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Chapter 9

What Do We Know – What Should We Know? Measuring and Comparing Achievements of Learning in European Higher Education: Initiating the New CALOHEE Approach

Robert Wagenaar

Abstract Are the instruments to decide on the quality, suitability and relevance of higher education learning that we have at our disposal still adequate for today's dynamic world? Do students enrolled in higher education around Europe develop the competences they need? Are degree programmes delivering what they promise? Can we learn to compare student's achievements in different countries in a meaningful way? These very pertinent questions deserve an answer based on reliable evidence. This evidence is not at our disposal yet, although a set of tools has been developed in the framework of the Bologna Process that offers a good basis. However, the ultimate proof of the pudding is in the eating, which requires not only agreement on what should be but also on what has been learned. To respond to this need, the project *Measuring and Comparing Achievements of Learning Outcomes in Higher Education* (CALOHEE) has been established with support of the European Commission. CALOHEE is developing the instruments conditional for setting up transnational diagnostic assessments, which can be applied European-wide. CALOHEE delivers three types of outcome, outlined in this chapter: state-of-the-art reference points (benchmarks) for five academic sectors/subject areas, detailed assessment frameworks for these disciplines and a multidimensional assessment model that does justice to the mission and profile of individual higher education institutions and degree programmes.

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9.1 Introduction

For the last 25 years, concern has been expressed about the suitability and relevance of higher education learning in today's dynamic world: first by the European Commission in several publications (EC 1991, 1997) and since 1998 by the European ministers of education, in the setting of the Sorbonne and the Bologna Declarations. Both have stipulated the need for reforms regarding the organization, design and implementation of degree programmes. Probably more than ever, the participation in and quality and performance of higher education are perceived as a significant factor for boosting economic growth and enhancing social well-being besides personal development (Katsarova 2015; see also Cain and Hearn in this volume). This not only applies to Europe (<https://www.whitehouse.gov/issues/education/higher-education>). Living in a competitive world, there is a growing need felt to benchmark higher education performance at system level as well as at degree programme level (Katsarova 2015). Initiatives have been taken to set standards and develop indicators to allow for comparison (see also Coates in this volume). Until now, the most far-reaching one in terms of comparison at system level has been the Organisation for Economic Co-operation and Development (OECD) feasibility study *Assessment of Higher Education Learning Outcomes (AHELO)*. Although it resulted in three substantial volumes, the study did not produce a suitable and workable approach (Tremblay et al. 2012–2013). It showed however the challenges and limitations of global comparison of achievements of learning.

So far, more promising has been the work established in developing standards, descriptors and indicators. In 2005 the *European Standards and Guidelines for Quality Assurance* were published by the European Association for Quality Assurance in Higher Education (ENQA) which obtained wide approval and support. A decade later these were updated (ENQA et al. 2015). Another initiative in which much time and effort has been invested over the last 10 years or so is the development of 'overarching' or 'meta-level qualifications frameworks'. Good examples in this respect are the *Qualifications Framework for the European Higher Education Area* (QF for EHEA), based on the 'Dublin Descriptors', and the *European Qualifications Framework for Lifelong Learning* (EQF for LLL) (Bologna Working Group 2005; EC 2008). These have been complemented by national qualifications frameworks (CEDEFOP 2016). All these frameworks provide good indications of what is expected in terms of outcomes of a learning process at different levels. However, because of their purpose and role, the descriptors included in meta-frameworks are necessarily rather general.

Starting in 2001, benchmarks or reference points have been defined for specific subject areas or disciplinary fields, as well as for academic domains or sectors in the context of the Tuning Educational Structures in Europe projects and in European thematic networks (TNPs) (<http://www.unideusto.org/tuningeu/publications/subject-area-brochures.html>). These involved hundreds of academics from all over Europe. The European meta-frameworks and the Tuning subject area/sectoral qualifications frameworks should be perceived as complementary. Although they are

more detailed, subject area-based qualifications frameworks or benchmarks are also still rather general by nature, since each is expected to cover a broad academic field (see also Cain and Hearn in this volume). In their present forms, they are not suitable for precise measuring and comparing of learning. That requires more sophisticated frameworks. This chapter offers a new approach which is being developed in the framework of the feasibility study *Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe* (CALOHEE) (<https://www.calohee.eu>). In June 2016 a core objective of this study, the development of multi-dimensional ‘assessment frameworks’ at subject area level, was adopted as formal European Commission policy (EC 2016).

9.2 Developing an Infrastructure for Comparative Testing

With the Tuning projects aim to contribute to the realization of the main objectives of the Bologna Process, an important incentive for launching CALOHEE by the Tuning initiators has been the disappointing level of implementation of one of its current most important objectives for reform, the introduction of the concepts of active learning and the student-centred approach. Both were originally introduced in 2002 by Tuning. Recent research shows a disconnect between political ambitions and reality, that is, academic staff is unprepared and untrained for these concepts, and students are disappointingly unfamiliar with them (Gonzalez and Wagenaar 2003; Birtwistle et al. 2016). CALOHEE aims to serve as a source of inspiration for making the intended reforms a reality by offering a clear reference and the necessary approach and materials to facilitate the updating of content of degree programmes by making these ‘fitness in purpose’ and ‘fitness for purpose’. In other words, the outcomes of the learning process should meet the aims of the programme, as well as meet the needs and expectations of students and society, ensuring employment, personal development and civic, social and cultural engagement.

