



Brussels, 17.1.2018
SWD(2018) 14 final

COMMISSION STAFF WORKING DOCUMENT
Accompanying the document

Proposal for a COUNCIL RECOMMENDATION

on Key Competences for LifeLong Learning

{COM(2018) 24 final}

Contents

1. Introduction.....	3
2. The objectives and the impact of the 2006 Recommendation on Key Competences	6
2.1 The objectives of the 2006 Recommendation on Key Competences	6
2.2 Impact of the Recommendation on Key Competences.....	8
2.3 Key competences in national competence frameworks	10
2.4 National strategies or reforms in education influenced by the European Framework of Key Competences for Lifelong Learning.....	16
2.5 Comparison of other international frameworks	19
3. Results from the stakeholder consultation	28
3.1 Public on-line consultation.....	28
Previous experiences with the European Reference Framework	29
Position Papers	30
3.2. Main findings during the consultation process.....	30
What are the main strengths of the current Framework as a whole?.....	30
What are the main weaknesses of the current Framework as a whole?.....	31
Need for change	31
Making the Key Competences approach more operational	31
3.3 Findings per key competence.....	32
<i>Communication competences</i>	33
<i>Mathematical competence and basic competences in science and technology</i>	34
<i>Digital competence</i>	34
<i>Learning to learn</i>	34
<i>Social and civic competence</i>	34
<i>Sense of initiative & entrepreneurship</i>	34
<i>Cultural awareness and expression</i>	35
<i>Transversal elements</i>	35
4. The proposal for a Recommendation on Key Competences for Lifelong learning	36
4.1 Recommendations to Member States and Commission.....	36
4.2 Changes to the European Reference Framework of Key Competences	38
Underlying concepts.....	41
Literacy	44
Languages competence	46

Science, technological, engineering and mathematical competence	47
Digital competence.....	50
Personal, Social and Learning Competence	51
Civic competence	55
Entrepreneurship competence	57
Cultural awareness and expression.....	59
5. Good practices to support Key Competences Development	62
5.1 Challenges for implementation	63
5.2 Competence Frameworks	64
5.3 Supporting educational staff	65
5.4 Assessment of learners	67
Different approaches to and purposes of assessment.....	67
International assessment, evaluation and comparison	69
European Frameworks to support assessment.....	71
National testing	72
5.5 Learning environments and learning approaches.....	75
5.6 Monitoring and evaluation of the use of the Recommendation for Key Competences for Lifelong Learning	78
6. Policies and projects supporting competence development in lifelong learning perspective	83
6.1 Foundations for lifelong learning: The significance of early childhood for competence development	83
Literacy	85
Languages.....	87
Mathematics, science and technology.....	88
Digital.....	92
Personal, Social and Learning.....	95
Civic competence	97
Entrepreneurship	99
Cultural awareness and expression.....	101

1. Introduction

In 2006, the European Parliament and the Council adopted a Recommendation on Key Competences for Lifelong Learning¹. In its annex, the European Reference Framework of Key Competences for Lifelong Learning, it defined the competences each European citizen needs for personal fulfilment and development, employment, social inclusion and active citizenship. It invited Member States to ensure that their education and training systems are able to equip people with these competences.

Since 2006, European societies and economies have experienced significant changes, digital and technological innovations as well as labour market and demographic changes. Many of today's jobs did not exist a decade ago and many new kinds of jobs will be created in the future. Manual operations are vulnerable to automation and changes in work patterns are on the rise. Increased mobility and cultural mixity, new forms of communication and relationships alter the ways societies are organized. Climate change and the limits of ecological resources, together with economic and social inequalities, mean that sustainable development is a necessary concern for all human activity.²

These developments change daily life, both at work and leisure. Society and economy rely heavily on highly competent people while competence requirements are changing; in addition to good basic skills (literacy, numeracy and basic digital skills) and civic competences; skills such as creativity, critical thinking, initiative taking and problem solving play an increasing role in coping with complexity and change in today's society. The 'Reflection paper on the Social Dimension of Europe'³ emphasises the importance of the right set of skills and competences to sustain living standards in Europe. Skills such as creativity, critical thinking, initiative taking and problem solving play an important role in coping with complexity and change in today's society.

Likewise, the Commission Communication on "Strengthening European Identity through Education and Culture"⁴ calls for investing in people and their education and to make sure that education and training systems help all learners the knowledge, skills and competences that are deemed essential in today's world. It also makes a strong link between the a common understanding of the competences all people in Europe needs and the establishment of a European Education Area.

The 'Reflection Paper on Harnessing Globalisation'⁵ recognises that "the key to empowerment is lifelong learning. Equal access to high-quality education and training is a powerful way of redistributing wealth in a society. This should start with a high standard of basic education and access at all ages to training and skills development. We also need to find new ways of learning for a society that is becoming increasingly mobile and digital as well as of providing the right blend of 'soft' skills, notably entrepreneurship as well as robust digital skills. Already 90 % of all jobs require at least some level of digital skills."

¹ Recommendation of the European Parliament and the Council of 18 December 2006 on key competences for lifelong learning (2006/962/EC)

² EPSC Strategic Notes (13/2016) The Future of Work; Council Conclusions on education for sustainable development from November 2010

³ European Commission, 2016, [Reflection Paper on the Social Dimension in Europe](https://ec.europa.eu/commission/sites/beta-political/files/reflection-paper-social-dimension-europe_en.pdf)
https://ec.europa.eu/commission/sites/beta-political/files/reflection-paper-social-dimension-europe_en.pdf

⁴ COM(2017)673

⁵ European Commission, 2017, Reflection Paper on Harnessing Globalisation
https://ec.europa.eu/commission/publications/reflection-paper-harnessing-globalisation_en

Despite these findings, latest OECD PISA data show that one in five pupils in the European Union (EU) has insufficient proficiency in reading, mathematics and science⁶. Many young people lack appropriate digital competences⁷. Worryingly, between 2012 and 2015, the trend in underachievement for the EU as a whole has worsened. In the countries involved in the OECD Survey of Adult Skills (PIAAC) 2012, between 4.9% and 27.7% of adults are proficient at only the lowest levels in literacy and 8.1% to 31.7% are proficient at only the lowest levels in numeracy. 44% of the EU population have low or no (19%) digital competences.⁸

Competence needs are not static; they change throughout life and across generations. It is therefore important to make sure that all young people and adults have the opportunity to acquire the required competences in initial education and training, higher education, continuous professional training, adult education or different forms of non-formal and informal learning.

In response to the current competence gaps in society, the 'Pillar of Social Rights' underlines as its first principle that "(e)veryone has the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market." The Pillar of Social Rights emphasises the "relevance of education and skills for successful participation in the labour market and for social cohesion. It emphasises opportunities to maintain and acquire skills. This entails flexible opportunities for learning and re-training which should be available at all times throughout a person's life and working career, including early childhood, initial, further, higher and adult education and training systems."⁹

In the Rome Declaration of 25 March 2017, 27 Member States pledged to work towards a Union "where young people receive the best education and training and can study and find jobs across the continent."¹⁰ Building on the May 2017 Education package¹¹ and contributing to the 'New Skills Agenda for Europe'¹², the Review of the 2006 Recommendation on Key competences for Lifelong Learning addresses the opportunities and challenges of the future of learning in the context of competence development in lifelong learning perspective.

