions about the focus of their respective institutions. Hence, there are institutions and programmes that profile themselves as profession-oriented and want to be perceived as such.

The absence of a widely accepted PHE categorisation may explain PHE as being part of higher education and therefore operating within the same triangle of education, knowledge creation (research) and services to the community. However, from the viewpoint of the PHE sector, there is always a "general" education content in professionally oriented programmes, as it is precisely this component that makes them belong to "higher education." The shift of paradigm to learning outcome-based programmes with the right combination of technical or vocational and more general humanistic skills has only strengthened the concept and perception that PHE is part of higher education.

The next subchapter will lay out a number of features that are linked to the predicate "professional" as we could conclude after various EU-wide consultations.

A definition and a guiding framework

In the recent period, higher education systems have witnessed blurring the borders among formerly set types of HEIs. Despite the diversity of approaches at every level of higher education, the issue of quality remains central if all the different types of higher education are to remain different but equal to the various stakeholders.

The following definition and specific key characteristics should serve as guidelines to a better understanding of PHE as a sector of higher education, respecting its mission and integration within higher education systems, and promoting its development and evaluation irrespective of the institutional background and provisions.

The characteristics and quality criteria have been developed through various stakeholder consultations across Europe (please see chapter 2 for details).

> **Professional higher education is a form of higher education that offers a particularly intense integration with the world of work in all its aspects, including teaching, learning, research and governance, and at all levels of the overarching qualifications framework of the EHEA.**

Its function is to diversify learning opportunities, enhance the employability of graduates, offer qualifications and stimulate innovation for the benefit of learners and society.

The world of work includes all enterprises, civil society organisations and the public sector. The intensity of integration with the world of work is manifested by a strong focus on the application of learning achievements. This approach involves combining phases of work and study, a concern for employability, cooperation with employers, the use of practice-relevant knowledge and use-inspired research.

Policy and Strategy

How is PHE embedded and represented in the overall policies and strategic framework of higher education institutions?

Characteristics	Description	Core criterion
Policy and Strategy Integration	Integration of the world of work into policies and strategic framework	Institutional policies and strategies are defined in collaboration with the world of work.
Objectives and Outcomes	Main objectives in relation to the outcome of PHE	PHE specifically focuses on enhancing job-related skills and competencies with a view to raising the employability of students. The emphasis is on learning outcomes and use-inspired research.
Regional Integration	Engagement with its regions and contribution to their development	PHE is strongly embedded in regional partnerships with the world of work.

Table 2: Framework - Policy and strategy

Teaching and Learning

How is teaching and learning influenced through the specific characteristics of PHE?

Characteristics	Description	Core criterion
Methods of Curriculum Development	The process of design and development of: - learning outcomes - curricula - methods of learning and assessment	Curricula are developed by academia in collaboration with stakeholders, in particular from the world of work, taking into account the future needs of the practice and context of employment.
Learning Outcomes	What a learner is expected to know, understand and be able to do as the result of a process of learning	The learning outcomes reflect essential knowledge, skills and attitudes related to the specific professional requirements, but should not be limited to this. In addition, students acquire professional and life skills which enable them to act successfully, in an innovative and self-organised way in a changing work environment. The involvement of students in research, development and innovation activities leads them to better professional practice.
Content for Teaching and Learning	The content comprises: - syllabus and other materials - practice examples - working methods	The learning content is productively integrating theory and practice as the basis for complex problem-solving in real work situations. The content is informed by the latest research, trends and references from both the world of work and academia.

Characteristics	Description	Core criterion
Learning Methodology	The learnin methodology comprises: - the learning design - the assessments needed to achieve the learning outcomes	The learning methodology comprises methods of active, collaborative and self-organised learning and while focusing on experience based learning methods including but not limited to simulation based learning (SBL), scenario based learning (SceBL), problem based learning (PBL), or any other authentic learning situations. Both formative and summative assessments should reflect the nature and methodology of the specific PHE learning environment.
Learning Environment	The surroundings and conditions in which learning takes place	The learning environment includes experience within Institutions as well as outside, in the world of work. Significant practice phases and/or job experiences serve to reflect theory in a practical context.
Programme Team	All persons involved in the design, delivery and assessment of learning, including visiting lecturers, professionals and support staff	At the programme level, the team shows a combination of academic background and relevant experience from the world of work.

Table 3: Framework - Teaching and learning

Research, Development and Innovation (RDI) *How are RDI integrated as part of a sustainable PHE, recognising that they might differ from level to level?*		
Characteristics	**Description**	**Core criterion**
RDI Agenda	The scope of the RDI activity	The RDI agenda is informed by the world of work in order to meet the needs of society and of the world of work.
RDI Process	The way RDI meets the needs of society and the world of work	Researchers seek and provide input from and to the world of work and value stakeholders' requests and contributions. The RDI process respects the nature of the inputs and can include various types of research activities and scholarship.
RDI Outputs and Outcomes	The expected result of RDI	RDI outcomes aim to be relevant to the world of work, and society. In addition to traditional outputs, such as licenses, patents and publications, RDI outcomes are solution-oriented with tangible benefits for the world of work and society.

Table 4: Framework - Research, development and innovation

The framework supplements the definition by clarifying how the professional nature of higher education expresses itself through various characteristics of higher education. The characteristics do not attempt to describe a professional HEI, but rather are applicable to units of education, most typically courses or programmes within higher education. Hence, the framework characterises PHE without referring to historical levels and national (higher) education, to certain ways of learning, or to specific types of institutions. The latter is of importance, because PHE in Europe is provided at the institutional, faculty or department level. Profiling entire institutions as academic with "highly theoretical courses" or professionally oriented with programmes for "practical skills development or training" would disregard the fact that since decades, comprehensive universities have offered and continue to offer professional education for prospective physicians, dentists, veterinary surgeons, architects, etc., which are all "professionals" in their own right.

The framework is made up of three variables:

Characteristic: Name of the indicator

Description: What is entailed by the indicator?

Core Criterion: Sets out the minimum requirement(s) the educational experience must adhere to in order to fall under the category of PHE

The following subchapters address the dimensions of the framework: Policy and strategy, teaching and learning, as well as research, development and innovation. Examples from different countries participating in the HAPHE study are demonstrating how the criteria are implemented.

PHE policy and strategy

The following pages exemplify how PHE is embedded and represented in the overall policies and strategic framework of PHE.

Policy setting

World of work representatives as PHE presidents in France - networking, capacity building and QA

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

IUTs and engineering schools are administered by a board composed of representatives of regional and local authorities, employee unions, and employers. The QA system of engineering schools requires its members to elect employers as the presidents of their board. Approximately 95% chose to do so, even if without being legally obliged, and today, 110 of 113 IUTs in France have an employer representative as their president. For example, in 2014, some IUT presidents held key positions in companies such as Total, Gaz de France, Electricité de France, Safran, Sanofi and Areva.

Just as the directors of IUTs or engineering schools are organised in national networks, IUT presidents form national associations for lobbying and capacity building. The national association UNPIUT puts forward the voice of the world of work and collaborates with the legislator or higher education ministry concerning the legal framework of the French higher education. UNPIUT promotes the place of IUTs as PHE within the unitary system for matters such as easing access to PHE by students from diverse backgrounds, funding and, more significantly, the professionalisation of the IUT curricula through projects, placements, etc. The association has voluntary staff, but individuals usually have a mandate from their employer. Activities are financed by the IUTs (1 Euro per registered student).

Until 2007, IUTs were autonomous structures within the universities. When they lost that autonomy, UNPIUT work was essential in helping directors (umbrella org: ADIUT) have the French legislative assembly vote for a decree that protects IUT funding within the universities.

Furthermore, regular seminars for newly elected presidents are held. Because of their expertise and ability to mobilise all stakeholders in the world of work, these associations are also involved in the QA process. The QA body for the IUT network (abbreviated CCN) involves members of employee and employer unions, as well as academics and students. Their mission is to make sure that curricula remain relevant

to the expectations of employers and universities. The QA body evaluates each IUT every 5 years, performing a quality check from the institution's QA documents and subsequently visiting the IUT and its departments. Each evaluation and visit is carried out by a pair of evaluators: one academic and one representative of the world of work, often a member of UNPIUT.

Organising stakeholder sessions to revise institutional policy

Author: Marc Vandewalle, Secretary General of the Flemish Council of University Colleges, Belgium - Flanders

University colleges have independent boards of directors composed of executives and representatives from the world of work, for example, leading figures from companies, employers, and non-profit organisations, mostly from the region of the HEIs ranging from top managers of private companies or hospital leaders to government executives and high management of employers' organisations or sector representatives. In most institutions, these representatives make up for more than two-thirds of the board and hence have a decisive voice in the policy and strategy of the institution. Many involve staff members, students and alumni, as well as national and regional representatives of the world of work. The sessions' aim is to gather inspiration and input from a wider and more diverse group of people to shape or adapt the HEIs' strategy and policy.

Balanced representation by law - University bodies at DHBW

Author: Raimund Hudak, Professor at Baden-Württemberg Cooperative State University Mosbach (DHBW), Germany

At *Duale Hochschule Baden-Württemberg* [Cooperative State University Baden-Württemberg (DHBW)], the University Council is the highest decision-making body, and the majority of its members are representatives of the world of work. The boards of each of the three faculties are composed of an equal number of representatives of the world of work and of academia
In those committees, institutional strategies are crafted and decided upon. The balanced representation is required by the higher education law of the southern German state of Baden-Württemberg and is one of the only state legislations in Germany detailing how the world of work partners shall be embedded within the governance scheme of the university. The law outlines their roles and responsibilities, as well as the relationship between the world of work and the world of academia for the DHBW in detail. It is a unique example of legislation designed to ensure an equal partnership between the world of work and academia and respecting the governance of an academic institution at the same time.

Objectives and outcomes of PHE

Developing "sandwich courses" for better employability at IUTs in France

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

IUTs in France have awarded University Diploma of Technology (DUT) for 40 years. The 2-year EQF level 5 programmes offer placements for students, which typically last 10 to 12 weeks. However, enterprises have been asking for graduates who are more immediately employable, can adapt very quickly to changing conditions and can start their career with more knowledge on the world of work *without* compromising on academic performance. More and more DUT graduates continued their studies in master's programmes and engineering schools, thus depriving the world of work of the high-quality level 5 graduates they need for their development and following a career path other than the DUT programmes were intended for (short cycle for immediate employment).

Consequently, enterprises and the financing bodies for lifelong learning (called OPCA in France) collaborated with a number of IUTs to create 3-year-long "sandwich programmes" in which students work a full year in partner enterprises to make learning genuinely dual. The programmes are set up as follows:

- Year 1: Two semesters of academic training with a short (2- to 3-week) introductory work experience session. The format used to be deployed in the first and second semester of the traditional DUT programme.
- Year 2: One semester (16 weeks) of academic training followed by 32 weeks in an enterprise. The placement part of the year is accompanied by one or two "get together" sessions at the institution.
- Year 3: The student spends one semester with the enterprise and the last at the IUT for academic learning.

The dual programmes combine a full year of on-site training within the enterprise and are in line with the nationally defined requirements for national IUT curricula.[12] Work contracts are required (learners are employees, not students) and are co-funded by the enterprises and OPCAs in a standard lifelong learning mechanism. After signing

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[12]There are 24 national curricula for IUT programmes defining teaching volume and learning objectives for each module and competences to be acquired.

Contrats de professionnalisation, learners become company employees, not students, and receive a regular salary. This compensates for the extra year to graduate.

Employment is a must - Companies send their staff to PHE in southern Germany

Author: Raimund Hudak, Professor at Baden-Württemberg Cooperative State University Mosbach (DHBW), Germany

The DHBW aims for the employability of all graduates and to grow their competences necessary for the different fields of the job market. Each semester at DHBW is divided into two parts to achieve this: theory at the PHE institution on the one hand, and learning/working at a private company or in the public sector on the other (please see the figure for illustration).

Degree after 6 semesters (3 years)

Semester 1+2   3+4   5+6

Each semester (24 weks) is divided into 2 parts:

theory
12 weeks at DHBW

practice
12 weeks at the partner

organisation
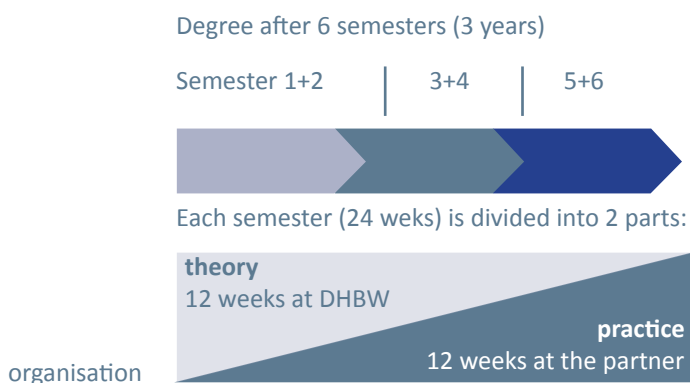
Figure 3: Theory at the PHE institution versus learning/working at a private company or in the public sector

Theory phases at DHBW are comparable to traditional undergraduate education. Practice phases give students insight and work experience with a cooperative education partner. Those phases are accompanied by pre- or post-placement lectures, which distinguish the DHBW practice phases from pure on-the-job training. The cooperative HEI crafts the regulations and content of these training periods, which follow a curriculum as well. It is noteworthy that employment with one of DHBW's dual partners is a requirement for student admission. Therefore, recruitment is in the hands of the cooperative education partners, who decide with their staff about parallel participation in higher education. DHBW verifies their qualification for higher education entrance only. Students are granted vacation days as stipulated in the 3-year study contract signed by the student and the cooperative education partner at the beginning of the programme. The students spend their time until graduation with the same employer who pays them a salary comparable to the wage of a trainee.

Regional integration

Build and maintain - Application schemes and time budgets for regional partnerships

Author: Raimund Hudak, Professor at Baden-Württemberg Cooperative State University Mosbach (DHBW), Germany

The DHBW collaborates with more than 9000 partner organisations from business and industry, which employ students and provide time and space for practical study. Those "dual partners" apply for membership at the university and must meet certain quality standards. Official admittance is always given through the university council of one of the local campuses and can be revoked in case of insufficient quality.

Within the governance scheme of the DHBW, each head of programme is responsible for maintaining the quality of cooperation with the dual partner organisations. Each professor in that position is allocated a time budget entirely for partnership building and maintenance.

Info Box: Portalegre Polytechnic Institute (IPP), Portugal

Portalegre Polytechnic Institute (IPP) is a public PHE institution that offers a comprehensive (academic and professional) range of subjects—business management, health, agricultural studies and education. IPP has four schools that engage in teaching, training, research and other activities in their respective scientific, pedagogic, technical and artistic scope. The institute was the first Portuguese HEI to be awarded the quality certification as a whole. It was also the first Portuguese HEI in receiving social responsibility certification. Programmes are offered at EQF level 5–7 for currently 2000 registered students.

Strategic planning and cooperation among municipalities, businesses and two Portuguese polytechnic Institutions

Authors: Joaquim Mourato, President of Polytechnic Institute of Portalegre, Portuguese Polytechnics Coordinating Council (CCISP); Armando Pires, Head of International Affairs/Full-time Professor at Polytechnic Institute of Setúbal, CCISP; and José Miguel Nunes Pereira, Adviser, CCISP, Portugal

Portuguese PHE institutions usually involve regional companies and professional associations in student training. In some cases, regional partnerships are guided by institutional agreements with a high number of professional organisations (public

and private), other HEIs, municipal bodies and companies. The *Plataforma 21 Alto Alentejo* is a partnership between the Portalegre Polytechnic Institute (IPP) and several municipalities of the Alto Alentejo region. The initiative set up a discussion platform with forums, surveys and gathered suggestions to understand the needs of the region. Participation was promoted among experts from the field at a local and national level and was opened to all elected officials and citizens. With the input received through the discussion platform, IPP comprised a strategic development plan for the region, assisting authorities, entrepreneurs, investors, institutions and the Portuguese government in promoting actions that lead to a sustainable development of the Alto Alentejo region.