From this perspective the following questions were inspired: Do students enrolled in higher education around Europe develop the competences they need? Are degree programmes delivering what they promise? Can we learn to compare student’s achievements in different countries in a meaningful way? These are very pertinent questions given the amount of money involved in higher education for governments as well as for families and the students concerned. The notion of cost-benefit that is applied throughout society nowadays also applies to the higher education sector (see also Coates in this volume). In response to this, the ultimate aim of the CALOHEE initiative is to develop the infrastructure for setting up and implementing multidimensional assessments for five subject areas, chosen to represent five significant academic domains: humanities, social sciences, natural sciences, health care and engineering. These assessments and their underpinning frameworks should offer insight into whether the outcomes of learning match the investments made. The assessments for each of the five subject areas are intended to use a similar

methodology, but they shall be tailored to the characteristics of each field of studies, thus enabling a comparison of students' performance in a Europe-wide context.

The assessments will necessarily be multidimensional in order to allow for precise and fair measurement, taking into account the different missions, orientations and profiles of institutions and degree programmes. The outcomes of the assessments should not only offer institutions useful information to verify whether their students are achieving internationally defined standards of generic and subject-specific learning outcomes and are prepared sufficiently well for their role in society in terms of personal development, employability and civic, social and cultural engagement. Both the underpinning frameworks and the assessments intend to provide important information to the students themselves, so that they can understand better the objectives of their programmes and the competences they will gain and become proactive in the learning process. The frameworks and assessments will be designed in such a way as to stimulate academics to reform as well as to check that learning, teaching and assessment methods are truly aligned with the stated desired outcomes. Finally, the frameworks and the (outcomes of) assessments should play a key role in quality enhancement and assurance at degree programme level. Although actual comparative assessment is the ultimate aim, several steps have to be made first, which in itself is expected to offer a significant contribution towards the modernization and boosting of the quality and relevance of higher education programmes. These stepping stones involve the updating of existing subject area and sectoral qualifications frameworks as well as the development of meaningful 'assessment frameworks' which are drawn from these.

It is now widely accepted that both programme-level descriptors and unit- or module-level descriptors, described as programme and unit 'learning outcomes', are useful to determine whether the intended level of learning has actually been achieved. Experience has shown that learning outcome statements should be clearly and precisely formulated in order to guarantee objectivity/fairness and transparency. Tuning has developed a model, related to the work of educational scientists Bloom, Biggs and others (Lokhoff et al. 2010), which helps in elaborating reliable statements. Reliability is to be understood in this context as allowing for measuring and assessing the progress of learning and/or its achievement. The Tuning model distinguishes five elements that should be covered in a learning outcomes statement: verb, type, subject, standard and scope/context. Hence it is more precise than models which focus (mainly) on the use of the most appropriate 'verb' to indicate the level to be achieved during a specified piece of learning (Adelman 2015). Focusing on verbs has its limitations because it lacks precision in defining the scope and complexity and therefore the level of a learning outcome.

An additional instrument for determining the level of performance of an individual learner is so-called rubrics. Rubrics or score cards offer more detail and precision in terms of the criteria used to assess and grade a piece of student work and the weighting of different elements. Rubrics can have quite different formats and are used to assess an individual course unit or module. Although qualifications frameworks, level descriptors and rubrics are all indispensable tools for judging the quality of learning, they are not sufficient for comparing the results obtained by different

study programmes in the same field of study in a national or international context. This requires a completely new type of instrument being the mentioned ‘assessment framework’. Such a framework offers more detail than do qualifications frameworks about what a graduate in a particular subject area is expected to know, understand and be able to do when finishing his or her studies and/or a well-defined (structured) period of studies successfully. The European *Subject Area Assessment Framework* to be developed in the context of the CALOHEE feasibility study should thus provide a solid basis for constructing reliable and sustainable sets of assessment items for each of the five subject areas covered by the feasibility study.

9.3 Applied Principles

The OECD’s AHELO feasibility study has been inspirational for defining the CALOHEE study. On the basis of lessons learned, this has resulted in a completely different design. While AHELO was based on a top-down approach meant to find evidence regarding the performance of (national) systems, CALOHEE has chosen to use a bottom-up approach in order to give the academic community a central position in the further implementation of the process of modernization of higher education in Europe. It should offer ‘performance’ information at individual and aggregated at programme, institutional and national level. It involves 70 academics and 6 student representatives covering a wide range of countries. It builds on the work already carried out in the framework of the European Higher Education Area (Bologna Process) and the worldwide activities associated with Tuning. Although Tuning operates globally, all its projects are regionally based to do justice to cultural and other differences. In AHELO these differences were clearly underestimated despite a ‘contextual strand’ it had included in its outline, which should have offered a sufficient basis and safeguard to avoid the misinterpretation of results. In practice, AHELO struggled with insufficient cohesion.