The 2006 Recommendation of Key Competences for Lifelong Learning supported the development of competence-oriented teaching and learning and related curricula reforms. Competence-oriented educational concepts and curricula focus on the outcomes of a learning process but also on the application of that learning in new or different contexts. Competences include more than knowledge and understanding and take into account the ability to apply that when performing a task (skill) as well as how – with what mind-set – the learner approaches that task (attitude). Competence-oriented education is regarded as advantageous in a time when the knowledge base of our societies is developing at an immense speed and when the skills required need to be transferred to and developed in many different societal contexts, including those unforeseen in the future.

⁶ OECD (2016), PISA 2015 Results; European Commission (2016), Pisa 2015: EU performance and initial conclusions regarding education policies in Europe

⁷ European Commission (2015) Being young in Europe today - digital world

⁸ Education and Training Monitor 2016, p. 81

⁹ European Commission's Digital Scoreboard 2017, based on Eurostat data for 2016

¹⁰ <http://www.consilium.europa.eu/en/press/press-releases/2017/03/25/rome-declaration/>

¹¹ COM (2017) 248, COM (2017) 247

¹² COM (2016) 381

Moving to a competence-oriented approach in education, training and learning represents a paradigm shift. It impacts not only on the structure of curricula, but also changes the organisation of learning. Implementing competence-oriented education, training and learning requires often cross-curricular approaches, a greater emphasis on interactive learning and teaching styles, combining formal with non-formal and informal learning, more collaboration with non-education stakeholders and local community, a new role of the teacher, trainer and educator in guiding learning processes as well as new approaches to assessment.

Eleven years after its adoption, the review of the Recommendation on Key Competences for Lifelong Learning aimed to: a) evaluate the impact of the Recommendation; b) look at the appropriateness of the European Reference Framework with its competence descriptions in relation to changing economic and social contexts; and, c) analyse the experiences made in implementing competence-oriented education, training and learning. It also asked what support the EU in particular can provide to enhance competence development of European people.

The proposed Council Recommendation on Key Competences for Lifelong Learning repeals and replaces the 2006 Recommendation. This Staff Working Document provides evidence and additional background information to the Proposal for a Council Recommendation on Key Competences for Lifelong Learning.

- Chapter 2 summarises the objectives of the 2006 Council Recommendation on Key Competences for Lifelong Learning in its timely context. It also looks at the ways Member States have implemented the Recommendation during the last decade. It analyses seven national competence frameworks used in Member States to define learning outcomes, indicating the ways competences are defined in curricula development. It also provides a comparison with other international competence frameworks.
- Chapter 3 summarises the main findings of the consultation process, in general and with regard to the individual competences as defined in the European Reference Framework of Key Competences for Lifelong Learning.
- Chapter 4 presents the proposed changes to the Recommendation providing evidence to support both the recommendations to Member States and Commission, the changes proposed for the Reference Framework on Key Competences and the good practices to support the development of key competences for lifelong learning.
- Chapter 5 looks at ways to better support the use of the European Framework of Key Competences for Lifelong Learning, looking at the challenges and barriers experienced in the implementation of the 2006 Recommendation. Key elements are the creation of a variety of learning approaches, environments and contexts that foster competence development, the support to the educational staff, and the development of assessment methods and strategies that help better assessing and validating key competences. In this way, Chapter 5 provides more insight and background information on the good practices set out in the annex to the Recommendation..
- Chapter 6 presents a range of concrete practice examples which might inspire initiatives to foster key competence development in different areas of education and training.

2. The objectives and the impact of the 2006 Recommendation on Key Competences

Adapting education and training systems better to the future competence needs is a recurring challenge. Already the Lisbon Council in 2000 requested to define the ‘new basic skills’¹³ and the Education and Training 2010 work programme, adopted in 2002, included an objective on “developing skills for a knowledge society”¹⁴.

This chapter presents the objectives of the Recommendation on Key Competences for Lifelong Learning in its political and timely context. It analyses its impact at national levels, but also looks at national and international competence framework to demonstrate the variety of competence definitions and to assess the relevance of competence definitions for future education, training and learning.

It confirms that there is a need to up-date competence frameworks regularly to better adapt them to societal needs and to better structure education and training curricula. The European Reference Framework is here no exception. A key finding is also that while competence frameworks address a comparable set of competences, the terminology and definitions chosen show a great variety. This variety depends on the projected use, but also on the target group and on the geographical region.

A European Reference Framework needs to be sufficiently broad to cover all education, training and learning sectors, including non-formal learning, and to respond to the variety of education and training systems in Europe. It also needs to be sufficiently specific to be of added value. As a reference tool for Member States, for education providers, for stakeholders and for learners, it needs adaptation to the concrete circumstances in which it is used.

2.1 The objectives of the 2006 Recommendation on Key Competences

In the early 2000s, more and more European countries made efforts to shift from knowledge solely to a broader competence approach in national curricula. The adoption of the 2006 Recommendation on Key Competences for Lifelong Learning and its annexed European Reference Framework of Key Competences for Lifelong Learning was therefore very timely to support this process and provide a common reference document.

The Recommendation invited Member States to ensure that initial education and training offers all young people the means to develop the key competences to a level that equips them for adult life. Adults should be able to develop and update their key competences throughout their lives. In addition, the Recommendation underlined the need to provide extra support to people with educational disadvantages caused by personal, social, cultural or economic circumstances.

The Reference Framework formed a key element of the Council Recommendation as it was conceptualised as a reference tool for Member States in defining national education, training and learning policies. In line with the ambition to better cater for future competence needs and in order to respond to the challenges defined by the Lisbon Council, the Reference Framework included not only traditional subject areas, but in addition defined also those competences that enable people to pursue learning throughout lives, contribute to democratic

¹³ http://www.europarl.europa.eu/summits/lis1_en.htm

¹⁴ OJ C 142, 14.6.2002

societies and to succeed in today's and tomorrow's world.¹⁵

The European Reference Framework of Key Competences for Lifelong Learning defined eight key competences:

- Communication in the mother tongue;
- Communication in foreign languages;
- Mathematical competence and basic competences in science and technology;
- Digital competence;
- Learning to learn;
- Social and civic competences;
- Sense of initiative and entrepreneurship; and
- Cultural awareness and expression.

These key competences are all considered equally important. They are conceptualised as a combination of knowledge, skills and attitudes and the definition of each key competence states the knowledge, skills and attitudes relevant for it. This approach supported the definition of learning outcomes and its translation into curricula or learning programmes.¹⁶

- Knowledge – facts and figures, concepts, ideas and theories which are already established and support the understanding of a certain area or subject;
- Skills – ability and capacity to carry out processes and use the existing knowledge to achieve results;
- Attitudes - disposition and mind-sets to act/ react to ideas, persons or situations¹⁷; in the European Framework of Key Competences also including values, thoughts and beliefs;

The definition of the individual competences and their related knowledge, skills and attitudes overlap and interlock; they reinforce each other. The original formulation also listed a number of 'transversal themes' applied throughout the Reference Framework such as critical thinking, creativity, initiative, problem solving, risk assessment, decision taking, and constructive management. These 'transversal themes' are regarded as relevant to all key competences.

With this approach, the Recommendation aimed to support the move from a rather static conception of curricular content (defining what a learner needs to learn) to a more dynamic definition of the knowledge, skills and attitudes a learner needs to gain. Agreeing on a European Reference Framework was a key step; the reference tool constituted a common understanding among Member States. The recommendations to Member States and to the Commission remained rather general, inviting Member States to make sure that especially young people have the chance to develop these competences.