Figure 4: The Alto Alenteja social network site

Info Box: Setúbal Polytechnic Institute, Portugal

Setúbal Polytechnic Institute is a public PHE institution in an (sub) urban area in Portugal. Approximately 6500 students participate in comprehensive range of subjects ranging from education to technologies to business management to health. Programmes are offered from EQF 5 to 7 on two campuses with well-equipped laboratories, documentation centers, audio-visual equipment, and computer facilities available to students and teachers.

Another successful example of a beneficial collaboration with local municipalities and PHE, and the Setúbal Polytechnic Institute (IPS) in particular, is the *Social Volunteering Programme*. The partnership works together on the organisation of traineeships at the municipality but also on jointly created projects. In 2007–2009, the Setúbal municipality approached IPS to support the launch of a social volunteering programme

in one of the city's most problematic social areas, Bela Vista. The institute also collaborated with the Palmela municipality to modernise an old primary school as part of the *Fantasiarte Programme* (Education Through Art) between 2008 and 2010.

National regulations and incentives to foster job-related skills in France

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

The French state promotes apprenticeships through incentives for the participating enterprises (e.g., by waving taxes on apprentices' salaries). The National Fund for Development and Modernisation of Apprenticeship provides finances to regions to organise apprenticeships. Subsequently, the regions provide social benefits for the apprentices such as travel expenses between the company and the IUT or engineering school.

A partnership for reskilling and PHE in northern France

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

In the northern region of France *Pas de Calais*, many major industrial employers are located, such as automobile manufacturers Peugeot, Renault and Toyota, the rail industry, and steel works. These companies found it difficult to hire qualified technicians and other intermediary personnel. On the other hand, a large number of *Baccalauréat* (the Secondary School Leaving Certificate - Level 4) holders suffer from unemployment and have not been able to develop a viable professional career after receiving training that is irrelevant to the needs of the regional industry. This group can be characterised by low skills, a general lack of adaptability and the tendency to reproduce gender stereotypes, as was especially the case for many women after level EQF 4 training as secretaries.

In this typical skills mismatch situation, a group of concerned employers, the *Région Nord - Pas de Calais*, the Instituts universitaire de technologie de Valenciennes (*Université de Valenciennes et du Hainaut-Cambrésis*) and the local authorities have joined forces to set up a targeted retraining scheme.

Detection

Awareness & Empowerment

Selection

Bridging Programme

Assessment & Access

The local Young People Employment Centre (Mission locale du Valenciennois) provides lists of unemployed people under age 26 and detects individuals who meet the criteria defined by the partnership;

A series of personal development sessions, workshops are run for young people, which are designed to raise their awareness of industrial jobs and their ability to grasp simple scientific concepts. The National Science Week (*Fête de la science*) provides the opportunity for visits of manufacturing sites, research labs, as well as teaching and learning institutions. The aim is to restore esteem, equip young people with better understanding of the benefits of a scientific job in the industry and empower.

The IUT and partners select young people for entry into specific 6-month training programme.

Young people attend bridging courses in a dual learning set-up: They take classes in scientific (maths, physics, mechanics, electronics) and industrial subjects as well as training in the generic skills with dedicated tutors at the IUT. athe bridging courses follow a locally defined programme (other than DUT which is nationally defined). Also learners sign a part-time paid contract in a company under 6-month apprenticeship programme during which some time is dedicated for work on a personal/ professional project. Learners sign a part- time work contract and are paid. Funding and support packages come mostly from the region and the employer.

At the end of the bridging programme, learners are assessed and can gain access into *mainstream* Level 5 Professional Higher Education, based on their assessment results, individual motivation and, mostly the outcome of the personal/professional project. Most of them will attend an IUT or STS (higher vocationa education) in dual learning, i.e. continung the apprenticeship. The companies involved during the bridging course typically keep the learners under contract.

PHE teaching and learning

Curriculum development with stakeholders

Joint academic and professional efforts for a new bachelor of finance (PHE) in Denmark

Author: Regitze Sparre Kristensen, Director of International Department at Tietgen Business College, Denmark

Joint academic and professional efforts for new bachelor of finance (PHE) in Denmark

In 2006, the report "Analysis of skill needs and training provision within the financial markets" (Danish: *Analyse af kompetencebehov og uddannelsesudbud inden for de finansielle markeder*) was published and recommended to the Danish Ministry of Education to develop a professional bachelor of finance (EQF 6) in the upcoming years. Subsequently, several representatives from the sector actively participated in a working group of the Danish Ministry of Education in December of the same year. The development process of the new programme was chaired by the Ministry and has been guided and coordinated by the University College of Northern Denmark who received a research and development grant from the Ministry, but the industries have been closely involved on the drawing board through surveys and face-to-face interviews.

The proposals and recommendations of the finance sector have had a major impact on the structure of the programme as well as on the academic content. This way, the new professional bachelor has a strong correlation with the competency requirements demanded in the sector and is supported by the Financial Sector Education Policy Committee. The group represents the Danish Employee Association of employees in the insurance sector, the National Association of the Financial Sector Employers, the Financial Services Union, bankers, Mortgage Banks and Insurance Association, and Co-ordination Group for higher financial education. Furthermore, the Housing Associations, Danish Estate Agents, the Property Federation Denmark and the Association of Registered Accountants are in favour of the new programme.

Today, there are approximately 490 admitted students to the programme that is offered by four Danish institutions.

Proposals from professional associations kick start curriculum development at Tallinn University of Applied Sciences

Author: Anne Kraav, Vice-Rector for Development, Tallinna Tehnikakõrgkool University of Applied Sciences, Estonia

Feedback from the labour market is received on regular terms through the university's Advisory Board, annual Curriculum Councils, members of Diploma Theses Evaluation Committees and other events (professional field meetings, seminars, etc.) as well as through the frequent communication with the employers by Tallinna Tehnikakõrgkool University of Applied Sciences (TTK UAS) employees who are members in professional associations and the Estonian Qualifications Authority that hold regular meetings and other events that provide opportunities to discuss the needs of the labour market.

The launch of a potential new curriculum and planning a new specialisation at TTK is based on written proposals and recommendations from professional associations, members of the TTK UAS Advisory Board and partner enterprises. For example, electrical engineering labour market organisations expressed the need for electrical engineering education in Estonia on EQF level 6. They initiated the launch of the new curriculum in 2012 in collaboration with the PHE institution.

> **Info Box: TTK University of Applied Sciences (TTK UAS)**
>
> TTK University of Applied Sciences (TTK UAS) is the largest university of applied sciences in Estonia with currently 2700 registered students and 5 faculties. TTK UAS is a public professional higher education institution offering competitive education in the fields of engineering, production, technology, architecture and construction.
>
> Thirteen study programmes at EQF level 6 lasting 4 years (240 ECTS) are provided for full-time learners, distance learners and in-service training courses in the Open University.

Furthermore, input is gathered from external members of Curriculum Councils and Diploma Theses Evaluation Committees - at least 50% are external members, mainly from the world of work - to address the needs of the labour market. Curriculum Councils operate as standing committees coordinating the development, modification and analyses of curricula. The Council comprises at least two external representatives of professional associations or employers in addition to the dean, the head of chair and at least one student representative.

Understanding career paths and future needs of employment - A national study on PHE graduates in France

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

Each PHE institution has to set up a survey of its graduates through its Observatory of Student Life (OVE). The network of IUTs has decided to design and run its own centralised graduate survey by specialist researchers from the partner universities and the French Centre for Research on Qualification.[13] The *Enquête sur le devenir des diplômés de DUT* is a survey of all IUT graduates 30 months after finishing their degree. Graduates are invited by their former institute.

Nearly 50,000 graduates are surveyed each year from 110 IUTs in 600+ study departments. They answer 45 questions about professional or academic endeavours undertaken in the preceding 30 months: school, further study programmes, results, type of employment, employer, salary, etc. The IUT network has been able to obtain partial ministerial funding for the survey implementation, analysis and dissemination. The 2.5-year time scale and the wealth of information gathered enable the IUT network, its QA organisation and the Ministry of Higher Education to get a clear view of career paths after graduation from professional education.

An online tool makes it easy for each stakeholder (IUT administrations, universities, QA body, course designers, professional partners, etc.) to assess its graduates and its activity. Importantly, the results can be used for communication to secondary school leavers and are of great importance for students during their first phases of the work on Professional and Personal Projects.

QA of curricula and learning outcomes at French PHE - Legal obligation to involve the world of work

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

Licence professionnelle are professional bachelor programmes at *EQF level 6*. Those highly work-oriented programmes are offered by IUT within generally academic institutions. French universities are autonomous in organising their own QA system, and professional bachelors are required by law to set up a dedicated body, the

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[13]Cereq is a research network that conducts studies on employability and current trends in certifications and competencies.

Advisory Committee called *Conseil de perfectionnement*. Hence, these programmes have the opportunity and obligation of crafting their own quality development and giving professionals a say in its organisation.[14] Advisory committees comprise representatives of the academics involved in the programme, professionals (who might or might not teach) and students.

Licence professionnelle/ University	Meeting/Who?	How Often?	Attributions
Rail Vehicles Maintenance (University of Lille 1)	Representatives of companies Programme coordinator Lecturer representatives	Once yearly	validates curriculum change only a steering committe (academics and teaching professionals only) is in charge of other validations
Methods and Engineering in Automotive Diagnostic (University of Paris-Est-Créteil)	Representatives of companies Programme coordinator Lecturer representatives	Twice yearly	validates teacher selection validates currucular changes validates placements subjects
Industrial Installation Design (University of Le Havre - in partnership with Association de formation professionnelle del'industrie - Région havraise)	Every cmpany involved participants Programme coordinator	Every 8 weeks	recruit students validates the curriculum validates projects adapts curriculum

Table 5: Examples of advisory committee organisation

[14] On the other hand, the EQF level 5 professional diplomas (DUT) at IUTs have a nationally organised quality assurance system.

Depending on the programme, the Advisory Committee will meet once or several times a year to validate the teaching and learning programme, examine the students' progress and propose remedies to any difficulty. Further tasks can entail:

- the validation of the work experience programme (company placement, dual education scheme, etc.) given to each student;
- the validation of the projects assigned to learners by partner companies; and
- the organisation of trainings for tutors from the world of work.

Curriculum development in Portuguese health schools

Authors: Joaquim Mourato, President of CCISP; Armando Pires, Head of International Affairs/Full-time Professor at Polytechnic Institute of Setúbal, CCISP; and José Miguel Nunes Pereira, Adviser, CCISP, Portugal

In Portuguese PHE, classes mostly have a practical nature or combine practice and theory, the latter focusing on creative and scientific capabilities.

Most institutions try to involve the stakeholder in the curricula creation. For example, at the Health School of the Polytechnic of Viseu, the programme curricula are developed and reviewed by a steering committee of teachers, students and other relevant stakeholders and need approval by the technical-scientific and the pedagogical board. When revising a study programme, the contributions and suggestions of partner companies are taken into account to gain from the experience and vision of the world of work for curriculum development.

Info Box: Portuguese health schools

In Portugal, health schools are integrated in the polytechnic higher education subsystem. The vast majority of health schools are integrated in public polytechnic institutes and universities (17 schools overall, 3 schools are not integrated). These offer programmes on EQF levels 6 and 7.

In Portuguese health schools, professionals are part of the team of educators and schools and hold meetings with different professionals to establish bridges with the best practices in the world of work. When revising or developing curricula for programmes and courses, schools also take the specific professional competencies into consideration as previously defined by professional associations.

Setting professional and general learning outcomes

More subjects with learning outcomes related to entrepreneurship and soft skills development at Tallinn University of Applied Sciences

Author: Anne Anne Kraav, Vice-Rector for Development, Tallinna Tehnikakõrgkool University of Applied Sciences, Estonia

To ensure graduate success in the labour market, knowledge and skills in the field of humanities and entrepreneurship are much emphasised in addition to core subjects. Programmes at TTK UAS are designed to grow communication skills, the ability to work well with others, language skills, and the readiness for professional development and engineering responsibility. All TTK UAS curricula contain elective subjects with a value of eight European Credit Transfer System (ECTS) credits that develop entrepreneurial attitudes and skills. In the period 2010–2014, the proportion of entrepreneurship-related subjects has grown about 30%. For example, the curriculum for mechanical engineering has a humanities module (mandatory six ECTS) offering courses as Basics of Science Philosophy, Client Experience, as well as English, German and Russian language courses for business. The aim is to match the competencies obtained by the students with expectations of the world of work. They are involved in RDI activities of TKK faculties (e.g., through contract work on the one hand and graduation theses and course papers on the other).

Co-makership at Hanze University of Applied Sciences: Innovation labs on healthy ageing

Author: Monique Swennenhuis, Senior Advisor International Marketing, Hanze University of Applied Sciences, Groningen, Netherlands

Healthy ageing has been a strategic theme for Hanze University of Applied Sciences, Groningen, for years. In 2013, this resulted in the Centre of Expertise Healthy Ageing with a network of 35 partners. A public-private network organisation that aims at innovations in health care, it has now grown into an innovation platform with more than 140 active partners: Educational institutions, health care organisations, small and large companies, municipalities, and partner organisations all collaborate in the Centre of Expertise. Innovation and co-makership is achieved through innovation labs. These are networks of different partners within the organisation that function as testing grounds in which researchers, students, teachers and professionals from industry work together on finding solutions to problems that occur daily in health care. Projects and research often begin with questions from the professional practice. These questions are combined and discussed by the partners in the innovation lab.

Teacher-researchers, students and experts from the professional practice will start working on these in co-makership. What is important here is open innovation, and together arriving at a solution that is feasible in practice. Students participate in the research as part of their internship or in the frame of a talent track (Hanze UAS offers honours programme in different forms, posing higher learning requirements than their regular bachelor's programmes).

> **Info Box: Hanze University of Applied Sciences, Netherlands**
>
> Hanze UAS is a large public PHE institution in Groningen, northern Netherlands with 17 schools, 27,000 students and 3000 staff. In Hanze's portfolio are BA and MA programmes (EQF 6 and 7, respectively) offered in Dutch, German and English. Six centres of applied research and innovation are run, which are considered as multidisciplinary collaborations between professorships and education.

Take the lab clinical malnutrition. Malnutrition is a serious, comprehensive and growing problem in healthcare, especially for hospital patients. The key question in the innovation lab "clinical malnutrition" is how can professionals - especially dieticians, physiotherapists and nurses/carers - improve the quality of life for people who suffer (or are in danger of suffering) from malnutrition with diet and exercise?

Hanze's partners in this lab are the University Medical Centre Groningen, Ordina (IT), Friesland Campina (dairy industry) and MediqTefa (medical nutrition). The lab was launched in July 2013,and they soon had their first result: an international app that can detect, determine and monitor clinical malnutrition in hospital patients based on, among other things, weight changes, bodily fluids, physical activity and the intake of food. All partners have an interest in the innovation lab, and together, they determine the course for further solutions. Students that are involved can come from a range of programmes. In this particular lab, two students, one studying Human Technology and the other Nutrition and Dietetics, wrote their bachelor thesis on their lab research into developing a toolkit to fight malnutrition. Hanze UAS actually awarded the students the Hannie Schaft prize, a recognition of the best bachelor thesis with high social engagement.