What did not help either in this respect was the clear separation of a ‘generic skills and competences strand’ and two ‘subject specific knowledge and skills strands’ for, respectively, civil engineering and economics. In the philosophy of Tuning, these two strands cannot be separated and should be fully integrated in the teaching and learning process, based on the argument that generic competences are not only developed in the framework of a domain of knowledge but are also perceived differently between educational sectors. Another serious weakness proved to be that the design did not allow for differences in missions and profiles of higher education institutions, for example, more research driven and more applied formats. The response of CALOHEE to this diversity is the application of a multidimensional approach by using two main parameters for assessment: ‘knowledge: theoretical and methodology’ and the ‘application of knowledge and skills’. Taking into account the responsibility of higher education to prepare graduates for their role in society, another two categories or parameters have been added to the two mentioned which were not covered by AHELO: preparation for employability and civic, social and cultural

engagement. This makes CALOHEE much more comprehensive and relevant as reference for what ‘should’ be learned according to different stakeholder groups.

A further innovation introduced by CALOHEE is the merging of the two existing European meta-frameworks in one model and the introduction of the concept of dimensions, covering areas of learning (Wagenaar 2013). This model is also applied to organize the descriptors of competences in one encompassing table or grid per level (Ba and Ma/EQF 6 and 7) which should represent a so-called meta-profile for the sector and the subject area involved. These tables are a crucial addition to the existing Tuning subject area reference points brochures which have been published since 2008. Another new element to these brochures is the identification of roles and tasks of graduates which go beyond an inventory of occupations. To collect more detailed information, a questionnaire was distributed among the academics involved in CALOHEE, the outcomes of which have proven to be an eye-opener. The outcomes showed that it is indeed possible to identify clear accumulated sets of tasks and roles of graduates per subject area which offer much more useful information to take into account when designing and updating the content of degree programmes than an overview of typical occupations can offer. From the material available, it is obvious that many of these typical roles and tasks are not ‘trained’ (very well or explicitly) during higher education programmes (<https://www.calohee.eu/>).

Having the principles outlined above, the remainder of this chapter will provide insight into (1) the definition of the assessment framework proposed; (2) the application of qualifications frameworks and so-called dimensions to construct an assessment framework; (3) the multidimensional parameters identified, that is, the items to be assessed, in terms of theory, methodology, skills, application, employability and civic-related competences; and (4) the structure of the framework, that is, the topics of assessment and their related possible learning, teaching and assessment approaches.

9.4 Assessment Framework Definition

The term ‘assessment framework’ can have different meanings. On the one hand, it may refer to an instrument used as a basis for an accreditation procedure, that is, to check whether a study programme meets minimum quality standards (ECA 2014). On the other, it can also be understood as a framework, which offers a detailed scheme or schedule of phases in an assessment process, including the different approaches to be used with respect to the course units/modules that form a particular study programme (<https://www.nottingham.ac.uk/teaching/assessmentfeedback/assessmentframework.aspx>). The teaching staff involved in such a programme is expected to respect this scheme when implementing the programme. It should offer a well-thought, thorough and balanced structure for assessment of the different programme components.

In the case of CALOHEE, ‘assessment framework’ has a third meaning. It is a table which contains the learning outcomes or descriptors defined as part of a sub-

ject area qualifications framework and more precise subsets of each one of them. Each subset, taken together, describes in some detail the key elements and topics covered by a learning outcome statement. In addition, the assessment framework intends to offer insight in the most appropriate strategies and approaches to assessing the constituent elements of each learning outcome. The term is used in CALOHEE in the same way as in the OECD AHELO feasibility study, where assessment frameworks were defined for the disciplinary fields of Economics and Civil Engineering, based on the respective Tuning AHELO conceptual frameworks for those two subject areas (OECD 2011a, b, 2012a, b).

9.5 Qualifications Frameworks and Dimensions

As mentioned above, the assessment frameworks to be developed will be based on the grids or tables of descriptors included in the Tuning sectoral and subject area qualifications frameworks. The EQF for LLL uses the categories of knowledge, skills and competences to structure its descriptors. Thus, the three columns form in CALOHEE terms a ‘knowledge framework’, a ‘skills framework’ and a ‘competency framework’, linked by level. The last column, the ‘competency framework’, refers to the world of work and society and identifies the competences required to operate successfully in the work place and as an active citizen. In the EQF, the competency column builds on the other two elements: knowledge and understanding and the skills necessary to develop and use this knowledge. Together these can be seen as ‘content-related competences’ or ‘subject-specific competences’. As is well known, besides these, Tuning distinguishes ‘generic or general competences’, which are grouped in three categories: instrumental, interpersonal and systematic competences. These should be covered in the ‘competency’ strand but are also related to the ‘skills’ strand.

To illustrate this point, it is worth mentioning that over time many competency frameworks have been developed for a specific job sector, company or institution. These define the requirements for a given job and are used in job vacancy announcements. These announcements normally contain content-related or subject-specific competences as well as generic competences. As an example of a well-developed competency framework, we may take the one the OECD produced in 2014 for the selection/assessment and promotion of its own staff (OECD 2014). This competency framework is linked to the catchwords: learn, perform and succeed. It makes a distinction between ‘technical competences’ (subject-specific competences) and ‘core competences’ (generic competences). It identifies 15 ‘core competences’ which are organized in three clusters: ‘delivery-related competences’ focusing on achieving results, ‘interpersonal competences’ focusing on building relationships and ‘strategic competences’ focusing on planning for the future. The ‘delivery-related competences’ are analytical thinking, focus on achievement, drafting skills, flexible thinking, resource management, teamwork and team leadership. The interpersonal competences selected are client focus, diplomatic sensitivity, negotiation

and organizational knowledge. The strategic competences identified are developing talent, organizational alignment, strategic networking and strategic thinking. For each of these competences, a definition was formulated.