The Recommendation played also an important role in defining the objectives of the Lifelong Learning Programme (2007-2013), the predecessor programme of Erasmus+. Especially in the area of school education, contributing to the acquisition of key competences was an important priority for the programme.¹⁸

¹⁵ Commission SWD (2012)371

¹⁶ European Commission/EACEA/Eurydice 2012, Developing Key Competences at School in Europe: Challenges and opportunities in Europe, p. 19

¹⁷ See also OECD (2016) Education 2030: Draft Discussion Paper on the progress of the OECD Learning Framework 2030; the OECD approach addresses 'values' as a separate category from attitudes

¹⁸ http://ec.europa.eu/education/lifelong-learning-programme_en

The European Commission continued the work on the Reference Framework by setting up an ET2010 Working Group on the Assessment of Key Competences; the results of this work were published in 2012 in a SWD on the 'Assessment of Key Competences in initial education and training: Policy Guidance'.¹⁹

2.2 Impact of the Recommendation on Key Competences

Since its adoption, the European Framework of Key Competences has been accepted and used by many Member States and stakeholders. It has influenced reforms and strategic developments in formal education and training, as well as non-formal learning, across European Union and even beyond Europe. The Joint Progress Report of the Council and the European Commission in 2010 recognised the Framework as a contributory factor in the increasing shift towards competence orientation of European teaching and training systems.²⁰ The Reference Framework acted as a reference point, but also helped to develop a common understanding, at a European level, of the benefits of a competence-oriented approach to education.

Its role in Member States' implementation of educational reforms is documented in a range of studies and reports. This includes the findings of KeyCoNet, a European policy network, which aims to support the use of the Reference Framework in school education. Its publication *'Key Competence Development in Europe - Catalogue of Initiatives'* presents 50 initiatives in European countries in the last years that are closely linked to the European Framework of Key Competences in Europe.²¹ A Eurydice Report from 2012 also looked especially at the use of the Reference Framework in school education, concluding that Member States adopted different approaches to guide and support competence oriented education in schools with a number of countries having developed national strategies to support competence development at least in some of the key competences identified by the European Framework.²²

In vocational education and training, key competences have received increased attention in curricula and standards. While evidence for this is not as strong as in the school education sector, it can be stated that increasingly, countries include basic skills and key competences in their VET offers. According to CEDEFOP, more than 50% of countries have included in 2014 key competences in the level descriptors of their National Qualification Frameworks (NQF²³),

http://eacea.ec.europa.eu/LLp/comenius/comenius_en.php

¹⁹ SWD(2012)371

²⁰ EC/Council (2010). 2010 Joint progress report of the Council and the Commission on the implementation of the Education and Training 2020 work programme, 2010/C 117/01.

²¹ Key Competence Development in Europe. Catalogue of Initiatives, <http://keyconet.eun.org>

²² European Commission/ EACEA/ Eurydice, 2012, Developing Key Competences at School in Europe: Challenges and Opportunities for Policy

²³ The European Qualifications Framework (EQF) is a translation tool that helps communication and comparison between qualifications systems in Europe. Its eight common European reference levels are described in terms of learning outcomes: knowledge, skills and competences. This allows any national qualifications systems, national qualifications frameworks (NQFs) and qualifications in Europe to relate to the EQF levels. Learners, graduates, providers and employers can use these levels to understand and compare qualifications awarded in different countries and by different education and training systems. See https://ec.europa.eu/ploteus/search/site?f%5B0%5D=im_field_entity_type%3A97

which signal that they can be developed in the VET programmes. Including key competences in NQF level descriptors also means embedding, and, eventually, assessing them.²⁴

The Reference Framework has also been used in adult education reforms across Member States. Some examples of adult education guidelines based on the eight competences include the common set of professional knowledge and competences (“socle de connaissances et compétences professionnelles”)²⁵ developed in France since 2014; “White Paper on Programme Planning”²⁶ used by all Volkshochschulen in Vienna, Austria; rural adult literacy programmes in Slovenia; recent reforms in Portugal and Norway.

With its initial focus on upper secondary level education, the Reference Framework was less influential in the area of higher education.

In non-formal learning the Youthpass,²⁷ based on the Reference Framework, is the European tool to improve the recognition of the learning outcomes of young people and youth workers/leaders from their participation in projects supported by the EU Erasmus+/Youth in Action Programme. The Youthpass is also part of a broader European Commission strategy which aims to enhance the recognition of non-formal and informal learning and of youth work in Europe and beyond to facilitate a better match between skills and labour demand, promote the transferability of skills between companies and sectors and help people move around the EU to study and work.

Furthermore, the importance of the key competences in regard to youth work were strengthened in the Council Conclusions²⁸ on the role of youth work in supporting young people's development of essential life skills that facilitate their successful transition to adulthood, active citizenship and working life of May 2017. The Council Conclusions underline the importance to promote and support a cross-sectoral approach in helping young people acquire and develop the necessary competences to facilitate their successful transition to adulthood, active citizenship and working life and to ask to ensure that these Council Conclusions contribute to the review of the Recommendation of Key Competences for Lifelong Learning with a view to strengthening and being consistent with the life skills dimension in the European Framework of Key Competences.

The EU Youth Conference in 2016 concluded in joint recommendations of the Structured Dialogue on Youth and asked EU Institutions and the Member States to develop or further implement evidence based policy and practice that aim to continually improve the skills of young people to critically evaluate and process information through both formal and non-formal education.

However, it is difficult to isolate the role of the Framework from that of many other influential factors, including other international competence frameworks. Most commonly,

²⁴ CEDEFOP (2015) Stronger VET for better lives. Cedefop's monitoring report on vocational education and training policies 2010-14, <http://www.cedefop.europa.eu/en/publications-and-resources/publications/3067>. See also Excerpts from country reports on “Key competences in vocational education and training”, CEDEFOP 2016, <http://www.cedefop.europa.eu/en/publications-and-resources/country-reports/key-competences-in-vet>

²⁵ Journal Officiel de la République Française (2015) Décret n° 2015-172 du 13 février 2015 relatif au socle de connaissances et de compétences professionnelles.

²⁶ Weißbuch Programmplanung (2009) Die Wiener Volkshochschulen GmbH/Institut EDUCON

²⁷ <https://www.youthpass.eu/en/>

²⁸ Council Conclusions on the role of youth work in supporting young people's development of essential life skills that facilitate their successful transition to adulthood, active citizenship and working life - Council Conclusions (22 May 2017) - 8033/17 JEUN 46 EDUC 140 SPORT 23 EMPL 190 SOC 250

evidence indicates that the Reference Framework indirectly influenced on the overarching aims, educational policies, and programmes rather than on the detailed content of legislative and associated curricular changes.²⁹

2.3 Key competences in national competence frameworks

National competence frameworks exist in several Member States, mainly addressing competence development up to secondary education level. They are covering a broad set of key competences relevant to education and training. In the context of the review, a study focused on the following competence frameworks³⁰:

- Estonia – National Curriculum for basic skills, amended in 2014
- Finland – National Core Curriculum for Basic Education 2014
- Belgium (Flanders) – Cross-curricular final objectives in mainstream secondary education
- France – Décret no. 2015-372 du 31 mars 2015 relatif au socle commun de connaissance, de compétence et de culture
- Ireland – Key Skills of Junior Cycle and Senior Cycle Key Skills Framework
- Italy – National Operational Programme 2014-2020 'For the school', competences for learning
- Netherlands – Ons Onderwijs 2032 (January 2016)
- Portugal - Perfil dos alunos à saída da escolaridade obrigatória

A comparative analysis of these national competence frameworks confirms that the European Framework of Key Competences has been used as an inspiration, but that the variety of definitions reflects also the need to adapt competence definitions to national circumstances and the way competence frameworks are supposed to be used.