All innovation labs have a strong practical character, shared ownership and involvement, and are physically close to health care institutions. Each lab has a clear theme and focuses on sustainability and continuity. Themes range from active ageing for the elderly, e-health and serious gaming, and labour and healthy ageing to exercise-friendly environment public spaces and work innovations in the care sector.

Hanze UAS is the secretary of the Centre of Expertise Healthy Ageing and responsible for the progression of the projects, connection, dissemination of knowledge and distribution of subsidies.

From learning goals to assessment to evaluation - A clearly defined process at ZSEM in Croatia

Author: Žarko Nožica, Professor at the University College of Applied Computer Engineering in Zagreb, Croatia

At Zagreb School of Economics and Management, student learning goals and objectives are well defined in order to integrate mission and learning process. The faculty has a central role in the process of describing the skills, values and knowledge they expect as outcome of the teaching process. The learning goals are a roadmap for the curriculum and the basis for the assessment. The latter is also a central process for linking the mission, learning goals and learning outcomes achieved by the students. At ZSEM, it encompasses the following steps:

- alignment of the curriculum to defined learning goals;
- identification of instruments and measures for assessment; and
- collection, analysis and dissemination of the assessment data.

When the assessment data of the student learning outcomes have been collected and analysed, the results are used for continuous improvement and results in revisions of the school's curriculum.

Content for teaching and learning in PHE

Simulations, case studies and design-based professional learning in Flanders (Belgium)

Author: Marc Vandewalle, Secretary General of the Flemish Council of University Colleges, Belgium-Flanders

Professional bachelor programmes in Flanders combine theory and practice through simulation, real-life materials or work situations (for example, real machinery to repair, real assignments for translators or event organisers, real samples to analyse, etc.) and case studies.

Figure 5: Ship simulation lab in Flanders

Many programmes combine theory and practice and offer different types of simulation labs. Some work with students in birth simulation labs, ship steering simulators, etc.; others simulate a workplace and its activities (for example, a travel agency or accounting company). Depending on the phase in the curriculum, some student work results in usable material in a contract relation with companies or other "customers." This is particularly the case for event organising, design, graphic design, translation and interpreting.

Engaging staff and students in collaborative research and design projects helps to keep learning materials and curricula up to date. In many cases, the combination of gaining theoretical knowledge and practical development generates real and usable products such as movies, solar-powered cars, educational games, or new fashion and design products.

All of the above complement the obligatory work placement/internships in companies, government and non-profit organisations (schools, hospitals, etc.). Simulations, case studies and design-based learning ensure that students enter their internships well prepared and enrich learning in a "controlled environment".

Learning methodology

Active and collaborative learning methods at ZSEM in Croatia

Author: Žarko Nožica, Professor at the University College of Applied Computer Engineering in Zagreb, Croatia

Staff at ZSEM understands that learning is more effective through authenticity and interaction between students. All master programmes and courses are delivered through a combination of the traditional lecture and practical work (cases discussions, problem-based learning, labs, etc.) in a format that combines theory and practice. Small course sizes of 10 to 30 students each make it possible to give students hands-on learning experiences and feedback on their individual work. Some undergraduate courses and most graduate courses include group assignments facilitated by the PHE educators. Furthermore, study trips and visits to companies are organised during which students spend time with faculty members and learn in a less formal atmosphere outside the school's premises. ZSEM also invites students to join associations such as the Journalism Club, IT Club, Management Club, Financial and Investment Club, and the Marketing Club.

Full review and new solutions for local business in a 48-hour camp

Author: Regitze Sparre Kristensen, Director of International Department at Tietgen Business College, Denmark

48 TIMER

Each year, Lillebaelt Academy in Denmark gives students the opportunity to test their skills in real situations in a company. Over a period of 48 hours, students from different disciplines, such as data science, finances, nutrition technology, marketing and installation technology, review a business and develop different measures for improvement.

Info Box: Lillebaelt Academy of Professional Higher Education (Erhvervsakademiet Lillebælt), Denmark

The business academy in the region of southern Denmark offers 30 higher educational programmes at EQF levels 5 and 6, both full-time and part-time. The academy has 3200 students and 300 employees and collaborates with 2300 companies. The institution is relatively new (established 2009) and has been set up by the merging of higher education branches of four colleges.

Students can apply to participate in this extracurricular activity. The big challenge for them is to turn ideas into concrete implementable proposals in just 2 days. One company is selected each year, and consultants at Lillebaelt Academy coordinate cooperation with the companies.

In April 2010, the camp was held with staff and owners of "BF-OKS a/s Hesselagergård," a company that refines many different types of meat products since 1983. The company had grown a lot in the last few years, and the work processes were not optimal. The PHE students received wish lists (for different groups) and set out to prepare proposals for a new framework of enterprise administration. The following notes were taken by students participating in the project.

Thursday - We get a guided tour in small groups through the company. We then discuss and analyse various options. Later in the afternoon, we have a short meeting with the owners. We receive green light for further work with three of the many prepared suggestions. Around 9:30 p.m., there is a need for a meeting with the owners. "It's only about economics" is their message, and two options need to be dropped. Panic spreads in our group, because almost 12 hours were spent without significant results.

Friday - What can we do? One suggestion is: "Let's get in contact with a trainee in another company who took part in the previous 48-hour project and knows about the conditions." Her reply came promptly: "Send me the material immediately, and I'll see what I can do!" Now, we get support of a top draughtsman. Delegating a task gives more time for other activities, and our mood increases again.
We lead in-depth interviews with the employees and have long meetings with the owners. The meetings have an agenda, and we take minutes. We come up with constructive suggestions for changes in workflow and physical location of some of the company buildings. We organise our proposal in different stages so that the daily production will be affected as little as possible during reconstruction.
Later in the afternoon, we present the preliminary work to a mixed panel of the company's staff. All five people take time to comment on our proposals. We get positive feedback and can continue to further develop all ideas. It takes much time and concentrated work.

Saturday - Only few hours left to deliver all project proposals to the owners. We finish up the material for our presentations. At 10:30 a.m., we start to present. It was obvious that the owners were amazed by the amount of concrete proposals that could be used to improve the company's daily operations: Proposal for economic and inventory management systems, recipes for new liver pâté, hygienic studies, an analysis of mortgage proposals for savings on electricity and water consumption, and many more.

At the end of the 48-hour camp, the participating students and company staff said the following:

It's great fun to be part of it here, because you are constantly in touch with the owners of the company, who tell you whether a proposal is useful or not (construction architecture student).

You are forced to find out what real skills I have developed (financial management students).

48 hours are over, but we are still overwhelmed by the amazing experience it was to have 32 students around us. The results of the project are sound and impressive. We are now in the process of reviewing them in detail (company staff).

As a businessman, it is always exciting to be challenged on the "usual" - and when our business is seen with "brand new eyes" of 32 talented students who have the up-to-date knowledge in their respective fields, you can only get something good out of it. We certainly expect to revise both existing workflows and implement new projects in the future (company staff).

The camp gives students an exciting opportunity to test their skills and work in a multidisciplinary team of students. It offers an authentic insight into practices and challenges of a company. The business, on the other hand, gets a comprehensive review from a team with a fresh perspective, hence a result that might otherwise be very costly.

Service for PHE educators - A dedicated centre helps to integrate simulation-based learning

Authors: Raimund Hudak, Professor at Baden-Württemberg Cooperative State University Mosbach (DHBW), Germany

DHBW in Germany emphasises methods of active, collaborative and self-organised learning. For that reason, the dual university runs a centre for management simulation with four staff members who engage more than 1000 students in real-life business problems every year. Lecturer and professor can chose from a range of modules for their classes, and the centre provides from 1 of 30 management games up to an "all-in service." A typical simulation lasts 2 to 3 days, during which students work in groups to also develop collaborative skills and social competences.

Six different simulations are offered for trade and commerce, for example, focusing on the car industry, e-commerce, marketing and start-ups. The simulations were developed by external business simulation experts.

PHE learning environment

Work placements in Flanders - From observation to innovation projects

Author: Marc Vandewalle, Secretary General of the Flemish Council of University Colleges, Belgium-Flanders

In Flanders, Belgium, all professional programmes include work placements in different forms and durations. Most HEIs/programmes offer their students a diversity of placements at different types of companies and foreseen tasks - and consequently also varying levels of autonomy needed. The required skills are gradually built up. Placements typically start with an observation period, advance to contributing to all general activities and eventually have the learner work on a professional assignment. The latter specifically concerns an innovation in the workplace and learners should take the lead in the respective project. Thus, the work placement period does not only have the purpose to develop the competences of the student in and for the world of work, but also aims to contribute to the improvement of the work environment.

For better learning experience, the practice phases are sometimes complemented by "reflection" days at the home institution or even in dedicated internet fora in which practice is related to theory and the theoretical development of the innovation projects is discussed. Often, the innovation projects become the subject of the learners' bachelor thesis, which should be grounded in both theory and practice.

At IUT of Le Havre, the duration of in-company learning varies according to sector needs

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

Dual higher education in France is often organised on 2-week units for alternation: 2 weeks of academic learning and 2 weeks with a company. The format was inherited from its predecessor: dual vocational education (at levels 5 and 4). The IUT of Le Havre (University of Le Havre) realised that most companies involved in the delivery of its dual education programmes found it difficult to adapt to a pre-set sequence of in-company training and university periods. Arranging the curriculum with a fixed alternation also has proven a difficult task.

At IUT Le Havre, the sequences have now become subject of consultation in the curriculum design process with stakeholders of the dual organisation. In the case of highly specialised professional bachelors with a limited number of partners, all

companies interested in a programme get their say. If the scope of the programme is wider, local regional employers' representatives (branches professionelles) are asked to reflect on the duration of the two phases.

Info Box: Institut Universitaire de Technologie (IUT) of Le Havre

Institut Universitaire de Technologie (IUT) of Le Havre is a public PHE institute in an urban area in France with approximately 2450 registered students. The institute awards 10 professional (not vocational) degrees with wide-ranging specialisations at EQF level 5. Each prepares for a whole range of jobs. Eighteen programmes are offered at level 6 (*Licences professionnelles*), which tend to be job-specific. Like all IUTs, IUT Le Havre is a PHE institute within an academic university (University of Le Havre). Staff qualifications, selection process and working conditions are strictly the same as for French university personnel. Research activities and programmes are carried out under the university's umbrella and are therefore not specific to the IUT.

At IUT Le Havre, the sequences have now become subject of consultation in the curriculum design process with stakeholders of the dual organisation. In the case of highly specialised professional bachelors with a limited number of partners, all companies interested in a programme get their say. If the scope of the programme is wider, local regional employers' representatives (*branches professionelles*) are asked to reflect on the duration of the two phases.

For instance, civil engineering firms (specialist programmes at levels 5 and 6) strongly expressed that dual education would be far more beneficial to the students with longer periods in the life of a building site. Extending practice phases would be more suitable for several meetings on the building site, and students could better learn how to react to adjustments, for example. It has therefore been decided to extend periods of in-company training to several months. Partner companies as well as the institution had to put extra effort in supporting the programme operators' decision for more flexible alternation periods outside of the convention for dual education in France. Some OPCAs, the financing bodies for lifelong learning in France,[15] have internal rules that forbid to fund study programmes if the period of academic training is longer than a specific number of weeks.

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[15]There are about 80 different funds that cover each sector of the economy, each of them being administered by one OPCA. Each company contributes to a fund.

The table shows some examples of the revised sequences for dual education at IUT Le Havre.

Professional Bachelor Programmes	In company/University learning
Construction and Civil Engineering	8 weeks/3 weeks
Electrical Eng. - Systems Design	4 weeks/2 weeks
Mechanical Eng. - Site Inspection	4 weeks/3 weeks
Logistics	2 weeks/2 weeks
Maintenance	4 weeks/2 weeks
Marketing (Retail sector)	Variable according to shopping days and periods of the year 3 days/2 days
Short cycle programmes (DUT - 6 semesters) exept Construction and Civil Engineering	Three semesters of academic training with three weeks of "company contact" are followed by two semesters in-company training interrupted by three weeks of "University contact". The last semester is entirely spent at the university.

Table 6: Integrated study model—Flexible to sector-specific needs at IUT Le Havre

The PHE programme team

PHE teaching teams in Flanders - Institution-specific ways to balance academic and professional expertise

Author: Marc Vandewalle, Secretary General of the Flemish Council of University Colleges, Belgium-Flanders

We found a variety of approaches on how PHE institutions or departments seek to establish a balanced combination of staff with academic background and relevant experience from the world of work:

Some institutions/departments set **targets** for the percentage of teaching staff with practical experience. Those professionals from the world of work might be offered (limited) teacher training modules. The staff members who both teach and work usually can rely on appropriate scheduling and are granted exception from some organisational obligations at their institution. Many PHE departments hire "visiting staff" with specific professional experience and promote those positions in the world of work. The regular HEI teaching staff, on the other hand, is encouraged to take "work experience" periods to enhance or update their knowledge and skills. Often, teaching staff is involved in practice-oriented research projects and thus keeps good relations with the world outside his or her institution.

Although not being a PHE staff member, the assignments during work placements are co-guided by a dedicated professional at the different companies.

Teaching PHE on Saturdays to involve working professionals and work-specific locations

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

In many French IUTs, the work week has been extended to include Saturday mornings. This enables professionals, consultants and company staff (technicians, executives) to devote time for students and teaching classes, facilitating project work or mentoring without interfering with their workload during weekdays. Classes can furthermore be delivered in work-specific places and give students the opportunity to become acquainted with compatible behaviour and attire. A number of IUT seminars take place in the premises of the Chamber of Commerce, often in the Chamber's Council amphitheatre.

Legal requirement for teaching staff: Three years of world-of-work experience

Author: Raimund Hudak, Professor at Baden-Württemberg Cooperative State University Mosbach (DHBW), Germany

Baden-Württemberg state law requires DHBW professors to have a minimum of 3 years of experience outside of academia.

It is also legally required that a large percentage of the teaching staff at the DHBW is part of the world of work. While holding management or other positions, those visiting lecturers present real cases and up-to-date knowledge to the PHE classroom.

Introducing national regulations for teaching staff qualification in Portuguese polytechnics

Authors: Joaquim Mourato, President of CCISP; Armando Pires, Head of International Affairs/Full Professor at Polytechnic Institute of Setúbal, CCISP; and José Miguel Nunes Pereira, Adviser, CCISP, Portugal

In PHE, the criteria for hiring and evaluating teachers include academic as well as professional experience. Teaching staff qualification at the academic and professional level has increased significantly over the past few years. Many of the full-time and part-time teaching staff have obtained academic degrees (master or doctor) and/or the title of specialist, which requires 10 years of work experience. In 2002, the polytechnic system only had 690 PhD professors (7% of the total teaching staff), and in 2014, about 3100 teachers held a PhD (32% of the total teaching staff). Along the same lines, we can say that, in the polytechnic system, many teachers have previous experience in the world of work in their specific field of teaching. This increase in academic qualification and years of work experience among PHE teaching staff can be explained by new national regulations and strategic decisions of most institutions to support their teaching staff qualification. In 2007, a new framework created the title "specialist," which is conferred to someone with more than 10 years of working experience in a given area after passing a public exam. At the same time, a new law was passed to regulate HEIs. This new framework stated that at least 15% of the teaching staff must hold a PhD, and 35% the title of specialist. In 2009, the new career framework for polytechnics[16] limited access to the teaching career to specialists and individuals with PhDs.