Based on these competences, the OECD competency framework offers indicators for different levels, which are associated with types of jobs. Level 1 is typically associated with jobs as assistants, secretaries and operators and the like; level 2 with jobs as statisticians, corporate management and administration assistants/officers, logistics officers and documentalists; level 3 with jobs as economists/policy analysts, IT analysts and human resources advisers; and level 4 with jobs as senior economists/policy analysts or managers. Level 5, the highest level identified, is associated with jobs as heads of division, counsellors, deputy directors and directors and so forth. The typical jobs identified for the OECD might have limited value for many of the subject area covered by CALOHEE, but the operationalization of levels is useful. This is because the indicators used are clearly related to levels of responsibility and autonomy, the main indicators covered in the 'competence strand' of the EQF. The OECD framework is also relevant because it makes a clear link to the 'tasks and roles' executed as part of the jobs identified. The OECD document distinguishes three job families: 'executive leadership', 'policy research, analysis and advice' and 'corporate management and administration'. The OECD framework is only one example; many others can be found on the Internet (<https://www.microsoft.com/en-us/education/training-and-events/education-competencies/default.aspx?tabselect=1>). Besides in the management sector, competency frameworks have been drawn up and are applied in the health-care sector (Sastre-Fullana et al. 2014). Besides these job-related frameworks, recently a competency framework has been published for student work-based learning covering all levels of higher education, including the PhD (Jones and Warnock 2014).

As stated above, for the purposes of the CALOHEE study, the EQF for LLL has been merged with the QF for EHEA to make use of 'the best of two worlds'. While the EQF is focused on the application of knowledge and skills in society, the focus of the QF for the EHEA is more related to the learning process itself: it applies descriptors which cover different areas or 'dimensions' of learning: knowledge and understanding, application of knowledge and understanding in relation to problem solving, making judgments, communicating information, conclusions, etc. and learning capability. In developing the CALOHEE approach, the conclusion has been drawn that 'dimensions' are indispensable to define the field of study for which it is required to distinguish the different constituting areas. The 'dimension approach' is complementary to the three categories included in the EQF for LLL. Dimensions help give structure to a particular sector or subject area and also make these more transparent. The use of 'dimensions' facilitates breaking down the rather general level descriptors into more precise ones. This process is necessary in order to develop an assessment framework, which must be sufficiently detailed to permit comparing and measuring. Such an approach also provides far better indicators for evaluating the quality of a degree programme than are available at present. Initially, a number of the academics involved in CALOHEE expressed their doubts

about the usefulness of the proposed merging of the two frameworks, but at its second general meeting taking place mid-November 2016, it was unanimously concluded this is the best way forward.

Although there should be an obvious connection with the five or six areas of learning (depending on the cycle covered) or dimensions formulated as general descriptors in the QF for the EHEA, each sector must define its own set of sectoral/subject area dimensions in order to be able to do justice to its field. In the sectoral frameworks developed so far, diversity has been found between sectors as well as some overlap. Each dimension in a Tuning CALOHEE Qualifications Framework includes three *related* descriptors, respectively, for knowledge, skills and (wider) competences. This is illustrated in the Fig. 9.1.

Dimension 1	Knowledge descriptor	Skills descriptor	(Wider) Competence descriptor
Dimension 2	Knowledge descriptor	Skills descriptor	(Wider) Competence descriptor
Dimension 3	Knowledge descriptor	Skills descriptor	(Wider) Competence descriptor

Fig. 9.1 Dimensions in a tuning CALOHEE qualifications framework

The ‘skills descriptor’ builds on the ‘knowledge descriptor’ and the ‘(wider) competence descriptor’ on the other two. In Tuning and CALOHEE the term ‘wider competences’ is preferred, because it takes into account the fact that knowledge and understanding must also be understood as competences, in this case ‘subject-specific’ ones or in OECD terms ‘technical competences’. Using the term ‘wider competences’ also expresses the fact that the aim of a period of study is both to foster personal development and to increase the learner’s competences for future employment.

9.6 Multidimensional Parameters

In order to accommodate the different missions and profiles of higher education institutions and their programmes, the CALOHEE assessment frameworks will be based on four parameters or categories. This is completely compatible with the existing Tuning CALOHEE sectoral/subject area qualifications frameworks whose core is formed by the grid or table of descriptors/learning outcomes. As the Fig. 9.2 illustrates, the four parameters of assessment are related to the three strands: ‘knowledge’, ‘skills’ and ‘(wider) competences’. The last strand is split into two: employability and civic, social and cultural engagement. The term ‘active citizenship’ is avoided, because it has a negative connotation in large parts of Europe.

Assessment framework

Fig. 9.2 Multidimensional parameters of the assessment framework

The distinction in strands is made for reasons of clarity, although it must be kept in mind that the four strands are closely interrelated, as are the three strands in the EQF for LLL and the five or six dimensions in the QF for the EHEA.