- The frameworks tend not to distinguish between communication in the mother tongue and in foreign languages, but focus on “communication” in general. Only the Italian framework makes an explicit distinction between the mother tongue and foreign languages. The Dutch framework specifies that the languages which the students should master are Dutch and English.
- The approach to mathematical competence and basic competences in science and technology is surprisingly varied. Whereas some frameworks tend to take a similar approach than the Reference Framework and define a competence in the area of mathematics and science, other look at the languages of mathematics and science.
- With respect to digital competence, several frameworks define a specific 'digital competence' with some variation in the terminology used (digital competence, ICT competence, digital literacy, citizenship and digital creativity). But digital competence is in others also treated as part of the language/communication area. For instance, France includes digital tools under 'Methods and tools for learning', and also takes a

²⁹ 'Final report on a literature review of reforms related to 2006 European Framework of Key Competences for lifelong learning and role of the Framework in these reforms', European Commission, 2017.

³⁰ For more detailed information on the different frameworks see European Commission (2017), Support of the stakeholder Consultation in the context of the Key Competences Review, Report 1: Comparative Analysis of national and international competence frameworks

language approach, including informatics language under 'Languages for thinking and communicating'.

- Learning to learn, or methods and tools for learning, is explicitly included in about half the frameworks. In Finland, learning skills are combined with critical thinking into *multiliteracy*, “the competence to interpret, produce and make a value judgement across a variety of different texts which will help the pupils to understand diverse modes of cultural communication and to build their personal identity”.
- Social and civic competences are largely included in all frameworks, but the terminology used varies a lot. Some countries take a straight-forward approach similar to the EU framework: social and citizen competence (Estonia), personal and citizen development (France), whereas this area in most of the other frameworks is spread over several competences/skills. Generally, the competence covers three main aspects:
 - “*civic*” in the sense of “citizenship”, with concepts such as “participation, involvement and building a sustainable future” (Finland), political-legal society/socio-economic society/socio-cultural society (Flanders), active citizenship (Italy)
 - *social relationships*, including respect for diversity (Italy); empathy, respect, working together, responsibility, considerateness (Flanders), working with others (Ireland), interpersonal relationships (Portugal)
 - *physical and mental well-being*, including “taking care of oneself” (Finland), “managing myself” and “staying well” (Ireland)
- Sense of initiative and entrepreneurship as a separate competence is only present in a few of the frameworks – Estonia, Italy, Finland (in the latter combined with “working life competence”). Initiative is a personal skill covered by the “common trunk” in Flanders, whereas the Irish framework refers to “being personally effective”.
- Cultural awareness and expression is comprehensively covered in all frameworks, except the Irish framework. Again, the terminology and the degree to which this is considered as one competence or several, varies. The Estonian and Finnish frameworks refer to it as “cultural and value competence” and “cultural competence, interaction and self-expression”, respectively. In several frameworks, this is linked to language in the broader sense (languages of the arts, language and culture), and also to representations of the world and human activity (France), and aesthetic and artistic sensibility (Portugal).
- Finally, a specific competence which should be mentioned is financial literacy, which is not part of the Reference Framework. This is covered under the Finnish framework as consumer skills and personal finance skills, while the Italian framework specifically mentions financial literacy.

Transversal elements (such as those described in the original Recommendation) are also present in Member States frameworks. "Critical and creative thinking" is the most pervasive of these. It is explicitly mentioned as a skill or competence in the frameworks of Ireland, Netherlands and Portugal, but is generally covered in most of the frameworks (for instance in relation to learning to learn). "Reasoning" and "problem solving" are similarly quite widely included. "Self-management" in various forms is also included in several frameworks, either as a separate skill or as part of social and civic competences. The Dutch framework includes "cooperation" as an interdisciplinary skill, but this aspect is also covered under social and civic competences in several frameworks. "Initiative" may also be seen as a transversal element which may or may not be linked directly to entrepreneurship.

The following table provides an overview of the different definitions of key competences in national frameworks; the analysis of the variety of definitions at national level also impacted on the results of the review of key competences.

Comparison of Member States frameworks with the Key Competences Framework

Key Competences Framework	Estonia	Finland	Flanders	France	Ireland	Italy	Netherlands	Portugal
Communication in the mother tongue	Communication competence	Not explicitly covered	Common trunk (communicative ability), but otherwise not explicitly covered	Languages for thinking and communicating	Communicating (junior and senior cycle) Information processing (senior cycle)	Basic competences – communication in the mother tongue	Language skills (Dutch)	Languages and texts Information and communication
Communication in foreign languages	Communication competence	Not explicitly covered	Common trunk (communicative ability), but otherwise not explicitly covered	Languages for thinking and communicating	Not explicitly covered (possibly integrated in the same categories as comm. in mother tongue)	Basic competences – communication in foreign languages	Language skills (English)	Languages and texts
Mathematical competence and basic competences in science and technology	Mathematics, natural sciences and technology competence	Not explicitly covered	Not explicitly covered	Natural and technical systems Languages for thinking and communicating (mathematical, scientific and informatics languages)	Communicating (junior cycle – using numbers and data), but otherwise not explicitly covered	Basic competences – mathematics Basic competences – scientific field	Numeracy Science	Languages and texts Technical knowledge and technology
Digital competence	Digital competence	ICT competence	Not explicitly covered	Methods and tools for learning (digital tools)	Communicating (junior cycle – using digital techn. to communicate)	Citizenship and digital creativity	Digital literacy	Information and communication

Key Competences Framework	Estonia	Finland	Flanders	France	Ireland	Italy	Netherlands	Portugal
					Managing information (junior cycle) Information processing (senior cycle)			
Learning to learn	Learning to learn competence	Thinking and learning to learn Multiliteracy (critical thinking and learning skills)	Common trunk (incl. perseverance, explore, open and constructive attitude) Learning to learn	Methods and tools for learning	Being creative (junior cycle) Managing information and thinking (junior cycle) Being personally effective (senior cycle)	Not explicitly covered	Not explicitly covered	Autonomy and personal development
Social and civic competences	Social and citizen competence	Participation, involvement and building a sustainable future Taking care of oneself and managing daily life (incl. well-being, health and safety)	Common trunk (incl. empathy, respect, working together, responsibility, considerateness) Physical health and safety Mental health Socio-relational development Political-legal society	Personal and citizen development	Managing myself (junior cycle) Staying well (junior cycle) Working with others (junior and senior cycle)	Global citizenship – Wellbeing, correct lifestyle and sport Global citizenship – civics, respect for diversity and active citizenship	Social studies Citizenship	Interpersonal relationships Well-being and health

Key Competences Framework	Estonia	Finland	Flanders	France	Ireland	Italy	Netherlands	Portugal
			Socio-economic society Socio-cultural society					
Sense of initiative and entrepreneurship	Entrepreneurship competence	Working life competence and entrepreneurship	Common trunk (initiative)	Not explicitly covered	Being personally effective (senior cycle – initiative)	Entrepreneurship education		
Cultural awareness and expression	Cultural and value competence	Cultural competence, interaction and self-expression	Socio-relational development (cultural and artistic manifestations)	Languages for thinking and communicating (languages of the arts) Representations of the world and human activity	Not explicitly covered	European citizenship Cultural, artistic and landscape heritage Integration and hospitality	Language and culture	Languages and texts Aesthetic and artistic sensibility
Other competences/ skills	Self-management competence	Taking care of oneself and managing daily life (incl. using technology responsibly; consumer and personal finance skills) Working life competence	Common trunk Political-legal society Socio-economic society Socio-cultural society		Critical and creative thinking (senior cycle)	Global citizenship: Food education and territory Environmental education Economic citizenship (economic, consumer, financial literacy)	Interdisciplinary skills: Creativity Critical thinking Problem solving Cooperation	Reasoning and problem solving Critical thinking and creative thinking Awareness and control of the body

2.4 National strategies or reforms in education influenced by the European Framework of Key Competences for Lifelong Learning

While not all Member States developed national competence frameworks, most Member States have national strategies or large-scale initiatives to especially promote some of the key competences. In 2011/2012 nearly all Member States had a strategy to promote digital competence, but also literacy, science and entrepreneurship competences were strongly supported by targeted initiatives or strategies in Member States.³¹

Examples for national reforms inspired by the Recommendation on Key Competences for Lifelong Learning are almost solely found within the school and VET sectors. Comparable reforms in adult education and in higher education are largely missing.