[16]Decreto-Lei n.º207/2009 Estatuto da Carreira do Pessoal Docente do Ensino Superior Politécnico retrieved from http://www.dges.mctes.pt/NR/rdonlyres/600EE55A-EA38-41D8-B083-ADEC8266C250/4640/DL_207_2009.pdf.
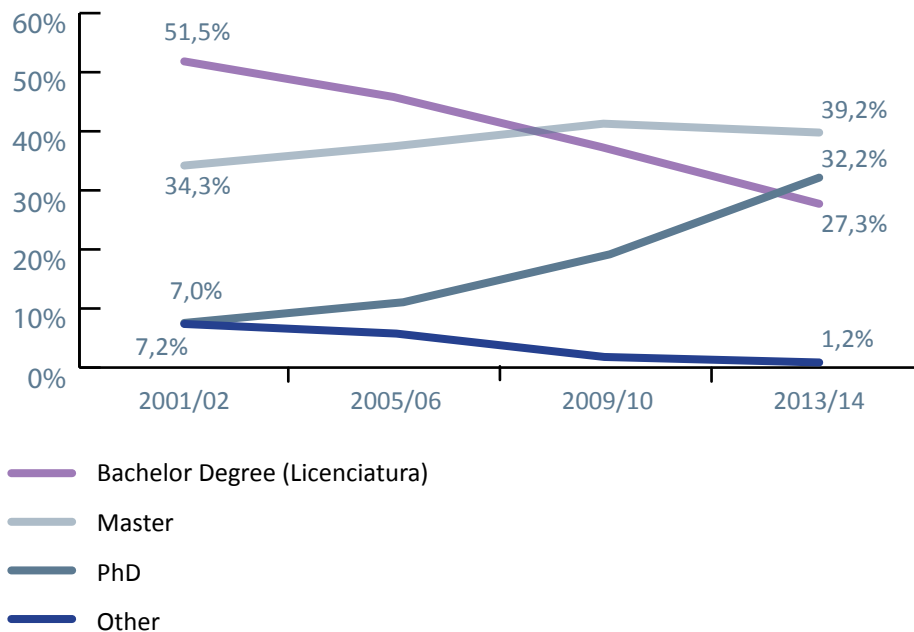
Figure 6: Evolution of the teaching staff academic qualification

Legend:
- Bachelor Degree (Licenciatura)
- Master
- PhD
- Other

Chart values:
- 51,5%
- 34,3%
- 7,0%
- 7,2%
- 39,2%
- 32,2%
- 27,3%
- 1,2%

X-axis: 2001/02, 2005/06, 2009/10, 2013/14

Research, development and innovation

Agenda setting

Demand-driven research and development through public funding in Flanders (Belgium)

Author: Marc Vandewalle, Secretary General of the Flemish Council of University Colleges, Belgium-Flanders

The Flemish government agency for Innovation by Science and Technology (IWT) funds research and launches public calls for projects every year. Additionally. the IWT offers advice and a network of potential partners in Flanders.

"TETRA" is funding line that aims to increase the innovative capacity in SMEs. Recently, the Flemish government decided to open this funding line towards the not-for-profit sector as well. The financing channel is open to all Flemish institutions of higher education [i.e., both university colleges (hogescholen) and universities can apply to lead the project and chose their partners of the work field]. However, PHE institutions are the "priority target group, given their comparative advantage for the diffusion of knowledge to traditional SMEs."[17] The funding is considered useful and attractive by SMEs and social-profit organisations who generally have no time, personnel, facilities or enough budget to innovate. However, these external partners (i.e., SMEs or not-for-profit organisations) have to be prepared to contribute 7.5% of the estimated cost of the research. Outcomes of RDI activities in PHE typically lead to product innovation, process and practice improvement, cost cutting, social innovation, organisational development, and market innovation more frequently than traditional academic output. Furthermore, research is often utilised in seminars, training sessions, publications in professional magazines (not necessarily scientific journals) and best-practice presentations or information campaigns.

"VIS feasibility studies" focus on the concrete development of an innovation strategy or initiative by a sector/group of companies. The focus here is also on SMEs, although large companies can also play a role. The difference with the TETRA program, mentioned above, lies in the fact that the companies themselves are leading the research project and can pick a research institute (PHEs, academic universities or

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[17]Flanders: Technology Transfer Fund (TETRA) retrieved from http://erawatch.jrc. ec.europa.eu/erawatch/opencms/system/modules/com.everis.erawatch.template/ pages/exportTypesToHtml.jsp?contentid=ea78594f-9094-11e0-a33b-3b1a37daf5b5 &country=Belgium&option=PDF.

non-educational research organisations) to collaborate or not. An individual company cannot apply for this funding. Companies are obliged to work together and apply on the basis of a complete consortium of companies. The companies have to be prepared to finance at least 20% of the VIS research project.

Industrial R&D projects are funded through a programme that requires a company as lead applicant. Consequently, (a) those undertakings address specific questions/ problems that need innovations/solutions in the world of work through practice-oriented research and (b) results are likely tangible. "The applying companies collaborate mostly with research partners. They do so in 56% of the projects."[18]

MatchPol - An initiative to support practice-based research at the bachelor level in Denmark

Author: Regitze Sparre Kristensen, Director of International Department at Tietgen Business College, Denmark

Metropol University College in Denmark cooperates with practice as a cornerstone of all research and development. The College develops strategic partnerships to solve key problems of the welfare state and develop future welfare solutions. Clear goals and expectations to the parties are managed with collaboration agreements that are well monitored to meet both, and the necessary adjustments can be made in a timely manner. In addition to interdisciplinary cooperation in research and development projects, the College engages with practice through consultancy and advisory work, analysis and evaluation of projects, management, and employee development. Cooperation is established with municipalities, regions, universities, user organisations, professional organisations, and private and public companies. The college has launched an initiative called "MatchPol," which aims at strengthening the connection of the bachelor thesis to (clinical) practice. Learners are guided to organise their research based on ideas and needs from hospitals, schools, job centres or rehabilitation centres. Through the initiatives, competencies are developed to detect those needs and find opportunities for development of practice as well as the abilities to act more solution-oriented. A Web site matched the ideas and presentations from practice with Metropol students. Cooperation partners and students are provided with templates for creating project proposals and agreements, as well as a guide to develop their research projects successfully.

[18]Page 10, Agentschap voor Innovatie door Wetenschap en Technologie (2014). Exploratory study into the effects of collaboration in IWT-funded industrial R&D-projects. Brussels, Steurs et el. retrieved from http://www.iwt.be/sites/default/files/english/files/IWT_study78.pdf.
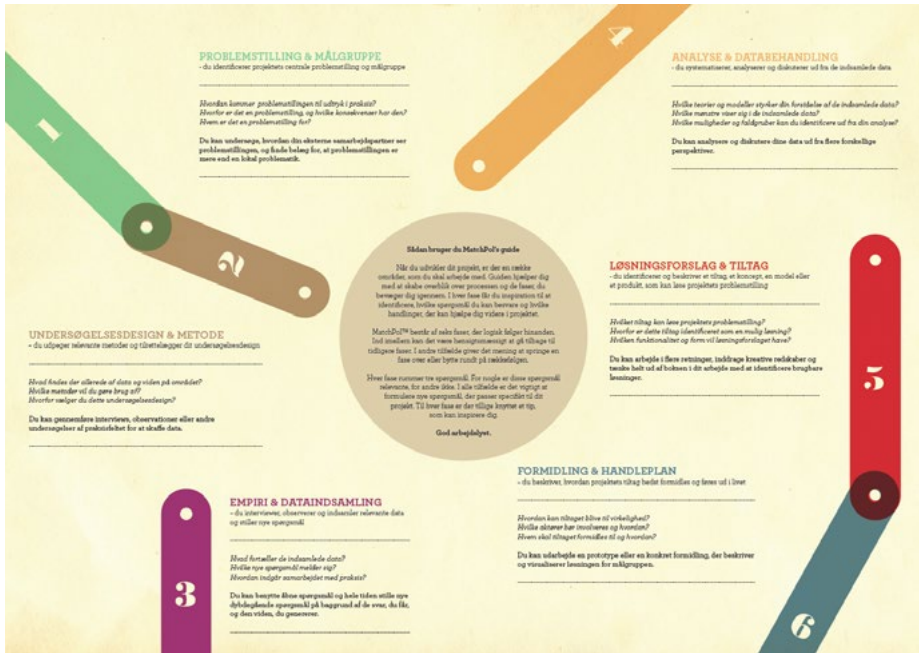
Figure 7: MatchPol guide for students to support practice-based research for bachelors

Also, PhD projects are organised in conjunction with both practice and other research institutions.

Info Box: Metropolitan University College

Metropolitan University College is a public university of applied sciences with campuses in Copenhagen, the capital of Denmark. Metropolitan offers bachelor's degree programmes, academy professional degree programmes and postgraduate studies and conducts applied research and development activities in welfare-sector subjects such as health, rehabilitation, welfare technology, management, education and social work. Metropolitan University College has two faculties: the Faculty of Health and Technology and the Faculty of Social Science and Pedagogy. The University Colleges' bachelor's degree programmes (EQF 6) have duration of 3.5–4 years equivalent to 210–240 ECTS, and shorter academy professional degree programmes (EQF 5) comprising 120–150 ECTS are also offered.

(Information retrieved from http://www.phmetropol.dk/English/About+Us)

A growing research mission with dual partners at DHBW

Author: Raimund Hudak, Professor at Baden-Württemberg Cooperative State University Mosbach (DHBW), Germany

The DHBW has been created from a network of different academies, which had been founded in urban and rural areas throughout the 1970s, 1980s and 1990s. In 2009, the academy was recognised as HEI, and from then on, applied research activities have increased. Dual partners from private or public sectors and university professors form cooperative research consortia in which industry partners present problems from the world of work and an agenda is set for a joint research programme. The common practice constitutes that research is funded by both partners, and usually projects last for a period of 2 years.

In the same year as higher education status has been granted by the federal state, the Faculty for Business and Economy opened the Centre of Applied Sciences (CASE). The centre engages in cooperative research relevant to the world of work such as analysing market potentials, usability research, image studies, competition analysis, research into the impact of advertising, surveys of satisfaction, consumer research, innovation studies and target group. Furthermore, CASE offers training in research methods and up-to-date tools and provides expertise and access to useful instruments to business students working on empirical research project especially during their bachelor projects. The growing second mission on research is being pushed forward by the federal Ministry of Science, Research and the Arts. In 2011, the ministry initiated a dedicated research support programme for DHBW focusing on collaboration with and networking among dual partner companies across regional and national borders.

RDI process

Better access to applied research for rural SMEs - The centre for food safety and innovation in the Normandy

Author: Stéphane Lauwick, Vice-President (International Relations), Association of IUT Directors, France

One of the difficulties of PHE institutions is to engage in research and innovation of regional interest while the international competition for funding is growing. This is particularly true for institutions in rural areas/regions. One solution is to create centres that gather all **RDI** entities relevant to the area in one building and attract funding from multiple sources: university researchers, applied research co-funded by specific companies and the region, as well as clusters and incubators. The Institute of Technology Cherbourg-Manche, for example, is located about 130 km from its

university (University of Caen Basse-Normandie). The two sites host three study departments each, and researchers and lecturers used to work in relative isolation. A multipartite agreement between the university, the region (*Basse-Normandie*), local authorities (*Département de la Manche-Ville de Saint-Lô*), industry representatives and an existing cluster kick-started the creation of the *Centre technique en sécurité et innovation alimentaire*. The research unit in food safety and innovation promotes research, innovation, technology transfer and training by supporting and funding involved regional and local operators. The students in the local IUT departments became also agents of technology transfer, with several work placements provided for them every year.

At Cherbourg-Marche and elsewhere, the proximity in space is essential: it shortens access time to quality research and puts the institution in a good position to provide advice and assistance for organisations in need of R&D. High local and regional visibility makes it possible for these centres to reach small organisations or SMEs that would otherwise not have the time, means or self-confidence to come into contact with large, somewhat intimidating, well-funded and prestigious research entities in big university centres.

Info Box: Institut Universitaire de Technologie (IUT) Cherbourg-Marche

Institut Universitaire de Technologie (IUT) Cherbourg-Marche is a public PHE institute in France. The institute awards six professional (not vocational) degrees with wide ranging specialisation at EQF level 5—each prepares for a whole range of jobs—and runs nine programmes at level 6 (Licences professionnelles).

Like all IUTs, IUT Cherbourg-Marche is a PHE institute within an academic university (University of Caen, Basse-Normandie). Staff qualifications, selection process and working conditions are strictly the same as for French university personnel. Research activities and programmes are carried out under the university's umbrella and are therefore not specific to the IUT.

Associated institutes for technology transfer in Germany

Author: Raimund Hudak, Professor at Baden-Württemberg Cooperative State University Mosbach (DHBW), Germany

Most German HEIs have established a central unit for technology transfer or a technology centre associated with the institution rather than being part of it. Technology transfer centres (TTCs) serve as catalysts to bring industrial clients and

researchers into contact and often play a decisive role in establishing collaboration with SMEs in particular. They systematically monitor industrial needs, negotiate contracts and provide consultancy services.

Collaborative applied research at DHBW has been developed throughout the last years, detecting research problems from the world of work and making them core of the university's research agenda. Seed funding is provided for collaborative research partnerships. Those usually conduct their research in 2-year cycles and aim to present larger research proposals with a wider scope to national and international funding agencies.

The TTC TTK UAS in Estonia

Author: Anne Kraav, Vice-Rector for Development, Tallinna Tehnikakõrgkool University of Applied Sciences, Estonia

In Estonia, the **RDI** process is stimulated through the representation of HEIs in professional associations and in sector-specific clusters in which researchers seek input on needs and expectations of the world of work and the society.

At TTK UAS, in particular, the TTC was established within the institution to provide structural units (mainly faculties) with the support needed for their RDI activities. The TTC serves as a link between enterprises and faculties: it mediates technology transfer opportunities and develops business contacts. It engages in applied research, consultations (also for spin-offs), in-service trainings, expert assessments and product development. The centre also builds national and international relations with similar RDI centres and institutions to exchange knowledge and information on technology transfer.

RDI outputs and outcomes

Applied research at Portuguese PHE institutions - Some examples

Authors: Joaquim Mourato, President of CCISP; Armando Pires, Head of International Affairs/Full-time Professor at Polytechnic Institute of Setúbal, CCISP; and José Miguel Nunes Pereira, Adviser, CCISP, Portugal

RDI plays a relevant role in PHE institutions' strategy in Portugal. Despite various constraints, all PHE institutions have been attempting to increase their involvement in RDI, increasing the number of research projects, publications, patents, public presentation and workshops, production of artistic objects, and their respective record and publication.

Some successful examples of projects created in Portuguese PHE institutions are as follows:

Mitrena/Setúbal Project - Following a request from the Setúbal Municipality, the economic impact of the Industrial Park of Mitrena was evaluated by the School of Business Administration of IPS. This industrial Park, created in 1989 by the Setúbal Municipality, comprises 373,800 m² divided in 46 lots. Today, the occupation area is about 50% of the total.

COHiTEC - A training programme in technology commercialisation was launched for the teaching staff with the aim of supporting the valuation of the knowledge produced at the Lisbon Polytechnic Institute. Since its launch, 136 projects have participated in COHiTEC, with a total of more than 600 researchers and management students. The supported business projects led to the creation of 23 technology-based companies.

Research on transport and infrastructure - Two studies were conducted in the Lisbon Polytechnic Institute to optimise electronic toll collection in national motorways (the Via Verde system) and to create efficient communication systems in the railway infrastructure. The Via Verde System is used in Portugal since 1991 and is available at all toll roads and bridges in the country since 1995.