The first parameter encompasses the core knowledge of a particular academic field as well as the related theoretical concepts and methodologies which are judged essential for a good understanding of that field. The depth to which this knowledge and its understanding are developed in a programme depends on the type of degree programme and type of institution offering it. For example, in the case of a research-intensive institution, deep knowledge of theoretical concepts and methodologies in relation to highly developed analytical competences/skills and critical thinking will be considered essential. While the outcomes of the Tuning surveys have shown that stakeholders consider the ability to apply knowledge and skills in practice – the second strand – very important in preparing for a societal role, in the case of the research-intensive institution the focus will be much stronger on the first strand. The balance will be different in the case of a university of applied science or a more applied degree programme. However, the CALOHEE assessment framework will indicate the optimum achievement level in both categories (for both BA and MA), that is, the highest level achievable and feasible for a higher education degree programme.

This means that students are not all expected to achieve the highest levels which are formulated as ‘intended’ learning outcomes in the framework. The norm of achievement – threshold, average, above average, excellent – with regard to each of the parameters will depend on the type of programme taken by the student, as well as its aims. This approach, which can be compared to the tests used to select pupils/students for different types of secondary and higher education, does justice to CALOHEE’s multidimensional approach. It also takes into account that in national and international contexts, a distinction is made between more and less ‘prestigious’

universities or other types of higher education institutions if these exist (grand écoles, skola normal, etc.). Although all these institutions will offer bachelor and/or master programmes (or their equivalents), it does not mean that these are understood to be of the same higher education ‘type’ or ‘level’. This is why it is so important to distinguish profiles and missions of institutions, each of which have an intrinsic value and place and role in the higher education landscape but therefore also have the obligation to describe and justify the choices they make.

Once the ‘optimum’ feasible learning outcomes are defined, it is essential to make subdivisions which reflect the different profiles of higher education institutions and programmes in an appropriate manner. These should also be the basis for deciding the norms to use when comparative assessments are organized. In order to avoid complicating the model excessively, it is proposed to develop two main subdivisions (research based and applied), which can be further split into two subsets, so as to distinguish level. This would provide grids for four types of degree programmes, having partially different programme learning outcomes and taking into account more academic and more professional orientations. All types, however, are expected to cover the identified common body of knowledge, skills and (wider) competences, and all students are expected to meet a threshold level to be identified and agreed upon by the academic communities responsible.

The parameter related to employability has already been discussed above by linking it to competency frameworks. As the OECD example shows us, different programme profiles might lead to different types of jobs given the tasks and roles related to these jobs which require different levels of competence. Employability can be defined in short as the skills and abilities that allows someone to be employed. The United Kingdom (UK) Higher Education Academy/Enhancing Student Employability Coordination Team (ESECT) have come up with the following definition of employability-related competences: *A set of skills, knowledge and personal attributes that make an individual more likely to secure and be successful in their chosen occupation(s) to the benefit of themselves, the workforce, the community and the economy* (York 2006). It is obvious that both subject-specific and general/generic competences are understood to be quite important in this context. In this last respect, the publication of the UK Higher Education Academy *Student employability profiles* is of relevance. It offers short profiles for each of the subject areas covered in the CALOHEE project (Rees et al. 2006).

Given the role of higher education institutions to prepare students for their role in society and to form strong bases for personal development, in addition to preparing them for participating in the work force, CALOHEE holds that it is important – even essential – that attention in the learning process is paid to civic, social and cultural engagement. This formulation is often referred to in the European context as ‘active citizenship’. It may well be that this aspect is not explicitly pursued at present in the vast majority of higher education programmes, but this is a serious omission, given the fact that the stability of many societies is under severe pressure. Interrelated challenges such as the refugee crises, the lasting effects of the 2008 financial crisis, the rapidly changing geopolitical context, the negative consequences of globalization, xenophobia, populism and most recently the Brexit and United

States (US) Presidential election, which reflect all these elements, shake the foundations of societies and their constituent components.

It is expected that the competences reflected in this strand will be largely the same for all subject areas, although the perception of their importance can differ. For academic fields such as history, educational sciences and teacher training, their 'weight' in the curriculum might be greater than in other disciplines. Recent publications show there is global attention for this category of learning. In 2010 the Australian government published its *Civics & Citizenship Education Professional Learning Package* (Australian Government 2010), and although it was meant for secondary education in particular, the topics covered seem to be relevant for higher education as well. It offers three modules to foster 'civics and citizenship', respectively, 'in the classroom', 'beyond the classroom' and 'participation in the community'. The focus in the modules is on 'civics and citizenship education knowledge, skills and dispositions' (an artificial habit, a preparation, a state of readiness or a tendency to act in a specified way that may be learned).

Probably even more important in the CALOHEE context is the 2016 publication of the Council of Europe, *Competences for Democratic Culture: Living together as equals in culturally diverse democratic societies* (Council of Europe 2016). In the publication 20 generic competences are distinguished, which are clustered in four groups: values, attitudes, skills and knowledge and critical understanding. By values is meant human dignity and human rights, cultural diversity, valuing democracy, justice, fairness, equality and the rule of law. The label attitudes encompass openness to cultural otherness and to other beliefs, world views and practices as well as civic-mindedness, responsibility, self-efficacy and tolerance of ambiguity. As skills have been identified autonomous learning, analytical and critical thinking, listening and observing, empathy, flexibility and adaptability, co-operation, conflict-resolution and linguistic, communicative and plurilingual abilities. The knowledge category lists knowledge and critical understanding of the self, knowledge and understanding of language and communication as well as the world, in terms of politics, law, human rights, culture, cultures, religions, history, media, economies, environment and sustainability.