The European Reference Framework contributed to the development of a 'quality threshold'.³² The following examples illustrate this; Member States used the European Reference Framework explicitly as a resource and reference for initiatives or reforms:

- The state educational programmes in Slovakia refer to the European Framework and the framework also directly influenced two key policies in Slovakia: Curricular reform in regional schooling introduced by the Education Act (245/2008); and Lifelong learning strategies adopted by the government between 2007 and 2011.
- Spain's Organic Act on Education 2/2006 (LOE) was also influenced by the Framework. The term 'basic competence' was first introduced in the Act, and was defined in line with the text used in the Council's Recommendation on Key Competences.
- In Poland, the Strategy for the Development of Education in the years 2007 – 2013 envisaged curriculum changes with more emphasis on the development of key competences, implemented in 2009.
- Belgium (Flanders)'s cross-curricular final objectives for mainstream secondary education which was implemented in 2010 was also inspired by the EU Key Competences Framework.

With regard to VET there are references to key competences in a range of recent reforms in Member States. Overall, there seems to be increasing attention to career management skills in VET to empower young people to make informed decisions and ease transition to the labour market; more than 20 countries reported adjustments or new initiatives to introduce career management skills in curricula, standards and qualifications. Also, entrepreneurship competence seems to be at the core of key competence development in VET.³³ The following table provides an overview covering a selected number of countries.

³¹ European Commission/ EACEA/ Eurydice, 2012, Developing Key Competences at School in Europe: Challenges and Opportunities for Policy, p.14

³² European Commission (2017), Support of the stakeholder Consultation in the context of the Key Competences Review, Report 1: Comparative Analysis of national and international competence frameworks, p.8.

³³ CEDEFOP (2016), Key competences in Vocational Education and Training

Key competences in vocational education and training³⁴

Member State	Highlights of Key Competences in VET
Estonia	Key competences are defined as general education studies within VET. The key competences that are essential to each programme (speciality) in VET are described in national VET curricula as modules. For example, language and literature, mathematics, foreign language, natural science subjects, social subjects, and entrepreneurship are all separate modules within the VET curricula. The key competences that are integrated in all vocational specialties are: learning to learn, digital competence, civic competence, sense of initiative and entrepreneurship and cultural awareness. The volume of key competences varies by VET programme.
Finland	Key competences for lifelong learning have been fully taken into consideration in upper secondary VET provision. Upper-secondary VET is made of three components: vocational units, common units and free-choice units. Key competences have been nationally adapted and included in the common units which can be divided into four categories that are compulsory for all VET programmes. The common units are: communication and interaction competence, mathematical and natural science competence, social and labour market competence, and social and cultural competence. The competences are included in the objectives of core subjects and the requirements of vocational qualification modules and their assessment criteria.
Belgium	In Belgium, key competences are central to compulsory education from age 6 to 18, including initial VET. Most of the key competences have been taken into consideration in upper secondary VET provision with the exception of learning to learn, and cultural awareness and expression. In general, learning to learn is seldom taken into account in education policies in Belgium. Cultural awareness and expression competences are not promoted in upper secondary VET in Belgium.
France	VET programmes consist of vocational and general (e.g. French, history, geography and civic education, mathematics, a modern foreign language, etc.) courses. The key competences are included in the general courses that are defined (syllabi) and examined nationally. All of the eight key competences have been taken into consideration in upper secondary VET provision.

³⁴ Source: CEDEFOP (2016) Excerpts from country reports on “Key competences in vocational education and training”, <http://www.cedefop.europa.eu/en/publications-and-resources/country-reports/key-competences-in-vet>

Member State	Highlights of Key Competences in VET
Ireland	The role of key competences in education and training in Ireland is not confined to the VET sector alone. All legislation and policy documents deal with key competences across a range of levels and programme types (e.g. NFQ levels and VET, general or mixed programmes). As a result, the role of key competences in VET programmes is implicit rather than explicit: because many of the qualifications awarded to those completing further education and training programmes call for minimum achievement in most of the eight key competences, the courses will inevitably include at least some of the key competences.
The Netherlands	All eight key competences can be found in the initial VET curricula, albeit not under a separate heading or in a standardised form. Since 2012, English and math have been compulsory subjects in VET at level 4 [the highest of the four qualification levels], even if they are not a part of occupational profile. Competences in science and technology are included only if mastering of these subjects is required by the occupational standards (national qualifications framework). The same is true for digital competence. VET law states that vocational training has to support occupational career, citizenship and further learning, hence, learning-to-learn and interpersonal, intercultural and social competences as well as civic competence are compulsory elements of all VET curricula since the 1996 VET law. Entrepreneurship is also promoted in VET but it is compulsory only for some VET programmes, for example in retail. Cultural expression is not a compulsory subject in VET, except for programmes preparing for occupations in the cultural sector (for example, design, artist, audio-visual productions).
Portugal	Most key competences, as defined in the 2006 EU framework, are implicitly present in VET curricula. Mother tongue, foreign languages, maths, science, technology, digital competences are called differently. Other competences such as learning to learn, social and civic competences, entrepreneurship, and cultural awareness and expression may be considered as partially included in curricula of some VET programmes, especially those for young people. Upper secondary VET for young people lack national regulations with clear rules for implementation of the eight key competences. Nevertheless, most of them are developed through the subjects. Key competences for adults in upper secondary VET are also part of the curricula. However, they do not include all eight key competences.

2.5 Comparison of other international frameworks

There is a range of international competence frameworks which provide additional insight in the concepts of competences and ways to define them.

A comparison of these competence frameworks demonstrates some common features: All competence frameworks refer to the need to adapt to change, to deal with complexity and to respond to fast changing digital and technological environments. They highlight changing competences needs in future and supporting the development of these competences is the main starting point and justification for the frameworks.

All frameworks combine a set of different competences, partly within a limited thematic focus or for a specific target group. They all go beyond cognitive skills and emphasise non-cognitive skills, attitudes or values. The latter are regarded as having a positive effect on e.g. employment outcomes and, at the same time, can be formed by education, training and learning³⁵. Using different terminology, they all define knowledge, skills and attitudes as key elements of a competence. Also, the so-called transversal skills, such as critical thinking, creativity and problem solving, feature prominently in all competence frameworks.

The main difference between the cited frameworks can be seen in the fact that some of them address a limited range of competences and do not aim to form a comprehensive basis for curriculum development in education and training. This leads to different approaches in structuring the competence frameworks and with emphasising certain skills or attitudes.