Financial Literacy International Project - Curricula contents were prepared by the School of Business Administration of the IPS in order to increase financial literacy among the Portuguese population in general.

Differences in professional higher education in Europe

On the next pages, we will describe notable differences we found between countries in Europe. Three dedicated subchapters look specifically into the dimensions of the PHE framework introduced in the previous chapter: Policy and strategy, teaching and learning, and RDI. Furthermore, we investigate how PHE is situated in the EHEA.

Professional bachelor or doctorate? Differences in qualification levels

The European Qualifications Framework defines higher education as levels 5–8 and maps them to the framework for qualifications of EHEA. Further we will consider the learning outcomes of these 4 levels.

The learning outcomes relevant to EQF **level 5** are as follows:

- comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge
- advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study
- a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems
- exercise management and supervision in contexts of work or study activities where there is unpredictable change
- review and develop performance of self and others

The discussion on the situation of "level 5" of the EQF in the different national qualifications frameworks is essential, as it is in some countries the interface between vocational and higher education.

We find PHE qualifications offered at this level in Belgium-Flanders, France, Croatia, Ireland, Malta, Netherlands, Portugal and Slovenia.

Country	PHE level			
	EQF5	EQF6	EQF7	EQF8
BE(FL)	■	■		
CZ		■	■	
DE		■	■	
DK	■	■		
EE		■	■	
FI		■	■	
FR	■	■	■	
HR	■	■	■	
IE	■	■	■	■
LT		■		
MT	■	■		
NL	■	■	■	
PL		■	■	
PT	■	■	■	
SI	■	■		

Figure 8: EQF levels of PHE by country

The learning outcomes relevant to EQF **level 6** are as follows:

- advanced knowledge of a field of work or study, involving a critical understanding of theories and principles
- advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study
- manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts
- take responsibility for managing professional development of individuals and groups.

We find that all countries surveyed offer PHE qualifications at this EQF level.

The learning outcomes relevant to **level 7** are as follows:

- highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research
- critical awareness of knowledge issues in a field and at the interface between fields

- specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields

- manage and transform work or study contexts that are complex and unpredictable and require new strategic approaches

- take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.

The Czech Republic, Germany, Finland, France, Croatia, Ireland, Netherlands, Poland and Portugal offer PHE qualifications at this level.

EQF **level 8** learning outcomes concern:

- knowledge at the most advanced frontier of a field of work or study and at the interface between fields

- the most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice

- demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity, and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

According to the results of our study, only Ireland offers a PHE qualification at the highest EQF level.

PHE is not (fully) equivalent to AHE across Europe

In all countries surveyed, the systems of PHE are integrated into the National Qualifications Frameworks (or in the process of being integrated where the NQFs are still being authored), which in turn are mapped to the European Qualifications Framework (EQF). Thus, generally speaking, we can say that PHE qualifications exist within the established recognition framework of the EHEA.

The Berlin Communiqué[19] states that "First cycle degrees should give access, in the

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[19]Berlin Communique (2003). Realising the European Higher Education Area, Berlin. Available at http://www.ehea.info/Uploads/about/Berlin_Communique1.pdf.

sense of the Lisbon Recognition Convention, to second cycle programmes. Second cycle degrees should give access to doctoral courses."

According to the Convention, access is defined as the right of qualified candidates to apply and to be considered for admission to higher education. The term "access" implies the assessment of applicants' qualifications with a view to determining whether they meet the minimum requirements for pursuing studies in a given higher education programme. Access is distinct from admission, which concerns individuals' actual participation in the higher education programme concerned.

Looking at transitions from PHE in the countries of our study, we can distinguish four cases:

- Full equivalence of PHE and AHE, with automatic transition between cycles and profiles
- Easy transition between profiles and cycles, with bridging programmes used to prepare students for access
- Difficult transition between profiles and levels - while bridging programmes exist, they are extremely demanding and form a considerable barrier to access to the next cycle.
- No transition possible - in some countries, it is not possible to transfer between profile and cycle, particularly from level 7 to level 8 of the EQF.

While the latter case is in direct conflict with the provisions of the Berlin Communiqué, the third case of difficult transition is somewhat debatable, in that arguably it fits the form but not the spirit of the provisions of the Communiqué.

In a number of countries, the name of the degree is linked to the professional or academic orientation of the programmes (e.g., for professional and academic bachelors, respectively). In many countries, the degrees "academic bachelor" and "professional bachelor," although classified at the same level of the qualifications framework (1st cycle/EQF level 6), are not fully compatible, and direct continuation of second-cycle studies by "professional bachelors" requires 1 to 2 years of "bridging studies."

The European picture of transferability is rather elusive with different multiple modalities for transfer between cycles available depending on the country. Countries with a binary system of higher education (parallel to the level of secondary education, where we have the terms technical versus general education) more often distinguish between AHE and PHE concerning transition with a unitary system of higher education (France and Portugal). This is likely to provide significant barriers to students wishing to change countries between cycles while, at the same time, changing from professional to academic profile.

According to our study results, the occurrence of such a distinction (professional-academic) becomes rarer in the second cycle of the qualifications framework and is virtually nonexistent on the doctoral level.

We thus highlight this as an important area for further research and consolidation.

Our research presented the following picture on a per-country basis:

Country	Recognition and Transferability
BE (FL)	Graduates from PHE programmes (bachelor programmes) have to do a bridging programme to get entry to a related academic master. This bridging programme counts between 45 and 90 ECTS. During the study, students transferring between different programmes (whether different in orientation or not) will have to apply for exemptions through previously earned qualifications (on the basis of ECTS cards).
CZ	There are no formal barriers for transfer from one level of higher education to another. As the Higher Education Act does not differentiate among the profile of study programmes, no specific measures have been put into place. The only notion of "professional bachelor study programmes" is provided within the decree on accreditation, yet this does not deal with transferability matters. It is left within institutions' competence to set their own criteria and requirements as regards "specific knowledge, abilities, talent or results achieved" within previous education for enrolment of applicants to programmes of higher qualification level. The situation is more complicated when referring to the transfer from tertiary professional schools to higher education, either after graduation or during the study. There is no official scheme for automatic recognition of students' achievements within tertiary professional education. The Higher Education Act allows HEIs to set specific requirements for the graduates of tertiary professional schools, but this option is left to institution's decision.
DE	There are no barriers for students transferring between different types of HEIs.
DK	Some bridging is possible; however, it is arranged on a bilateral basis and is not uniformly applied.
EE	Transfer between EQF 6 and 7, and between EQF 7 and 8 is automatic.

Country	Recognition and Transferability
EE	Transfer between EQF 6 and 7, and between EQF 7 and 8 is automatic.
FI	Transfer is possible, usually by means of a bridging course (up to 1 year).
FR (dual system)	There are no formal paths for transfer from PHE to AHE for graduates. All types of higher education select their students after EQF 5, and no formalised bridging programmes are required between PHE and AHE. More specifically, the entry to EQF 7 is subject to validation if the "licence" (bachelor's degree) has not been obtained in the same field - independent whether a university, institute or public-sector school has issued the degree.
HR	There are very demanding bridging programmes. A transfer from PHE at EQF level 7 to AHE EQF level 8 is not possible.
IE	Transitions are institution-dependent. Bridging is possible.
LT	Individuals holding professional bachelor's qualification have the right to enter study programmes of the second cycle, if they meet the minimum requirements approved by the Ministry of Education and Science. Academic HEIs offer bridging programmes, which are rather demanding.
MT	Recognitions and transferability ensured by Malta Qualifications Framework, sometimes by means of bridging programmes
NL	Transfer is possible, but some form of selection or bridging requirement may be applied.
PL	The transfer from AHE to PHE is possible. In practice, it depends on the entry requirements of institutions. They use a learning outcomes-based approach.
PT (partial unitary)	The transition is automatic

Country	Recognition and Transferability
SI (partial unitary)	Rules are determined by law. There are no automatic transfers, and bridging programmes are not provided. Graduates and students experience difficulties when attempting transfer between vocational and higher education programmes.

Table 7: Recognition and transferability among different countries

Funding of first mission activities

In most countries surveyed, funding for PHE **teaching activities** is under the same government budget line as funding for the rest of HEIs. Only Estonia, Finland and Netherlands have specific/separate funding mechanisms for PHE institutions.

In the Czech Republic, the budget and funding for tertiary professional schools is set within a different subchapter of the budget on education, which is a part of the higher education. At the same time, the public non-universities are subjected to the same source of funding and the same rules as universities. This may be reflected in the note on separate funding sources

Teaching and learning: Professional components to different extent

As the funding mechanisms described before suggest, in PHE, more emphasis tends to be placed on teaching (while less is placed on research, the next sections). Below, we describe, for 15 countries, what regulations are in place concerning curriculum design, the collaboration with labour market actors and staff requirements to make PHE learners ready for employment.

Requirements for PHE curricula: Integration of professional practice

Our survey of legislation in the 15 European countries shows that PHE usually provides a combination of academic and practical education.

There are two ways of integrating practical elements into PHE. In an **integrated mode**, phases of study and professional practice alternate, whereas in an **embedded mode**, the study phase is enriched through practice phases (e.g., in the form of internships).

In our stakeholder survey, we asked institutional participants whether one of the two modes is in use for their programmes. The results show that 72% of institutions have implemented the enriched and 69% the integrated mode of PHE provision for their programmes.

From a curricular viewpoint, legal regulations exist in many countries to include periods of professional practice (i.e., in the form of internships or apprenticeships). Many countries fix the ratio of theory to practice by law (for example, the minimum length of internship).

Country	Curricular Requirements
BE (FL)	Belgian law does not set any specific requirements for practical elements of curriculum. However, work placements are general practice in PHE in Flanders. It is noteworthy that the Act on Higher Education Structure (terms for accreditation) state that learning outcomes should fit the actual demands for the content of the programme from the world of work and the professional field in international perspective.
CZ	For higher education: No specific requirements or regulations are set regarding the content or structure of curricula. These should simply reflect the knowledge, skills and competencies declared within the professional profile as may be derived from decrees on accreditation and other relevant documents. Only the decree on "accreditation submission" requires professional bachelor study programme to specify the scope and content of practical placement. There is no further specification in any other document. Tertiary professional education shall contain theoretical education and vocational training and include "professional practice at workplaces," as part of the curriculum is obligatory.
DE	A practical orientation is required for PHE (i.e., reflected by the curriculum and through practical placements). There are special regulations for cooperative state universities (such as Berufsakademien, Duale Hochschulen).
DK	Some specific requirements for PHE are determined by law.
EE	PHE in Estonia are subjected to the same requirements as higher education; in addition, professional experience in the respective fields is requested.

Country	Curricular Requirements
FI	Curricular requirements are regulated by the Polytechnic Act. The law sets compulsory training periods from 30 to 75 ECTS for bachelors. For some programmes, there are additional requirements (related with professional regulations).
FR	*BTS*: no specific requirements but each STS specialty has a specific curriculum *DUT*: 20% of teaching must be undertaken by professionals Licences professionnelles: 25% of teaching must be done by professionals Engineering schools, master's: each or faculty defines its professional input *BTS*: no specific requirements but each STS course of study has a specific curriculum *DUT*: an internship of 350 working hours is mandatory Licences professionnelles: an internship of between 600 and 1000 working hours is mandatory *Masters professionnelles*: The 2-year M-cycle comprises an internships totalling an average of 600 hours *Engineering schools, management and usiness schools*: The 3-year engineering cycle comprises 2500 taught hours and internships totalling an average of 1000 hours. *Licences professionnelles*: 50% of teaching within the professional modules must be done by professionals with a total of 25% of teaching globally done by professionals
HR	Professionally oriented modules in Hungary need to contain at least 50% practical work (preferably 60%). Otherwise, there are no specific differences between AHE and PHE.
IE	There are no specific requirements at the country level; hence, curricula are institution-dependent.
LT	In Lithuania, the requirements for academic and professional bachelor programmes differ. For PHE and any other kind of practical training, at least a third of the study programme's scope must be accounted. Training practice, induction practice, practice placement, etc., should account for minimum 30 (until 1 September 2011, 20) credit points. The total scope of professional practices for artistic studies should be no less than 18 (until 1 September 2011, 12) credits, and for other studies no less than 24 (until 1 September 2011, 16) credits. The final practice placement should be in line with the subject of the final thesis and similar to jobs the students are educated for.

Country	Curricular Requirements
MT	Curricular details are institution-dependent. The share of ECTS/ECVET is related to key competences and sectoral skills determined in Malta Qualifications Framework.
NL	PHE programmes focus on practical applications of arts and sciences. There are implicit rules and conventions, rather than country-wide regulations, concerning curricular details in the Netherlands.
PL	Practically oriented programmes shall have a substantial share of practically oriented modules, but the law does not determine a fixed ceiling. Those practical modules should create learning conditions similar to real work situations. Curriculum structure is evaluated from the point of view of its adequacy to ensure expected learning outcomes. Learning outcomes for practical study profiles, determined by ministerial regulations, slightly differ from those for academic study profiles. Integrating practical placements of at least 3 months is compulsory.
PT	No differences between AHE and PHE exist. There are specific requirements for some regulated professions.
SI	University programmes do not demand any practical training in the work environment. Professional study programmes, on the other hand, are obliged to include a practical training in the work environment (10%). Higher vocational colleges have an obligatory practical training in the work environment (40%).

Table 8: Curricular requirement across different countries

Provision of Internships

Collaboration with employers in delivery of study programmes / teaching

Involvement of employers in setting learning outcomes / curriculum design

Collaboration with employers in defining new study programs

Involvment of Employers in policy development

- 1 - Not existent
- 2
- 3 - Frequently occuring
- 4
- 5 - Used practice
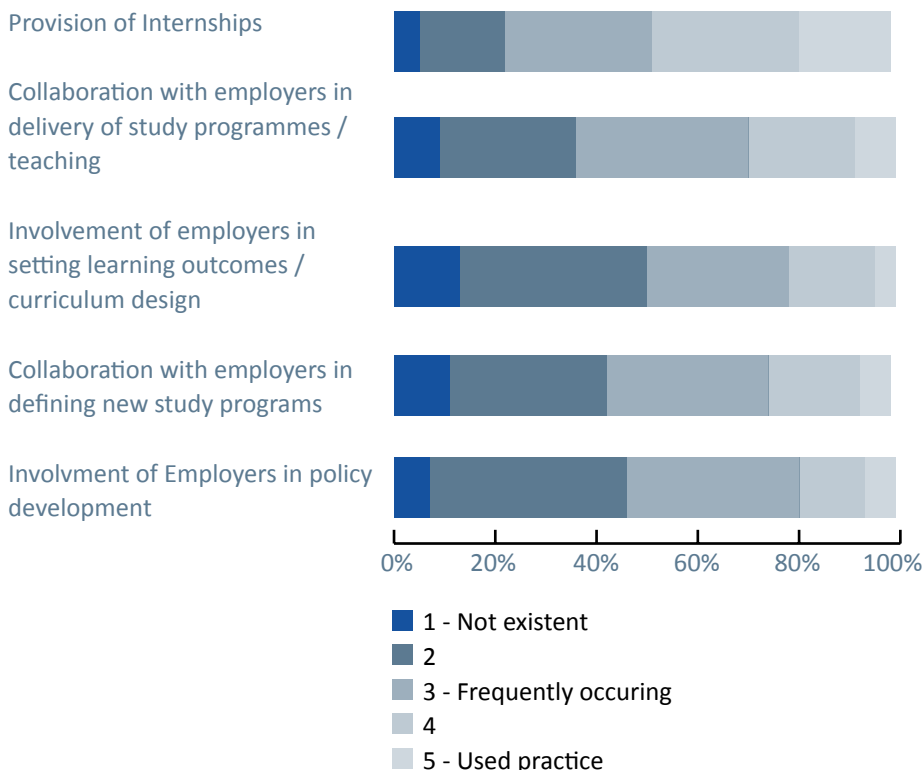
Figure 9: Extent to which different types of higher education–professional sphere collaboration exists in respondents' country, according to external stakeholders, in %

Collaboration with the professional sphere to shape teaching and learning

In all 15 countries of our study, we found formal requirements for the involvement of external stakeholders in curriculum design, with the exception of Portugal. This involvement could be in the form of advisory boards (e.g., Poland and Estonia), governing bodies, (e.g., Denmark) or **curriculum design** panels (e.g., Lithuania). Collaboration concerns provision of internships, the delivery of study programmes/ teaching, agreeing on setting learning outcomes, defining new PHE study programmes or policy development of the PHE institutions or sector.