From this list it is obvious that competences relevant for employability overlap with those for civic engagement. It shows that combining both employability and civic, social and cultural engagement in the 'wider competences' parameter/category is a sensible solution. The list of 20 generic competences chosen by the Council of Europe is based on a longer list of 55 identified in 101 competences schemes. Each of the 20 competences is clarified in the document and supported by a number of pre-assumptions, ranging from 3 to 12 statements. They offer clarity about what is expected of a citizen in a democratic culture. Taken together, these statements should be measurable.

A Educational Testing Service (ETS) research group also has studied the issue. The report by Judith Torney Puta et al. (2015) *Assessing civic competency and engagement. Research Background, Frameworks, and Directions for Next-Generation Assessment* stresses that civic learning is increasingly recognized as being important by both the higher education sector and workforce communities. It offers a review of the outcomes of some 30 projects covering 'existing frame-

works, definitions and assessments of civic related-constructs'. It identifies 31 competences ranging from civic literacy, civic engagement, civic identity, political knowledge, civic knowledge and skills, ethical and social responsibility in a diverse world, civic-mindedness and civic responsibility to political and civic participation. It also addresses the term 'civic learning' in terms of learning outcomes in the Lumina US Degree Qualifications Profile (DQP) both at associate level (level 5 of the EQF) and at bachelor level (<http://www.luminafoundation.org/files/resources/dqp.pdf>). The study offers a table of 'existing assessments measuring civic competency and engagement' and comes up with its own framework, distinguishing between the civic competency domain (covering civic knowledge, analytical skills, participatory and involvement skills) and the civic engagement domain (covering motivations, attitudes and efficacy, democratic norms and values and participation and activities). These competences are defined and completed with measurable topics/learning outcomes. The report concludes with examples of so-called 'test item formats' to assess civic competency and engagement.

These publications – together with others (<http://compact.org/resource-posts/assessment-of-students-civic-learning-and-development/>, Council of Europe 2016) – have offered a good basis to give substance to the parameter of assessment and allowed for defining concrete learning outcomes, which can be learned, taught and measured. It has resulted in a CALOHEE model – based on an analysis of present developments and the recent literature mentioned above – that contains four dimensions:

- Societies and cultures: Interculturalism and conflict management
- Processes of information and communication
- Processes of governance and decision-making
- Ethics, norms, values and professional standards

For each of these dimensions, knowledge, skills and (wider) competence descriptors have been defined. It is expected that these are integrated in the qualifications frameworks of each subject area (CALOHEE 2017).

9.7 Topics of Assessment, Teaching and Learning

Keeping the proposed four parameters, strands, dimensions and the main subdivision and its subsets in mind, the first step is to break down each of the descriptors linked to the 'dimensions'-related knowledge, skills and (wider) competences. Only after their breakdown has been realized does it seem feasible to give substance to the subdivision subsets as identified.

The splitting-up can be accomplished by identifying the different components which make up these descriptors. It has been suggested to distinguish 3–5 components to be formulated as subsets/sub-descriptors of each dimension. The lists of 'subject-specific competences' and 'general or generic competences' which have been identified by each Tuning subject area group as being the most relevant for the academic field (sector and subject area) should serve as a basis. The breakdown can be visualized as follows (Fig. 9.3).

Dimension	Knowledge descriptor	Skills descriptor	(Wider) Competence descriptor
1.	Sub-descriptor 1-1	Sub-descriptor 1-2	Sub-descriptor 1-3
2.	Sub-descriptor 2-1	Sub-descriptor 2-2	Sub-descriptor 2-3
3.	Sub-descriptor 3-1	Sub-descriptor 3-2	Sub-descriptor 3-3
4.	Sub-descriptor 4-1	Sub-descriptor 4-2	Sub-descriptor 4-3
5.	Sub-descriptor 5-1	Sub-descriptor 5-2	Sub-descriptor 5-3

Fig. 9.3 Descriptors linked to the ‘dimensions’-related knowledge, skills and (wider) competences

To make this model more concrete, the following (provisional) example at level 6 (bachelor) is taken from the work done by the CALOHEE Subject Area Group of History. The following dimensions for humanities/history are distinguished: ‘the human being: cultures and societies’, ‘texts and contexts’, ‘theories and concepts’, ‘interdisciplinarity’, ‘communication’, ‘initiative and creativity’ and ‘professional development’. This results in the following Table 9.1.