Among the most known international competence frameworks are:

- The **OECD Key Competencies (DeSeCo)**³⁶ framework which focuses on three very broad categories of competences: using tools interactively, interacting in heterogeneous groups and acting autonomously. While not defining cognitive skills or knowledge, it highlights reflective thoughts and actions.
- The **OECD Global Competency**³⁷ framework from 2016 which goes beyond the DeSeCo approach by looking at knowledge and understanding of global and intercultural issues, skills (analytical and critical thinking, ability to interact respectfully, empathy and flexibility) and attitudes (openness, respect for cultural otherness, global mindedness and responsibility). It aims to provide a starting point for the PISA 2018 assessment which aims to add 'global competence' to literacy, mathematical and science competences.
- The **P21 framework** (Partnership for 21st century learning)³⁸, is a US framework which aims to describe in a comprehensive manner the skills, knowledge and expertise students must master in work and life. It divides competences in 'key subjects and 21st century themes', 'learning and innovation skills', 'information, media and technology

³⁵ Cognitive skills are defined as the ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought. Non-cognitive skills are rather seen as patterns of thought, feelings and behaviours that are socially determined and can be developed throughout the lifetime. Non-cognitive skills comprise personal traits, attitudes and motivations. UNESCO (2016), Background paper prepared for the 2016 Global Education Monitoring Report, Education for people and planet: Creating sustainable futures for all. Non-cognitive skills: Definitions, measurement and malleability, p. 2.

³⁶ www.oecd.org/pisa/35070367.pdf

³⁷ OECD: Global competency for an inclusive world, 2016

³⁸ www.p21.org/our-work/p21-framework The Partnership for 21st Century Skills is a public-private organisation and members are among others big IT companies such as Apple, CISCO, Microsoft and Dell. The US Department for Education is a partner of the organisation.

skills', and 'life and career skills'. Its ambition might be closest to the European Framework of Key Competences for Lifelong Learning, trying to define a basis for curriculum development especially in school education. The presentation of the P21 Framework is also combined with the presentation of a wide range of tools and guidebooks to help its use by policy makers, teachers and parents.

- The **World Economic Forum** framework³⁹ which is clearly targeted at the skills needed in a future labour market – “the 21st century marketplace”. It looks at 'foundational literacies' such as literacy, numeracy, and ICT, at competencies such as critical thinking and creativity, and at 'character qualities' such as curiosity and initiative.
- The **Council of Europe Competences for Democratic Culture**⁴⁰ which focuses on competences needed to participate effectively in a culture of democracy, and to live peacefully together with others in culturally diverse democratic societies. It describes values, attitudes, skills and knowledge and critical understanding, covering a wide range of intercultural, civic, social and transversal competences.
- The **UNESCO Intercultural Competences Framework**⁴¹ which assesses the competences needed to live in a globalised world. Intercultural competences are communicative competences (language, dialogue, non-verbal behaviour) and cultural competences (identity, values, attitudes and beliefs). The framework underlines that none of the competences can stand alone, but must be considered in relation to one another.
- The **UNESCO Global Framework of Learning Domains**⁴² which was developed 2012/2013 by an international working group aiming to define the competences all children and young people need. In its design it covers early childhood education, primary and post-primary education; more specialised competences in secondary education are excluded. Being strongly linked to the Sustainable Development Goals, the framework tries to form the basis for developing 'learning indicators for global tracking'. They are supposed to measure fundamental learning opportunities applicable to all countries worldwide. Equity in access to learning and assessment of learning outcomes play a key role in this context.

Currently, the OECD is implementing a project on **Future of Education and Skills Education 2030** which focuses on developing a new international Conceptual Learning Framework on key competences, building on the DeSeCo framework. This new Framework shall define knowledge, skills, attitudes and values for the three transformative competences (Creating new value; Taking responsibility; Coping with tensions and dilemmas) which OECD regards as essential in 2030. It will focus on secondary school education only.

Going beyond the concept of 'competence frameworks', UNESCO published in 2014 'Guiding Principles for Learning in the Twenty-first Century'.⁴³ These guiding principles address a

³⁹ World Economic Form and Boston Consulting Group, New Vision for Education: Unlocking the potential of Technology, 2015

⁴⁰ Council of Europe, Competences for Democratic Culture: Living together as equals in culturally diverse societies, 2016

⁴¹ <http://unesdoc.unesco.org/images/0021/002197/219768e.pdf>

⁴² UNESCO, Centre for Universal Education at Brookings, Towards Universal Learning. Recommendations from the Learning Matrix Task Force, September 2013

⁴³ UNESCO International Bureau of Education, Guiding Principle for Learning in the Twenty-first Century, [Guiding Principle for Learning in the Twenty-first Century](#), Geneva 2014

range of competences and attitudes which are partly also tackled throughout the competence frameworks mentioned above: academic honesty, information literacy, critical thinking, creativity, STEM (science, technology, engineering and mathematics) learning, concepts-focused learning, health and mindfulness, service learning, learning support, assessment. Focus of the guiding principles is not so much on the definition of the competence, but rather on the approach to help children and young people to acquire these competences. They can support the definition of learning outcomes.

The following table provides an overview of competence definitions in the mentioned international competence frameworks.

Comparison of international frameworks with the Key Competences Framework⁴⁴

Key Competences Framework	OECD Key Competencies	OECD Global Competency	Council of Europe Competences for Democratic Culture	WEF 21 st Century Skills	P21 Partnership for 21 st century learning	UNESCO Intercultural Competences. Conceptual and Operational Framework. ⁴⁵	UNESCO Global Framework of Learning Domains
Communication in the mother tongue	Ability to use language, symbols and texts interactively	Ability to interact respectfully, appropriately and effectively	Linguistic, communicative and plurilingual skills Knowledge and critical understanding of language and communication	Literacy Communication	Key subjects: English, world languages, arts, mathematics, economics, science, geography, history, government and civics. Communication and collaboration	Communicative competence Language	Literacy and languages
Communication in foreign	Ability to use language,	Ability to interact respectfully,	Linguistic, communicative	Literacy	English, world languages, arts,	Communicative competence	Literacy and

⁴⁴ European Commission (2017), Support of the stakeholder Consultation in the context of the Key Competences Review, Report 1: Comparative Analysis of national and international competence frameworks, p. 17

⁴⁵ The UNESCO Intercultural Competences Framework provides two broad sets of competences, culture and communication. Each set of competences are made up of several concepts. These concepts do not stand alone, rather they should be understood in relation to one another. In the table, we attempted to place as many of the concepts as possible.

Key Competences Framework	OECD Key Competencies	OECD Global Competency	Council of Europe Competences for Democratic Culture	WEF 21 st Century Skills	P21 Partnership for 21 st century learning	UNESCO Intercultural Competences. Conceptual and Operational Framework. 45	UNESCO Global Framework of Learning Domains
languages	symbols and texts interactively	appropriately and effectively	and plurilingual skills Knowledge and critical understanding of language and communication	Communication	mathematics, economics, science, geography, government and civics. Communication and collaboration	Language	languages
Mathematical competence and basic competences in science and technology	Ability to use technology interactively	-	-	Numeracy Scientific literacy	English, world languages, arts, mathematics, economics, science, geography, history, government and civics.	-	Numeracy and mathematics Science and technology
Digital competence	Ability to use technology interactively	-	-	ICT Literacy	Information literacy, Media Literacy, ICT Literacy	-	-