Our survey asked external stakeholders how frequently cooperation with employers occurs in those different areas in their countries (please see the figure). For each area, slightly more than 50% of respondents found collaboration to be used in practice or frequently occurring in PHE.

Integrated study mode and private sector organisations as institutional members: An example of integrated PHE provision: Cooperative education in Germany

In addition to universities and universities of applied sciences, one specific type of HEI exists in Germany called cooperative state university (such as DHBW). It is defined through the model of cooperative higher education in which public and private sector organisations directly cooperate with the higher education sector to deliver PHE.

As a special cooperative institution, the DHBW puts emphasis on the framework for programmes with a special profile. The latter is issued by the German accreditation council.

For the Cooperative State University, specific legislation exists, which makes the partner organisations members of the university and which leads to a fully integrated system of HEI. Therefore, all academia and business as well as the public sector work hand in hand to provide study programmes.

There is a requirement that professors and part-time lecturers have to have a string record of practical experience outside the university. For Universities of Applied Science, this is usually 3 years, and for the Cooperative State University even 5 years.

The Cooperative State University follows a fully integrated practice-theory approach in which students alternate between the organisation in which they are employed and the university, every 3 months, until they obtain their bachelor's degree.

PHE programme team: How much professional work experience is required?

We also compared national legislation for differences in requirements for staff qualification, in particular the PHE teaching staff. The table below presents our findings across the different countries.

Country	Requirements on Staff Qualification
BE (FL)	There are differences in staff profiles compared to AHE. PHE staff needs to fulfil fewer research requirements and carry different functions and titles. It is common practice to involve non-academia in PHE teaching.

Country	Requirements on Staff Qualification
CZ	**Higher education (EQF 6–8):** The Czech law does not specify any particular requirements as regards staff qualifications in PHE. For the **professional bachelor programmes**, the accreditation standards require graduate studies as minimum qualification. However, lecturers of the professional sphere with lower formal education can be employed when supervised by the staff with appropriate qualification. If the staff has little less academic experience, the decree requires a plan of personal development. **Tertiary professional education:** A teacher of general subjects or vocational subjects teaching at a tertiary professional school should have acquired professional qualifications through higher education by completing an accredited master's study programme in a field appropriate to the nature of the general subject or vocational subject to be taught. A teacher of practicum and vocational training shall acquire professional qualifications through higher education by completing an accredited study programme in a field appropriate to the nature of the subjects to be taught in practicum; tertiary professional education by completing an accredited educational programme at a tertiary professional school in a field appropriate to the nature of the subjects to be taught in practicum; or secondary education accomplished by a school-leaving examination acquired by completing an educational programme of secondary education in a field appropriate to the nature of the subject to be taught and having practical experience in the relevant field of not less than 3 years. There are some specific requirements for teachers of medical study subjects. The director may make an exception for staff in artistic subjects.
DE	PHE professors and part-time lecturers need to demonstrate a record of practical experience outside of the university. For UAS, 3 years is a common requirement (depending on the federal state). The DHBW requires 5 years of non-academic work for their staff.
DK	The Danish accreditation operator EVA requires that "instructors' qualifications and competences must overall be adequate in relation to level and goals for learning outcomes and the teacher group must be updated with the latest knowledge on key trends in business or professions and relevant research."

Country	Requirements on Staff Qualification
EE	Eligibility requirements for the position of a lecturer of an institution of PHE are a master's degree or a corresponding qualification in combination with pedagogical skills and professional experience in his or her field of profession
FR	Formally, the requirements for staff qualifications in PHE and AHE are the same. In practice, PHE institutions employ a higher proportion of professionals and less staff with doctoral degree.
IE	Irish PHE institutions are autonomous in their staffing decisions, leading each to have their own policies.
LT	Lithuania has specific legal requirements for teaching staff in PHE: "No less than 10 per cent of the subjects in the study field should be taught by scientists or scholars and recognised artists (art subjects). Over half of the teaching staff of the study programme should have at least 3 years of practical experience in the subject field they teach."[20] The requirements for academic staff in PHE are different from the requirements in AHE.
MT	The requirements are implicitly determined by HEIs and published in calls for applications. No specific differences exist between AHE and PHE.
PL	There are specific requirements for staff in PHE with regards to their practical experience.
PT	Different rules for staffing in AHE and PHE exist in Poland (e.g., institutions of AHE need to employ at least 50% doctorates, PHE 15% only). Title of "specialist" is exclusive for PHE (for persons with recognised professional experience); at least 35% of PHE staff shall hold this title.

[20]General requirements of the first degree and integrated study programmes (9 April 2010 No V-501.

Country	Requirements on Staff Qualification
SI	The specific requirements for staff are different for HEIs (professional colleges and universities) where the lowest acquired education should be EQF level 7 or 8, professional and research references; for higher vocational colleges' staff, the lowest required education is EQF 6 and additionally at least 2 years' experience in the area of work and a 30 ECTS pedagogical-andragogical education.

Table 9: Staff qualifications across the different countries

RDI: Growing importance of applied research but less access to public funding

The distinction between "universities" and the "non-university sector" is most relevant in the *function* of research.

Even if in most countries these non-university HEIs did originally not have a research mandate, in most cases these institutions have progressively developed research activities and, at least in some countries, governments recognised the "research and innovation" role of these institutions and provided support and funding. Moreover, in many countries, the role of research in polytechnics, "Fachhochschulen," "hogescholen," university colleges, etc., is on the political agenda. Despite the absence of in-depth studies of research in the non-university sector, it is clear that the development of research in these institutions leads to quite complex interactions with universities, in the sense of convergence (academic drift) and/or of differentiation of a specific research mandate oriented towards the regional economy.

The Frascati Manual,[21] published by the Organisation for Economic Cooperation and Development (OECD), has set definitions of research that distinguish three main types ("levels") of *research, namely, basic research, applied research* and *experimental development.* Only the first two are the main focus in scientific publications, but it is the latter two that make the close relationship between PHE institutions and its stakeholders best apparent, mainly through research but also through (other) services to the community. Thus, we find that PHE Institutions tend to focus on activities such as innovation, technology transfer, applied research and development.

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[21] OECD, 2002, Frascati Manual – Proposed Standard Practice for Surveys on Research and Experimental Development, Paris – OECD. www.oecdbookshop.org/oecd/display. asp?LANG=EN&SF1=DI&ST1=5LMQCR2K61JJ

In terms of legislation, we find that across the countries surveyed:

- There are no restrictions[22] on research funding in Denmark, Ireland, Lithuania, Malta and Netherlands
- There are difficulties in obtaining research funding (compared to AHE) in Belgium - Flanders , Germany, Estonia, Finland, Portugal and Slovenia. In the Czech Republic, research is very much required at non-university HEIs. The difficulty is missing specification of the type of research needed; therefore, these institutions fall under the same rules and principles as universities yet having much more limited access to public funding.
- Research is not considered as part of the default role of PHE Institutions in Croatia and Poland.[23]

If research funding is difficult for the PHE sector, the following situation happens:

- There is no or very limited non-competitive based funding from the government for research at PHE
- Applied research is financed mostly by industry/business partners

Countries seem to differ in the availability and extend of competitive funding programmes for applied research, which either are directly targeted at PHE or provide funding for applied research and experimental development to both PHE and AHE.

The following table is a summary of the current state of research funding per country:

Country	Short Overview on Research Funding
BE (FL)	*Academic* programmes receive a large base funding (non-competitive) in a 55:45 ratio, meaning that for every 55 Euro of educational funding, 45 Euro are added for research. So the educational part of their funding (with a similar calculation as PHE) is only 55% of their total base funding. Although there is a growing awareness for practice-oriented research, PHE institutions receive very limited base funding. Few competitive public funding programmes are targeted at PHE institutions and/or their partners from the world of work as drivers of applied research.

[22]"No restrictions" does not necessarily mean research is performed in practice—only that there are no legislative obstacles to its funding.
[23]However, in Croatia and Poland, an institution may apply for research funding after having obtained the status of a "research institution."

Country	Short Overview on Research Funding
CZ	Higher education (EQF 6–8) All HEIs are expected to "maintain and augment acquired knowledge as well as cultivate scholarly, scientific, research, development, innovation, artistic and other creative activities in accordance with the type and orientation of the institution." The later note on orientation provides a space for profiling the professionally oriented HEIs, in particular "non-universities," in a specific way. However, there has been no further specification of such profile and tasks relevant for this type of institutions. Tertiary professional education (EQF 6) There is no formal request for tertiary professional schools to get engaged in any type of research or development activities.
DE	Research funding for applied research in PHE exists and is growing. All 16 federal states run programmes to support research at PHE institutions (Fachhochschulen/Hochschulen angewandter Wissenschaft), each with varying focus and amount of available funds. Furthermore, national funding programmes are offered by the Federal Ministry of Education and Research. In 2013, both the Ministry and the federal states decided to launch a funding programme for applied research in order to speed up technology and knowledge transfer with enterprises. STEM disciplines will have a priority.[24] The importance of research indicators (most often acquisition of third-party research funds) for the performance-based funding allocation to German PHE institutions by the federal governments differs between states but is rather small in general. In Baden-Württemberg, for example, 20% of PHE institutional funding is allocated based on performance, 20% of which based on acquisition of third-party research funds. That means only 4% of the budget is allocated based on "successful" research.[25]

[24]Gemeinsame Wissenschaftskonferenz(2013). Bekanntmachung der Vereinbarung zwischen Bund und Ländern über die Förderung der angewandten Forschung und Entwicklung an Fachhochschulen nach Artikel 91b des Grundgesetzes. Retrieved from http://www.gwk-bonn.de/fileadmin/Papers/FuE-FH-2013.pdf.

[25]Information based on: Hachmeister, C.-D., Herdin, G., Roessler, I., & Berthold, C. (2013). Forschung an deutschen Fachhochschulen/HAW: Gesetzliche Regelungen, Zielvereinbarungen und Förderprogramme im Jahr 2013. Gütersloh: CHE Centrum für Hochschulforschung. Retrieved from http://www.che.de/downloads/CHE_AP_171_FH_Forschung.pdf.

Country	Short Overview on Research Funding
DK	There are no restrictions. PHE research is focused on applied/ evidence-based research, and increased funding will be available in 2013–2015.
EE	In Estonia, only teaching activities of UASs are financed by the state (including in-service training). R&D financing in UASs comes from projects and bilateral contracts with enterprises. Therefore, UASs differ from universities, because they cannot rely on a base funding for R&D from the state in contrast to AHE.
FI	There are very limited possibilities of PHE research financing from Academy of Finland, the funding agency within the administrative branch of the Finnish Ministry of Education, Science and Culture. However, applied research is growing.
FR	*Senior technicians* (STS) are not involved in research and do very little in Innovation and Technology Transfer (I&TT). STS trainers are not researchers. The government does not finance any applied or other research in STS programmes. Research and development is the mission of both higher education sectors (AHE and PHE), although in fact PHE participates in I&TT to a higher degree. TTCs are organised at university level and provide those services for both AHE and PHE. Regarding IUTs, research activities and programmes are carried out under the university's umbrella and are therefore not specific to those institutes.
HR	Obtaining funding for research is very difficult. PHE institutions have to apply for a "research" status in order to be eligible: Colleges offering programmes in several fields of study and internationally acknowledged in the field of applied research may be awarded the rank of "college of applied research."[26]
IE	There are no differences between AHE and PHE. Bidding for grants is open to all HEIs.

[26]Act CCIV of 2011 on National Higher Education.

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Country	Short Overview on Research Funding
LT	PHE institutions in Lithuania are involved in applied research; however, the scope depends upon each PHE institution. Applied research activity is one of the indicators for ranking among PHE institutions.
MT	There are no restrictions to PHE institutions' involvement in research.
NL	There is a growing importance of applied research. Please see the case study below.
PL	PHE institutions are not obliged to engage in research, but they can apply for research grants. However, in order to obtain public research grants, the HEI shall be categorised as a research institution. So a non-university HEI first needs to develop its research capacities and perform some research to get the appropriate status before being in the position to benefit from public research funds.
PT	Theoretically, there are no differences to AHE, but PHE is oriented more on applied research, and there are difficulties in obtaining research grants for PHE. None of the public research programmes is specifically dedicated to PHE.
SI	Vocational colleges are formally limited to perform teaching but, in practice, are also involved in applied research in cooperation with the industry without receiving any state funding.

Table 10: A summary of the current state of research funding per country

Country example: Criteria and indicators for quality research in the Netherlands

Although universities of applied sciences have been engaged in research activities for some time now, the introduction of professors (lectoren) and their research groups (lectoraten) at universities of applied sciences in 2001 has meant that the research function is gradually becoming more structural. A research group works together to promote knowledge development and knowledge circulation in relation to a certain theme within and beyond a university of applied sciences, in the interest of education, professional practice and society as a whole.

The year 2001 was also the year in which the Knowledge Development Foundation for Universities of Applied Sciences (SKO) was created, on the basis of a covenant (lectorenconvenant) between the Netherlands Association of Universities of Applied Sciences and the Ministry of Education, Culture and Science. The main task of the SKO is to propose subsidies on the basis of a quality assessment of applications for research groups submitted by universities of applied sciences. In 2003, the research group is given a strong boost with the introduction of the so-called SIA-RAAK regulations. These regulations are intended to promote knowledge circulation between regional parties, particularly between knowledge institutions like universities of applied sciences, SMEs and public institutions.

In 2004, the professor covenant was updated to include a QA system to be introduced with effect from January 2009, among other things. This is linked to the new funding system, under which research resources are granted to universities of applied sciences in the form of a lump sum. With the introduction of the new covenant, the assessment of quality by SKO ceases and is replaced by the QA system.

In 2007, the general meeting of the Netherlands Association of Universities of Applied Sciences formally adopts the sector protocol for research QA. This adoption marks the agreement on a joint definition of research at universities of applied sciences and on the contours of the QA system to be developed.

Extent of research

Since the introduction of professors, their numbers have grown quickly from slightly more than 20 in 2001/2002, to more than 100 in 2003/2004, to more than 250 in 2006/2007. In 2008, the Netherlands had almost 400 lecturers. Nevertheless, with less than 400 professors (for 380,000 students) and a total research budget of approximately 75 million (lump sum and the Knowledge Development Foundation for Higher Professional Education/SIA), the extent of research can be called "modest" for the time being.

In 2004, the professor platform (Lectoren platform) was created. During the first stage of the development of research groups, this platform was responsible, in collaboration with the Netherlands Association of Universities of Applied Sciences, for external communication and for profiling research groups. In 2008, this platform was followed by the more network-oriented forum for practice-based research (forum voor praktijkgericht onderzoek). This forum plays an important role in the further design, positioning and development of research groups.