Table 9.1 Overview of the dimensions

Dimension	Knowledge	Skills	Competences
Human beings: cultures and societies L6_1. Level descriptor	Demonstrate basic knowledge and critical insight into changes and continuities in the human condition, environment and experience, in institutions and modes of expression, ideas and values in a diachronic perspective	Drawing on knowledge of history, identify and define, with guidance, significant problems and areas of enquiry with respect to social and cultural interaction	Apply historical knowledge and perspectives in addressing present-day issues, bringing to bear analytical understanding and respect for the individual human being in his/her personal, cultural and social dimension
Texts and contexts L6_2. Level descriptor	Demonstrate knowledge and understanding of the main kinds of sources for historical research	Identify, select with guidance and present information from a variety of historical sources in an appropriate form	Retrieve, manage and use information in order to formulate and address problems in their contexts using suitable methodologies

(continued)

Table 9.1 (continued)

Dimension	Knowledge	Skills	Competences
Theories and concepts L6_3 Level descriptor	Collect knowledge about and classify a range of analytical, theoretical and methodological approaches relevant to history. Demonstrate orientation in the major themes of present historical debate and knowledge of world chronology	Apply appropriate critical and methodological approaches to historical questions	Examine and explore societal issues and processes using relevant theories and concepts
Interdisciplinarity L6_4 Level descriptor	Demonstrate knowledge of the intellectual underpinnings and contexts of history in relation to other fields of study	Utilize, when opportune, knowledge and understanding from other fields to address problems and issues in the historical domain	Work with others in a multidisciplinary and/or multi-national setting when useful
Communication L6_5 Level descriptor	Demonstrate knowledge of the main means of communication used to convey information and perspectives in both academic and broader public contexts	Write and speak correctly in one's own language according to the various communication registers (informal, formal, scientific). Understand the appropriate terminology and modes of expression of the field of history also in a second language	Demonstrate ability to listen, understand different viewpoints and discuss ideas, problems and solutions with diverse audiences
Initiative and creativity L6_6 Level descriptor	Demonstrate knowledge of the ongoing nature of historical research and debate and of how historians contribute to key areas of academic and public discussion	Approach issues with curiosity, creativity and critical awareness; retrieve and handle information from a variety of sources (electronic, written, archival, oral) as appropriate to the problem, integrating it critically into a grounded narrative	Reflect on one's own perspective, capabilities and performance to improve and use them in a creative way. Think in scientific terms, pose problems, gather and analyse data and propose findings
Professional development L6_7 Level descriptor	Demonstrate knowledge of the intellectual bases and ethical aspects of historical studies and of the diverse contributions historians make to society	Methods to stay up to date with learning. Work autonomously and in a team, taking initiatives and managing time	Identify and/or create an appropriate study and/or work environment and participate effectively in it

Table prepared by the members of the CALOHEE Subject Area Group of History, July 2017

The first dimension, human beings: cultures and societies, which is meant to act as an overarching one for the field of history and the sector of Humanities is used here as an illustration of the outcomes a breakdown of a dimension in sub-dimensions or subsets offers (Table 9.2).

Table 9.2 Dimension 1: Human beings: cultures and societies

EQF level 6 (bachelor)	Knowledge	Skills	Competences
L6_1. Level descriptor	Demonstrate basic knowledge and critical insight into changes and continuities in the human condition, environment and experience, in institutions and modes of expression, ideas and values in a diachronic perspective	Drawing on knowledge of history, identify and define, with guidance, significant problems and areas of enquiry with respect to social and cultural interaction	Apply historical knowledge and perspectives in addressing present-day issues, bringing to bear analytical understanding and respect for the individual human being in his/her personal, cultural and social dimension
Subset 1	Show general acquaintance with diverse criteria of historical explanation and understanding on different time and spatial scales. Demonstrate awareness of how explanations and interpretations are conceptualized	Formulate historical explanations and interpretations of phenomena and processes through comparison and differentiation using quantitative and qualitative methods	Recognize consistent interrelations concerning phenomena and processes of different nature and scale, at the same time showing awareness of their uniqueness
Subset 2	Relate social and economic change to environmental transformations and to the accumulation/modification of knowledge	Describe the interaction between the natural environment and social change, on the one hand, and knowledge production on the other	Evaluate the impact of knowledge production and accumulation on society and the environment and vice versa
Subset 3	Demonstrate knowledge about power relations and how they shape collective organizations, institutions and representations of the world through conflict, negotiation and adaptation	Recognize tools and mechanisms of power in societal and collective relations and their genesis, continuity and transformations in time	Contribute to discussions and debates on power relations and political organization in a broad sense, placing them in historical perspective

(continued)

Table 9.2 (continued)

EQF level 6 (bachelor)	Knowledge	Skills	Competences
Subset 4 L6_1.4 Religious beliefs and practices	Demonstrate knowledge about modes of expression and transmission of beliefs and practices concerning moral values, immaterial and transcendental concerns and narratives and their dynamics	Describe different conceptual frameworks, symbolic representations and discourses that underpin and support collectively held beliefs and related practices	Engage critically with the dynamics of collective beliefs and practices and how they are expressed by individuals and groups
Subset 5 L6_1.5 Intercultural encounters	Demonstrate knowledge about intercultural encounters and their consequences on every field of human activities and on personal and collective identities	Describe and illustrate different dimensions (e.g. social, economic, religious and political) in cultural encounters via comparison and connections of specific cases	Contribute to understanding and respect for individuals and groups in their personal, cultural, economic and political and social dimension; conduct critical appraisal of conflicting views and facilitate intercultural mediation

Table prepared by the members of the CALOHEE Subject Area Group of History, July 2017