Key Competences Framework	OECD Key Competencies	OECD Global Competency	Council of Europe Competences for Democratic Culture	WEF 21 st Century Skills	P21 Partnership for 21 st century learning	UNESCO Intercultural Competences. Conceptual and Operational Framework. 45	UNESCO Global Framework of Learning Domains
Learning to learn	Ability to use knowledge and information interactively	Analytical and critical thinking	Autonomous learning skills Analytical and critical thinking skills	Critical thinking/problem solving	Critical thinking and problem solving	-	Learning approaches and cognition
Social and civic competences	Ability to relate well to others The ability to co-operate and work in teams The ability to manage and resolve conflicts The ability to defend and assert rights, interests, limits and needs	Knowledge and understanding of global issues Ability to interact respectfully, appropriately and effectively Global-mindedness	Co-operation skills Conflict-resolution skills Valuing democracy, justice, fairness, equality and the rule of law Civic-mindedness Knowledge and critical understanding of the world	Cultural and civic literacy Social and cultural awareness Collaboration	Key subjects: English, world languages, arts, mathematics, economics, science, geography, history, government and civics. Global awareness Civic Literacy Communication and collaboration Social and cross-cultural	Dialogue	Social and emotional Physical well being

Key Competences Framework	OECD Key Competencies	OECD Global Competency	Council of Europe Competences for Democratic Culture	WEF 21 st Century Skills	P21 Partnership for 21 st century learning	UNESCO Intercultural Competences. Conceptual and Operational Framework. 45	UNESCO Global Framework of Learning Domains
					skills		
Sense of initiative and entrepreneurship	Ability to form and conduct life plans and personal projects	-	Self-efficacy	Creativity Leadership	Financial, Economic, Business and Entrepreneurial Literacy Creativity and innovation Initiative and self-direction Leadership and responsibility	Creativity	-
Cultural awareness and expression	-	Intercultural knowledge and understanding Openness towards people from other cultures Respect for cultural otherness	Valuing cultural diversity Openness to cultural otherness and to other beliefs, world views and practices Knowledge and	Curiosity Social and cultural awareness	Social and cross-cultural skills	Intercultural citizenship Intercultural competences Intercultural dialogue Intercultural literacy	Culture and the arts

Key Competences Framework	OECD Key Competencies	OECD Global Competency	Council of Europe Competences for Democratic Culture	WEF 21 st Century Skills	P21 Partnership for 21 st century learning	UNESCO Intercultural Competences. Conceptual and Operational Framework. 45	UNESCO Global Framework of Learning Domains
			critical understanding of the world			Cultural shifting: The cognitive and behavioural capacity of an interculturally competent person to shift or switch language, behaviour or gestures.	
Other competences/skills	The ability to act within the big picture	Empathy Flexibility Responsibility	Flexibility and adaptability Empathy Responsibility Respect Skills of listening and observing Valuing human dignity and	Financial literacy Persistence/grit Adaptability	Financial, Economic, Business and Entrepreneurial Literacy Health Literacy Environmental Literacy Flexibility and adaptability	Values, beliefs and attitudes. Reflexivity: Ability to step outside one's own experiences to reflect consciously upon them, considering what is happening, what it means, and how	

Key Competences Framework	OECD Key Competencies	OECD Global Competency	Council of Europe Competences for Democratic Culture	WEF 21 st Century Skills	P21 Partnership for 21 st century learning	UNESCO Intercultural Competences. Conceptual and Operational Framework. ⁴⁵	UNESCO Global Framework of Learning Domains
			human rights Tolerance of ambiguity Knowledge and critical understanding of the self		Productivity and accountability Leadership and responsibility	to respond. Liquidity: a state of near constant change, with consequences for the ability of individuals to cope with change.	

3. Results from the stakeholder consultation

In 2016, the Commission initiated a broad consultation process on the review of the Recommendation on Key Competences for Lifelong Learning. Starting with the Education, Training and Youth Forum in October 2016, a series of dedicated consultation meetings and expert seminars have been held. The review was broadly discussed with Member States representatives in the ET 2020 High Level Group meeting, the meetings of Director Generals for school education, vocational education and training, and higher education as well as the Advisory Committee for Vocational Education and Training, the Cultural Affairs Committee and the Youthpass advisory group meeting.⁴⁶

The consultation process was concluded with a conference on the Key Competences Review which took place in Brussels on 14 June 2017. Main findings of this process were that there is both a need for supporting the use of the European Reference Framework for Key Competences and to update parts of it in order to make sure that it remains a relevant policy tool. Another important conclusion was to strengthen its relevance also for vocational education and training, higher education, adult learning and non-formal learning in a lifelong learning perspective.

This chapter summarises the key findings of the consultation process. A complete report on the consultation process can be found on the consultation website.⁴⁷

3.1 Public on-line consultation

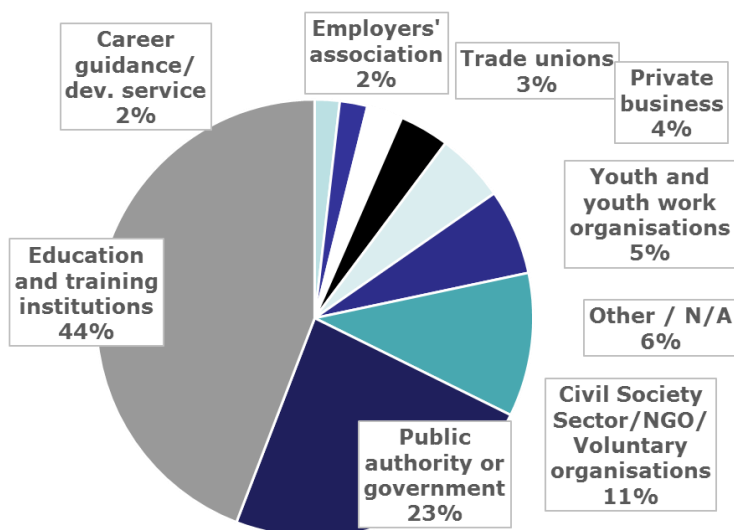
An online public consultation was open from 22 February till 19 May 2017 resulting in almost 500 responses and 69 position papers. Contributions to the public consultation show a good coverage of education ministries and a broad range of non-governmental stakeholders. Out of the 489 respondents, 69% answered the questionnaire in their personal capacity, while 31% answered on behalf of an organisation.⁴⁸

⁴⁶ Meetings included: ET 2020 High Level Group on Education meeting (Bratislava, June 2016), ETY Forum consultation (Brussels, October 2016), Expert seminar of the revision of the Key Competence Framework (Brussels, November 2016), Cultural Affairs Committee (Brussels, November 2016), ET 2020 High Level Group on Education meeting (Malta, November 2016), ET 2020 Working Group on Citizenship Education (Brussels, November 2016), ET 2020 Directors General Schools Meeting (Bratislava, December 2016), Youthpass advisory group meeting (Brussels, February 2017), two meetings with expert on foresight as part of Study: Prospective Platform – Key Competences for the next generation (Brussels, February and April 2017), Directors General HE meeting (March, 2017), Advisory Committee on VET meeting - covers both VET and Adult learning (April, 2017), Conference of EU policy networks in the field of school education (Brussels, April 2017), Directors General Schools Meeting (Malta, April 2017), Directors General VET meeting - covers both VET and Adult learning (May, 2017), and Conference on the Key Competence Framework (Brussels, 14 June 2017).