Nature of UAS research

In the sector protocol, the Netherlands Association of Universities of Applied Sciences makes a clear choice for the joint designation and definition of research at universities of applied sciences. By using the term practice-based research as the umbrella term for this research, the sector protocol is giving preference to this term above other terms such as applied research and design-oriented research. These terms do less justice to the nature and diversity of research at universities of applied sciences.

Practice-based research is defined as research that is rooted in professional practice and that contributes to the improvement and innovation of professional practice. This is achieved through the generation of knowledge and insights, but also through the provision of usable products and designs and concrete solutions for problems in the field. Added to this, this research is usually of a multidisciplinary or transdisciplinary nature and is embedded in a range of internal and external organisational contexts while retaining the academic reliability and validity of the research itself. Research is closely connected to education via its contribution to education activities, lecturer professionalisation and curriculum innovation. Because the research done has relevance for - and an impact on - professional practice, education and the broader society, knowledge is circulated and published via a very wide range of channels and to various target groups.

With these characteristics, practice-based research complies with what is referred to as mode 2 of knowledge development. The term "mode 2" refers to research that, in contrast to mode 1 research, is less bound by traditional disciplines, and that is effected more in the context of applications. This research is performed in networks of experts from the field and networks of researchers, and (as such) the quality of this research is assessed by a number of parties. This is based, on the one hand, on the recognition that scientifically valid research is concerned and, on the other hand, on the basis of the recognition that its impact on education, professional practice and society is the most important gauge for the quality of this type of research.

Research quality

Besides academic standards, the excellence of practice-based research is measured particularly on the basis of the relevance and impact of research within professional practice, education and society as a whole. Incidentally, the evaluation and assessment of research on the basis of these perspectives is still in its infancy (worldwide). To date, emphasis in QA systems elsewhere (English, Australian and Dutch universities, for example) has always focused strongly on the quality of research in the sense of scientific and academic impact.

So, traditionally, this impact is measured particularly on the basis of publications, citations and peer reviews. Within these countries and systems, steps are already being taken to find indicators and evaluation methods that place the importance and impact of research in a broader perspective. The Netherlands has a reasonable lead in this respect. For example, the ERiC (Evaluating Research in Context) platform has been created. The parties involved in ERiC include the Association of Universities in the Netherlands [Vereniging van Universiteiten (VSNU)], the Royal Netherlands Academy of Arts and Sciences [Koninklijke Nederlandse Akademie van Wetenschapen (KNAW)], the Netherlands Organisation for Scientific Research [Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)], the Netherlands Association of Universities of Applied Sciences, and the Ministry of Education, Culture and Science. These organisations work together to promote knowledge exchange and method development (at both a national and international level), with a view to more context-oriented research evaluations.

Diversity and variation

Because of the diversity and variation that exist between universities of applied sciences and between domains, the system leaves responsibility for QA, including the performance of evaluations on research units, with the individual institutions. The idea behind this is to promote a situation where it is possible to achieve optimal alignment between the nature and extent of QA and structure, culture and (quality) policy within a specific university of applied sciences. Added to this, professors and other researchers must experience QA as something for which they are responsible and which does actually promote quality. Finally, the system must do justice to the individuality of every research domain and sector.

Policy recommendations on professional higher education in Europe

This document summarised the key findings of the HAPHE project and gives 13 recommendations to European and national policy-makers, institutions offering PHE programmes, as well as individuals involved in quality management of PHE programmes and institutions.

Key Finding 1: PHE is a specific form of higher education, with its own characteristics

All countries participating in the HAPHE study make a distinction between AHE and PHE in their legislations. PHE is at the centre of the triangle of education, knowledge creation and services to community, having distinguishing characteristics when compared to traditional AHE in terms of policy and strategy, teaching and learning, as well as RDI. The existence of distinctive PHE programmes increases the offer of learning pathways in higher education, improving quality and student choice.

Recommendation 1.1: Strengthen PHE through specific, targeted policy-initiatives

Recommendation addressed to: European policy-makers

The fact that legislation in all countries makes distinction between AHE and PHE, means that from a policymaking perspective, PHE can be considered as a distinct sector from AHE, with distinct needs and drivers. As such, we suggest that strengthening and expansion of PHE be addressed through distinct policy-initiatives specifically targeting the PHE Sector.

Key Finding 2: The lack of key data on PHE hinders the exchange of good practice on challenges particular to PHE and evidence-based policy-making

PHE can contribute to solving (societal) challenges-in particular those related to employability-and the HAPHE framework will support further growth in the quality of design, provision and governance. This aim, however, is challenged by lack of reliable and comparable key data, especially at the European level. For this study, our data collection relied on a number of national studies with different foci and consultation sessions with experts. Studies on the implementation of the Bologna Process as well as on the E&T 2020 programme do not recognise the differing roles of the various forms of higher education, and thus do not provide specific data on the contribution of PHE.

At the European level, it is currently hard to impossible to determine

- the impact of legislative changes on PHE for society and the labour market, and
- the success of PHE institutional or programme approaches for graduates' success, student mobility and career progress.

Recommendations 2.1: Adapt research on the EHEA to be sensitive to the contributions of different forms of higher education towards overall policy goals

Recommendation addressed to: European policy-makers

Bologna implementation studies and EURYDICE reports on higher education should pay attention to PHE being a distinct stream within higher education. Policy decisions on PHE should be supported by in-depth, sector-specific analysis enforced by data sets measuring public expenditure, mobility, completion rates, transition from PHE to work, the use of Bologna tools, provision of study modes other than full-time, and issues linked to the social dimension.

Recommendation 2.2: Stimulate exchange of good practice on teaching and learning in PHE, engaging with the world of work

Recommendation addressed to: European policy-makers

This report presents a picture of a highly diversified PHE sector, with various different models of integration with the world of work, as well as systems of widely varying maturity. For this reason, there is considerable scope for transnational good practice exchange in the area of professional teaching and learning. Areas of particular focus for such exchange include the efficient involvement of employers in curriculum development and assessment, successful pedagogies/learning methodologies in PHE and the organisation of practice-learning phases. Furthermore, we recommend to stimulated exchange on the development of balanced PHE programme teams with academic skills and up-to-date knowledge from the world of work.

Recommendation 2.3: Launch a transnational study in all EHEA countries to gather educational key data on PHE

Recommendation addressed to: Associations representing PHE

With reference to the lack of reliable and comparable data on PHE as specific form of higher education, we recommend to run a large-scale study in all EHEA countries, starting with an assessment of the national capacities and existing data, and proposals

on how those can be efficiently interlinked with a transnational effort.

The study should complement efforts undertaken on the European level and produce comparable data on PHE policy and strategy, teaching and learning, as well as RDI building on the HAPHE framework of characteristics.

Key finding 3: Barriers to transition between PHE and AHE are commonplace

The Berlin Communique[27] states that "Within such frameworks,[28] degrees should have different defined outcomes. First and second cycle degrees should have different orientations and various profiles in order to accommodate a diversity of individual, academic and labour market needs. First cycle degrees should give access, in the sense of the Lisbon Recognition Convention, to second cycle programmes. Second cycle degrees should give access to doctoral studies."

This study finds that the transition from PHE to AHE (and vice versa) is not necessarily automatic or easy in many countries and scenarios. While in some countries transition is possible after attending short focused bridging courses, in others bridging programmes are so intense-often being a full year in length-as to effectively be a full intermediate cycle, whose completion is required to gain access to the next AHE level. In some countries, it is impossible to transfer between level 7 of PHE to level 8 of AHE within the EQF. This situation is further complicated in cases of transnational recognition, with students having no guarantee that initial cycle PHE can be used for access to the next level of AHE across Europe.

Recommendation 3.1: Equivalence between AHE and PHE qualifications should be guaranteed by law

Recommendation addressed to: National policy-makers

PHE programmes naturally aim for employability of their graduates. Nevertheless, a holder of a professional degree should be allowed to transfer to the next cycle of AHE

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[27]Berlin Communique (2003). Realising the European Higher Education Area, Berlin. Available from http://www.ehea.info/Uploads/about/Berlin_Communique1.pdf.
[28]frameworks of comparable and compatible qualifications as implemented today through national qualification frameworks (and their linkage to the European Qualification Framework).

in line with the Berlin Communiqué. Limited access to further studies (especially in countries where PHE provision is provided only at EQF levels 5 and 6) is an argument against pursuing PHE. An academic master can enrich competencies gained during a professional bachelor and still lead to a professional career.

Hence, we recommend that legislation be enacted guaranteeing access, in the sense of the Lisbon Recognition Convention between EQF levels, even between modes of education. Where institutions require bridging courses, these should be offered in parallel to academic studies and not go beyond building general scientific competencies and specific knowledge needed to master an academic programme.

Key finding 4: Applied, practice-led research is limited due to policy barriers

Recommendation addressed to: National policy-makers

The HAPHE study shows that the engagement of PHE in more applied, practice-led research is growing in countries across Europe. Stakeholder consultations during the development of the HAPHE guidelines confirm that research at PHE institutions is usually guided by questions arising from professional practice through exchange with the world of work or regional stakeholders with the aim to achieve a change in professional practice or commercialise a product. Good practice examples exist demonstrating how PHE successfully engages with the world of work and the society when setting agendas for **RDI** and shaping their processes and outputs.

However, only a few countries give PHE the same access to public research funding as academic institutions. Base funding for research from the government has been introduced only in the Netherlands. The majority of countries report few competitive funding programmes or that PHE providers are in a disadvantaged situation for obtaining grants. Most research in PHE is financed through industry.

This creates a situation where regions with large business, which can afford to finance collaborative research with PHE institutions, enter a virtuous positive feedback cycle where the research strengthens the business, which in turn strengthens the PHE institutions, while regions without such a business-industry link remain laggards in PHE-supported research innovation.

Recommendation 4.1: Recognise the untapped research profile and value of research outputs of PHE

Recommendation addressed to: National policy-makers

National policies should recognise that applied and practice-led research has become part of the mission of PHE institutions and programmes, even in countries where no legal framework exists for PHE to do so. "Applied and practice-based research are not methodologically depleted forms of research, rather they can be innovatory modes of research that cater for a different set of needs and define quality in terms of wider social robustness" (Furlong and Oancea, p.9).[29] It results in different outputs from traditional research, such as usable products, publications in professional magazines, (in-service) trainings for business and patents. Applied/practice-guided research is thus of significant importance to the overall economy and knowledge society.

Recommendation 4.2: Remove national funding barriers for applied and practice-led research conducted by PHE institutions

Recommendation addressed to: National policy-makers

Mechanisms to fund *academic* research vary a lot between countries, and it is beyond the scope of this document to judge the success of each. However, we recommend European countries scan for structural barriers in making funding available for applied and practice-led research conducted in the frame of PHE and remove them. Barriers might entail

1. linking direct public funding to outcomes of research assessment with high weights for classical academic outcomes (e.g., relying on bibliometrics or implicitly making the outcome of such an assessment a requirement for obtaining funding from research councils through competitive bids).
2. limiting access to public grants to institutions that have obtained the status of a "research" institution requiring from PHE institutions to develop such a capacity first while relying on industry sponsorship for research only

[29]Furlong, J., & Oancea, A. (2005). Assessing Quality in Applied and Practice-based Educational Research . Oxford University Department of Educational Studies. Retrieved from http://www.tlrp.org/capacity/rm/wt/campbell/docs/assessing_quality_shortreport_tcm6-8232.pdf.

To address the first point, we recommend considering assessing research capacity based on indicators that are more in line with the mission of PHE, in consultation with the appropriate stakeholder representatives for the sector.

With respect to the second, we recommend to grant PHE providers the opportunity to apply for competitive public funding programmes, which should subsequently evaluate the research capacity and quality on the basis of each individual proposal (instead of assessing entire institutions).

Key finding 5: PHE is offered predominantly on EQF level 6

In all countries of the HAPHE study, PHE is offered at EQF level 6. PHE programmes at EQF 5 exist in some countries and are developing dynamically. Students can apply for PHE programmes at level 7 in half of the investigated countries. Only Irish PHE is offered on EQF level 8.

We observe a tendency to rebrand PHE institutions as universities of applied sciences/ technical universities and more collaborations of PHE programmes with academic institutions for doctoral research.

Recommendation 5.1: Stimulate a consultation process whether to widen PHE provision to higher EQF (7 and 8) levels

Recommendation addressed to: Associations representing PHE

At first sight, PHE at EQF levels 7 and 8 appears adverse to the original aim of PHE provision (prepare for the labour market). However, in light of the growing importance of RDI and specialist knowledge in a knowledge-driven economy, it is timely to discuss with all stakeholders whether increased provision of PHE at higher levels would be beneficial for more effective engagement in knowledge/technology transfer.

New arrangements should provide a fair space for keeping the professional profile of programmes and institutions.

Recommendation 5.2: Strengthen effective PHE provision at EQF level 5

Recommendation addressed to: Associations representing PHE

PHE programmes on EQF level 5 should be strengthened in their double function to provide effective and efficient solutions for labour market entry and as entry route for further studies.

Key finding 6: A number of PHE programmes lack a systematic organisation of practice-learning phases

Although a solid proportion of PHE programmes is organised in an integrated (study and practice-learning phases alternate) or enriched (academic study is enriched through practice-learning phases such as internships) study mode, our results show that almost 30% of PHE providers do not have any of the two modes (fully) implemented. This constitutes a shortcoming in light of the aim of PHE to prepare learners for the world of work, also in the light of aims for developing the EHEA, further encouraging "work placements embedded in study programmes as well as on-the-job learning."[30]

Recommendation 6.1: Increase efforts to systematically include practice-learning phases in PHE programmes and exchange knowledge on successful implementation

Recommendation addressed to: Associations representing PHE

Practice-learning phases serve to reflect on theory in a practical context. Making experiences outside of the HEI a part of the PHE learning environment is the most direct way to foster professional and life skills and enable learners to act in a self-organised and independent way in a changing labour market. Guidelines should be developed within the framework of European and national umbrella associations for PHE, helping to put into place practice-learning phases with (even closer) links to the world of work.[31]

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[30]Page 3, Bologna Communiqués, (28–29 April 2009). The Bologna Process 2020—The European Higher Education Area in a new decade, Leuven/Louvain La Neuve Communiqué. Retrieved from http://www.ond.vlaanderen.be/hogeronderwijs/bologna/conference/documents/Leuven_Louvain-la-Neuve_Communiqu%C3%A9_April_2009.pdf.

[31]The ASET Work Based and Placement Learning Association in the UK provides an example of such a service through its Good Practice Guide for Work based and Placement Learning in Higher Education. ASET, Sheffield. Retrieved from http://www.asetonline.org/wp-content/uploads/2014/11/ASET-Good-Practice-Guide-2014.pdf.

Key finding 7: The self-understanding of PHE among staff is usually not linked to providing higher education for non-traditional learners

The HAPHE study showed that only a minority of PHE staff views their programme as catering to adult and disadvantaged learners.[32] This, however, does not mean that PHE is not attended by more learners from this group compared to AHE. We suspect a discrepancy between a substantial group of learners and the capacity of staff and management to adapt their mode of provision, teaching focus and methodology, facilities, etc., to their particular needs.

Recommendation 7.1: PHE providers should develop measures to make PHE more attractive and accessible to non-traditional groups

Recommendation addressed to: Associations representing PHE

In order to widen access to PHE of adults and disadvantaged groups, PHE needs to be flexible in terms of admission routes/study arrangements and reach-out initiatives and create appropriate structures and provisions

In specific terms, those measures could:

a.   offer more part-time programmes and integrated study models in which the learner is also employed in a company (through alternating practice phases) or even onsite courses in remote locations of large industry in collaboration with employers in order to cater to adult learners

b.   raise the staff-to-student ratio and run targeted reskilling programmes based on regional business needs and awareness programmes on the benefits of PHE/employment perspectives to reach out to disadvantaged learners.