Each sub-descriptor describes – in the form of a learning outcomes statement – a core element or topic constituting the respective ‘knowledge descriptor’, the ‘skills descriptor’ and the ‘wider competence descriptor’. These sub-descriptors can be compared to the learning outcomes statements as defined for the ‘highest’ of a range of successive units or modules in a degree programme (a so-called ‘learning string’), defining the level to be achieved. The sub-descriptors have to be formulated in such a way that they can not only be measured but also be learned and taught. Like descriptors, sub-descriptors should be appropriate for the cycle (BA and MA) for which they are defined. However, as in the case of the cycle-level descriptors, it is advisable (if feasible and suitable) to develop these at the same time, to secure a fair balance. When formulating the sub-descriptors, it is suggested to keep the Tuning model for defining learning outcomes in mind (Lokhoff et al. 2010; Moon 2002; EC 2015).

As part of the process of defining a sub-descriptor, it is thought necessary to identify the appropriate learning, teaching and assessment approaches, methodologies and techniques. This can be done at the level of the descriptor as long as all sub-descriptors can be covered. Experience of linking specific approaches to learning, teaching and assessment to descriptors has already been successfully applied in a recent Tuning project, TuCAHEA, focussing on Central Asian countries, although not in as much detail as is proposed here (<http://www.tucahea.org>). To obtain a more up-to-date overview of the current approaches applied, questionnaires were distributed regarding modes of teaching and learning and on modes of assessment among the CALOHEE membership. It was also asked to identify modes of assessment to

‘measure’ competence development for a set of key generic competences. The outcomes show that still mostly rather traditional assessment forms are applied. As far as the assessment of generic competences is concerned, the questionnaire shows a rather ambiguous picture because the respondents have no clear ideas on which modes could be best applied. This confirms earlier findings that the student-centred approach has not been implemented widely yet. It is relevant to mention here that of the 101 respondents, 97% confirmed that their institution is representative for their country, as is 93% of their degree programmes (CALOHEE 2016a, b). It shows the need for examples of ‘good practice’ to be identified by the subject area groups as part of the process of updating the present Tuning reference points brochures. The interrelation between descriptors, sub-descriptors and approaches for learning, teaching and assessment is shown below (Fig. 9.4).

Dimension	Knowledge descriptor	Skills descriptor	(Wider) Competence descriptor
1.	Sub-descriptor 1-1	Sub-descriptor 1-2	Sub-descriptor 1-3
1a	Learning approach	Learning approach	Learning approach
1b	Teaching approach	Teaching approach	Teaching approach
1c	Assessment approach	Assessment approach	Assessment approach
2.	Sub-descriptor 2-1	Sub-descriptor 2-2	Sub-descriptor 3-3

Fig. 9.4 Interrelation between descriptors, sub-descriptors and approaches for learning, teaching and assessment

Not every key element or topic described in a sub-descriptor has to be covered by each degree programme. Whether and to which level each will be covered in practice will depend on the profile and mission of the programme concerned.

9.8 Outcome of the Exercise

The outcome of the exercise will be an assessment framework for the subject area covering both first and second cycle (bachelor and master). Based on the dimensions identified, it will contain ‘knowledge descriptors’, ‘skills descriptors’ and ‘wider competences descriptors’, all of which will be underpinned by more precise sub-descriptors. Each sub-descriptor formulated as a learning outcome will cover a core element or topic. For each sub-descriptor or combination of sub-descriptors learning, teaching and assessment approaches will be identified. These should allow for the achievement of the learning outcome(s) and be presented as examples of good practice. It is not considered sufficient in this respect just to mention a method or approach, rather it is necessary to indicate ‘why’ this approach or method is used and ‘how’ it is applied in addition to the ‘what’ described in the learning outcome.

An assessment framework containing these elements will not only serve as an important reference for constructing new programmes and modernizing, revising and enhancing existing ones but will also serve as a fair indicator for the completeness and (high) quality of a degree programme allowing for different missions and profiles. But most of all, it will be a reliable instrument for measuring and comparing the achievement of learning outcomes in a national and international setting and therefore will act as a sustainable basis for making a next step: the development of the actual measurement instrument, that is, sets of consistent test formats and items.

In AHELO two more traditional formats were applied for assessment: multiple choice tests and constructive response tests of which the last required manpower-based assessments. For reasons of reliability, efficiency and cost-effectiveness, CALOHEE strives for machine-based testing only. Conditional is that this type allows for the assessment of profound knowledge and understanding as well as high-level skills. One should think of critical awareness, analysing and composition skills, for example. This implies that formats should be developed and applied which make it possible to facilitate text interpretation and analysis but also to identify best strategies and methodologies for solving a problem. This will require the application of new forms of (statistical) measurement methods and validation approaches for assessments, which are still in the process of development (e.g. Shavelson et al. in this volume). It is expected that the use of algorithms will revolutionize computerized assessments. It can build on forms already available, such as responding to and analysing footage and computer simulation. Also, strategic computer games technology can be of service here. Given the speed at which technology is developing, the perspectives are quite promising and will allow for forms of comparative measuring not many could foresee almost a decade ago when AHELO was launched. That this is possible no longer seems to be an issue, but rather the question that remains is *when* it will become possible to find confirmation in what we really should know as the outcome of a process of learning, being much more relevant than what we already do know.

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