Another group that would benefit from such measures are graduates of academic programmes that want a top-up professional qualification to be better prepared for the labour market.

[32] When selecting from predefined statements, this was the least agreed feature.

Key finding 8: PHE has distinct and defined indicators of core quality

This publication has presented the main work and outputs of the HAPHE initiative, in particular the "PHE characteristics framework." The framework was subjected to wide consultation throughout the EHEA, with input coming from experts and European and national stakeholders over a 2-year period, giving it significant legitimacy as a consensus position of the main European stakeholders. In particular, the framework proposes "core criteria," which together elaborate a set of minimum requirements that an educational experience must adhere to, so as to be considered PHE.

Recommendation 8.1: Incorporate the PHE characteristics into institutional QA procedures and quality culture

Recommendation addressed to: Quality Managers

The PHE characteristics define the areas in which the "professional" nature of PHE is expressed. The core criteria provide a minimum baseline for quality for each of these areas. As such, they can be a valuable tool for quality managers within PHE to ensure quality of the professional connection with the world of work, and to identify opportunities for continuous improvement of that connection. For quality managers AHE searching to "professionalise" their programmes, the characteristics provide a clear roadmap of areas for further work.

Recommendation 8.2: Develop indicators to measure quality expression of the characteristics

Recommendation addressed to: Associations representing PHE

While the characteristics and core criteria provide a minimum requirement the educational experience must adhere to, so as to be considered true PHE, they give no indication as to what "high quality" or "excellent" provision of PHE in each of the areas might entail. We therefore recommend that a set of indicators be developed to complement the criteria, such that they may form a comprehensive quality tool for institutions.

Recommendation 8.3: Take account of the distinct nature of PHE in external QA/accreditation processes

Recommendation addressed to: Associations representing PHE

While the European Standards and Guidelines for higher education provide a universally applicable quality standard for higher education, the expression of these

guidelines is often different in PHE and AHE. Review teams should therefore be equipped to take account of these different profiles, either through training or through official interpretations of the standards. Thus, for example, the European QA Agency (EQAA) offers (slightly) different standards/criteria for reviewing the research activities of professionally oriented programmes compared to academically oriented programmes-a practice that could be replicated by other agencies and accreditation bodies.

Consortium members of the HAPHE project

European Association of Institutions in Higher Education (EURASHE) (Belgium)

Johan Cloet

Johan Cloet is the secretary general of EURASHE, starting in 2014. He is the former general director of Lessius University College/vice-general director of Thomas More University College in Antwerp, Belgium (2008–2012). He has been involved in the activities of the Flemish Council of University Colleges (VLHORA, member of EURASHE) as a member of its steering board and president of the steering group of educational policy. In 2013, he has been selected as a member of evaluation teams in the framework of the Institutional Evaluation Programme (IEP) of the European University Association. A former ministerial advisor to the government of the Brussels region, his field of study is psychology.

Marko Grdošić

Marko Grdošić is the Project Manager at EURASHE coordinating HAPHE project as well as other running ones, and developing future ones. He is following the thematic agenda of Lifelong Learning and Employability and supports the external representation of the Association. Marko as well coordinates the main events organised by EURASHE – Annual Conferences in Yerevan (Armenia) 2014, Lisbon (Portugal) 2015; Quality Assurance Seminar in Bucharest, Romania, October 2013. Previously, Marko was the President of the European Students' Forum/AEGEE-Europe representing voice of students towards the main European and international institutions. His experience is based on development of policies and lobbying for student rights, particularly in the field of active citizenship, youth participation, human rights and education with a focus on non-formal learning. Marko obtained the bachelor degree in Finances and Audit from the University of Zagreb, after which he moved to Stockholm, Sweden for the Masters' in Macroeconomics, Economic development in particular. Marko is currently a member of the Advisory Council of the Council of Europe, where he holds the portfolio on education.

Stefan Delplace

Stefan Delplace is an educationalist, specialising in higher education policies and their interaction with civil society. He studied commercial sciences (BA), German languages (MA) and law (certificate). He has a degree in linguistics from the University of Gent, Belgium, and has acquired wide experience in working in international and intercultural environments. He was the Secretary General of EURASHE from 2004 to 2014, and during this period, he represented EURASHE in the Bologna Follow-Up Group and several of its working and coordination groups. In 2014, he was elected as member of the Bureau of the Steering Committee for Educational Policy and Practice at the Council of Europe. He has wide experience in quality assurance and accreditation issues, as a EURASHE delegate in the E4 Group (with ENQA, EUA, ESU). In this capacity, he contributed to the elaboration and revision of the ESG for QA, and was also a member of the Executive Board of EQAR, the European Register for Quality Assurance Agencies, from 2012 to 2014.

Iva Voldánová

Iva Voldánová is a former project associate of EURASHE and co-ordinator of the HAPHE project in 2012-2013. She was responsible for the follow-up and monitoring of the execution of a number of projects under the Lifelong Learning Programme. Further she was responsible for representing EURASHE and European professional higher education, promoting the EURASHE network and liaising with members. Ms Voldánová was a participant of EURASHE Working Groups on Employability and Internal decision making, political coordination and organisational development which aimed at monitoring, execution and implementation of the work programme under all 7 EURASHE priorities. Ms Voldánová is fluent in Czech, Slovak, French, English and Spanish. Previously, she has been a trainee at the DG Education and Culture, Higher Education Policy and Erasmus Unit and a consultant at Accenture Services in the Czech Republic.

Duale Hochschule Baden-Württemberg (DHBW) (Germany)

Ulf-Daniel Ehlers

Prof. Ulf-Daniel Ehlers is vice-president for Quality and Academic Affairs at the Baden-Württemberg Cooperative State University (DHBW) in Stuttgart (Germany). He has been appointed professor for educational management and lifelong learning at the same university. He is an educational scientist and holds degrees in the English language, social sciences and educational sciences from the University of Bielefeld (Germany), where he finished his PhD with honours in the field of Technology Enhanced Learning in 2003, and was awarded his Professor grade ("Habilitation") in 2008 from the University of Duisburg-Essen (Germany). He has led many international, European and national projects. He is the president of the European Foundation for Quality in E-Learning and vice-president of the Society for Media in Science. He serves on advisory boards of several professional associations in the field.

Nicole Graf

Since 2010, Prof. Nicole Graf is the head of the new Heilbronn Campus and vice-president of the Baden-Württemberg Cooperative State University (DHBW) Mosbach. She has many years of experience in managerial positions in worldwide operating companies. She worked in several positions for the Daimler-Group. She was responsible for establishing the sales organisation of TEMIC Semiconductors in Eastern Europe/CIS after the opening of the Iron Curtain in the early 1990s. In research and advisory projects, she works primarily on international competitiveness in cooperation with Fraunhofer IAO and Stanford University in California, partly sponsored by BMBF.

Raimund Hudak

As senior lecturer and researcher with over 10 years of experience at leading academic institutions, Raimund Hudak has been involved in various research programmes in Germany and abroad. He is the project manager at the Duale Hochschule Baden-Württemberg in the European-wide research project HAPHE. He is also the CEO of Synesis' European practice. With his involvement in managerial and leadership positions in TEMIC Semiconductor, Trumpf and Fairchild-Convac, he directed new market strategies, customer service and total quality communications processes. He designed and implemented strategic business plans and managed vital partnerships and new venture startups. With experience in Japan and other Asian countries, he is an expert in Asian market analysis and supply-chain management. He holds an MBA in business and international marketing from the Institute for Technology and commerce in Reutlingen, and MSc and undergraduate degrees in optics and photo engineering from FH Köln (Germany).

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Anthony F. Camilleri

Anthony F. Camilleri is a tertiary education policy consultant. He holds qualifications in law from the University of Malta, and was also active in the Malta national students' union and the European students' union. He works on topics related to quality assurance of higher and vocational education, social dimension of education, and innovation in education. He is a senior partner at the Knowledge Innovation Centre.

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Alicia-Leonor Sauli-Miklavčič

Alicia-Leonor Sauli-Miklavčič is a good connoisseur of international professional higher education, former Secretary General of the Slovene Association HVC as well as a member of the EURASHE working group on employability and lifelong learning. She was one of the partners in the L5-Missing Link project, one of the experts for the Short Cycle Higher Education in Europe publication, and one of the partners in the HAPHE project. In November 2012, she organised and chaired the first HAPHE conference for South-Eastern Europe and, in April 2012, co-organised and chaired the Bologna Seminar on Learning Outcomes in Ljubljana (Slovenia). She established the first Slovene ERASMUS Placement Consortium, the Slovene ERASMUS PHE Alumni Club and ERASMUS PHE Teacher & Staff Club, and she is an ERASMUS coordinator at Wood Technology School, Higher Vocational College (School Centre Maribor), contributing to the its selection for Erasmus Success Stories 2012 by the European Commission. She possesses good command of English, German, Croatian and Spanish languages.

Czech Association of Schools of Professional Higher Education (CASPHE) (Czech Republic)

Michal Karpíšek

Michal Karpíšek has been Executive Officer of the Czech Association of Schools of Professional Higher Education (CASPHE) since 1994. He has been engaged in the introduction and development of Czech professional higher education since its very beginning. Focusing on internationalisation, CASPHE became a member of EURASHE in 1994. Michal Karpíšek has been a member of the EURASHE Council for the last 12 years and since 2007 he has been serving as Vice-President, specifically involved in the strategy and organisational development of EURASHE and the employability and lifelong learning agenda. In recent years Michal Karpíšek has been involved in the reform of Czech tertiary education.

He served twice as an advisor to Czech ministers of education (2001-2003, 2010-2011) or their deputies for higher education with a particular attention to issues of diversification and quality of tertiary education. He graduated from the Czech Technical University, Faculty of Civil Engineering and has a degree in Quality Management from the Cranfield University (United Kingdom). Michal Karpíšek has been recently engaged as a senior expert in the reform of VET in Turkmenistan, as well as in Azerbaijan.

Tallinna Tehnikakõrgkool University of Applied Sciences (TTK UAS) (Estonia)

Anne Kraav

Participating in various international working groups has enabled Anne Kraav to have access to comparing Estonian professional qualifications framework with European Qualifications Framework. In Estonia, 8-level national professional qualifications framework was adopted in 2008 based on the unified lifelong learning European Qualifications Framework (EQF), including all officially recognised qualifications (diplomas and certificates). Vocational and educational levels have been connected; competency-based descriptions of professions and professional standards have been developed. She has participated in developing curricula competences and vocational standards and in improving the procedure of issuing qualifications. As a vice rector for development in Tallinn University of Applied Sciences, she has also strongly contributed to the formulation of level 5 qualifications, for example, drawing up the description of construction manager competencies. She is also representing Estonian Universities of Applied Sciences in the Council of Estonian Higher Education Programmes, which enables access to higher education data.

Assemblée des Directeurs d'Institut Universitaire de Technologie (ADIUT) (France)

Stéphane Lauwick

Stéphane Lauwick joined the University of Le Havre (France) in 1993 as a professeur agrégé. After heading the Electrical Engineering Department of the University Institute of Technology (IUT) of that university, he is now the director of the Institute, an institution that enrolls some 2500 students and delivers 26 awards. He is a member of the 2012–2014 Board of EURASHE and of ADIUT, the French Association of Directors of University Institutes of Technology. He is the former director of the Continuing Education Centre and Apprentice Training Centre of the University of Le Havre. In that capacity, he actively promoted lifelong learning and developed the recognition of prior learning (RPL) process both within the University and at international level. He has worked with EUCEN on these issues and has advised on the establishment of the RPL process for the University of Mauritius and the World Customs Organisation. He is a member of the working group on the Social Dimension of the Bologna Follow-Up Group (BFUG) where he represents EURASHE.

Flemish Council of University Colleges (VLHORA) (Belgium)

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Marc Vandewalle is the secretary general of the Flemish Council of University Colleges (VLHORA). As the CEO, he is the chief of the VLHORA staff and member of the board of UAS directors. As such, he is a member of different national and international fora. He is a member of the 2010–2012 and 2012–2014 Board of EURASHE and of the steering committee of UASnet. Before, he was the head of the business department of the Limburg Catholic University College. He held this position for 12 years, during which the educational approach was directed towards professional practice, competence-based learning, team work and innovation.

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Armando Pires

Armando Pires is a graduate of Electrical Engineering from the Technical University of Lisbon. He received his MSc degree in 1988 and PhD degree in 1994 in Electrical Engineering at the same university. He was the President of the Setúbal Polytechnic Institute (2006-2014). He was also the Vice-President of CCISP (Polytechnic Institutes Coordinating Council). He was the President of ASIBEI (Ibero-American Association of Engineering Education Institutions) and was member of the Administrative Council of AULP (Association of Portuguese Speaking Universities). He is currently full professor in the area of Electrical Engineering at the Setúbal Polytechnic Institute in Portugal and Senior Researcher and Coordinator of the Energy Group at CTS/UNINOVA (Universidade Nova de Lisboa). He is also the Head of International Affairs of CCISP.

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Croatian Council of Universities and University Colleges of Applied Sciences (VVIVŠ) (Croatia)

Žarko Nožica

Žarko Nožica is a professor and a scientist. He obtained his master's and PhD degrees from the University of Zagreb (Croatia). He has over 25 years of experience in university (Croatia) and industry environment (California, USA). Previously, he held a number of senior positions in the industry in the USA: as vice president, he managed the applications engineering organisation In LEDA Systems, Inc. He was director of corporate applications engineering and methodology development organisation at SONICS, Inc., Mountain View. He was also a senior manager at Cadence Design Systems, Inc., California. He held the following positions in higher education: a member of the faculty at the University of Zagreb, pro-rector at the Polytechnic of Zagreb, and dean at University College of Applied Computer Engineering. He was intensively involved in envision and development of programmes, curricula and establishment of the new institutions in the field of higher professional education in Croatia. He is currently a member of EURASHE's Council. Moreover, he is also a member of the Area Council for Technical Sciences in the Croatian Council of Universities and University Colleges of Applied Sciences. He is a member of the Advisory Committee of Croatian experts on Bologna-related processes.

The editor
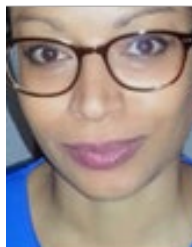
Anne-Christin Tannhäuser

Anne-Christin Tannhäuser is a consultant on innovation in education. In the past 6 years, she has worked for several initiatives in this field of education with specific focus on information and communication technology at the national and European level (for the University of Iceland, a non-profit research centre in Italy and the University of Duisburg-Essen). She has provided her expertise to the European Foundation for Quality in E-Learning, Baden-Württemberg Cooperative State University and the Knowledge Information Centre Malta. She coordinates the International Journal for Innovation and Quality in Learning. Anne-Christin Tannhäuser holds a master's degree in educational sciences and linguistics from the University of Leipzig. She was trained at the Max Planck Institute for Human Development, Berlin, in the use of qualitative and quantitative research methodologies.

Professional higher education is a form of higher education that offers a particularly intense integration with the world of work in all its aspects, including teaching, learning, research and governance, and at all levels of the overarching qualifications framework of the EHEA.

Its function is to diversify learning opportunities, enhance the employability of graduates, offer qualifications and stimulate innovation for the benefit of learners and society.

The world of work includes all enterprises, civil society organisations and the public sector. The intensity of integration with the world of work is manifested by a strong focus on the application of learning achievements. This approach involves combining phases of work and study, a concern for employability, cooperation with employers, the use of practice-relevant knowledge and use-inspired research.