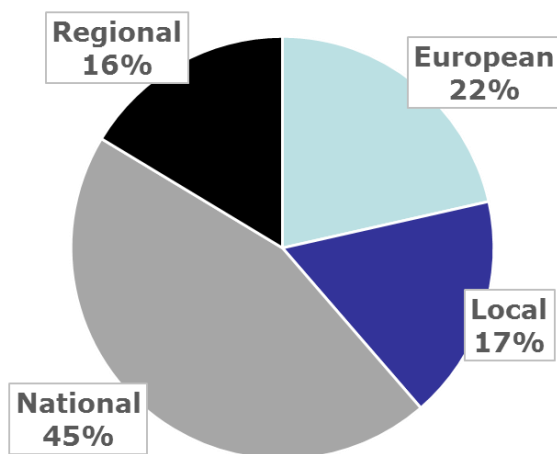
⁴⁷ https://ec.europa.eu/education/consultations/lifelong-learning-key-competences-2017_en

⁴⁸ However, in Spain and Italy 81% and 89%, respectively, answered in their personal capacity, while for the other countries almost half of the respondents replied on behalf of an organisation. The geographical spread of the respondents showed overall a high response rate from Spain and Italy; the two countries are home to almost half of the respondents, most of them answering in their personal capacity. Another large group is Belgium with 12% of the responses, most likely due to many organisations having their offices there. The rest are divided unevenly among the remaining Member States and EEA countries with strong participation also from Ireland, France, and Portugal. These imbalances have been taken into account when analysing the responses.

Data on the background and main area of activity indicate the high level of expertise in the field with most respondents working in the area of education, training and learning. 87% of respondents stated that their main area of activity was education and training, including non-formal learning and informal learning. Only 5% indicated that their main area was employment, while 8% answered “other”.



44% of the respondents work in education and training institutions, while 24% work for a public authority or government and 11% in NGOs. All geographical levels were represented in the survey – from local to European. The biggest group were those at the national level (45%).



Previous experiences with the European Reference Framework

Almost 90% of respondents knew about the Reference Framework before the survey, and most (85%) knew it as an EU level instrument. A little more than half of the respondents (52%) had come into contact with the Reference Framework at work, 22% during education or training, and 7% in the context of youth work.

Two-thirds (67%) had used the framework in their daily work life, and out of these 59% felt it added value to their work or life. However, 36% did not respond to this question. Just over a

quarter (26%) of the respondents indicated that it had been “a useful guidance tool”, 15% felt it had supported curriculum development, and 11% indicated that it had supported teaching.

Position Papers

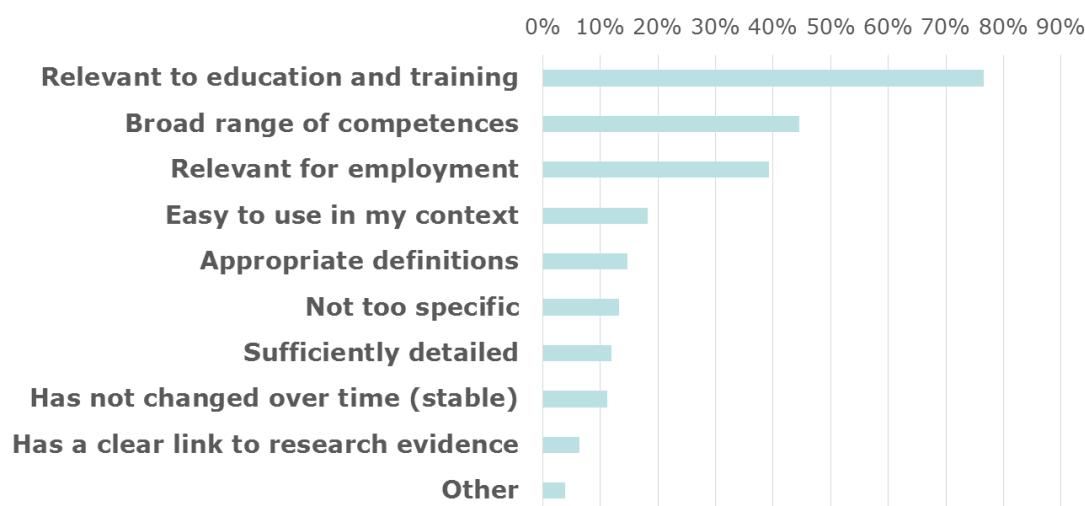
The on-line consultation also allowed for the submission of position papers. 19 position papers were submitted by public authorities including 5 national ministries for education and 6 governmental agencies in the areas of education, training, guidance and qualifications. Other position papers were submitted by civil society organisations, education and training institutions, professional organisation or individuals.

3.2. Main findings during the consultation process

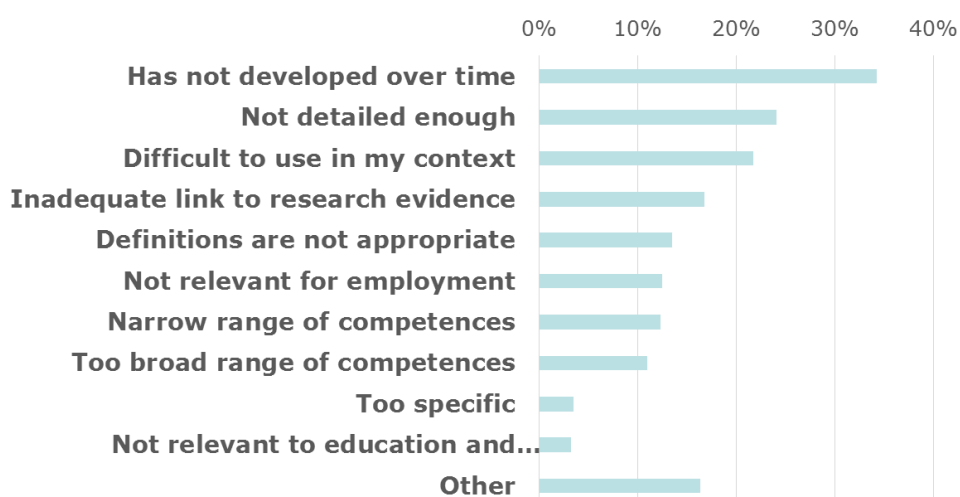
There was general agreement among participants in the consultation process that the European Key Competences Framework has been a useful guidance tool in education, training and youth work, with most take up in the school sector, where it supported and inspired curriculum developments and reforms.

The results from the on-line consultation also showed some shortcomings with less than 20% of the respondents answering that the Reference Framework was easy to use in their context.

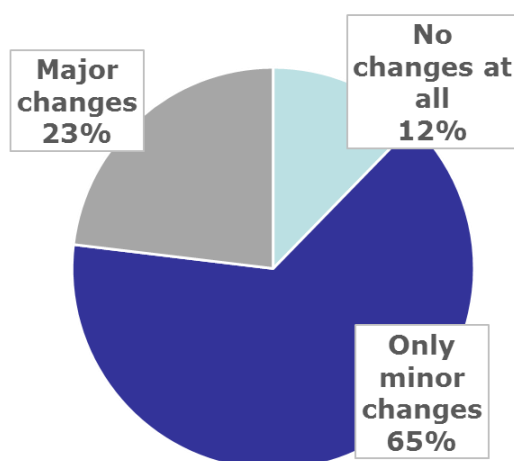
What are the main strengths of the current Framework as a whole?



What are the main weaknesses of the current Framework as a whole?



Need for change



Two thirds of the participants in the on-line consultation indicated that the European Reference Framework needed only minor changes, and these were mainly in relation to either addition of competences currently missing in the Framework or changes to definitions of individual competences, rather than changes to the structure of the Framework.

Many contributors stressed the importance of having a reference framework for all education and training sectors – including non-formal and informal learning – and the need to focus on the life-long learning perspective. They also underlined the need to put more emphasis on transversal skills throughout the Reference Framework.

Furthermore, contributors pointed to a need for more alignment and synergies with other international frameworks, particularly the competence frameworks of the OECD and the Council of Europe, as well as the UNESCO global citizenship education and the UN Sustainable Development Goals.

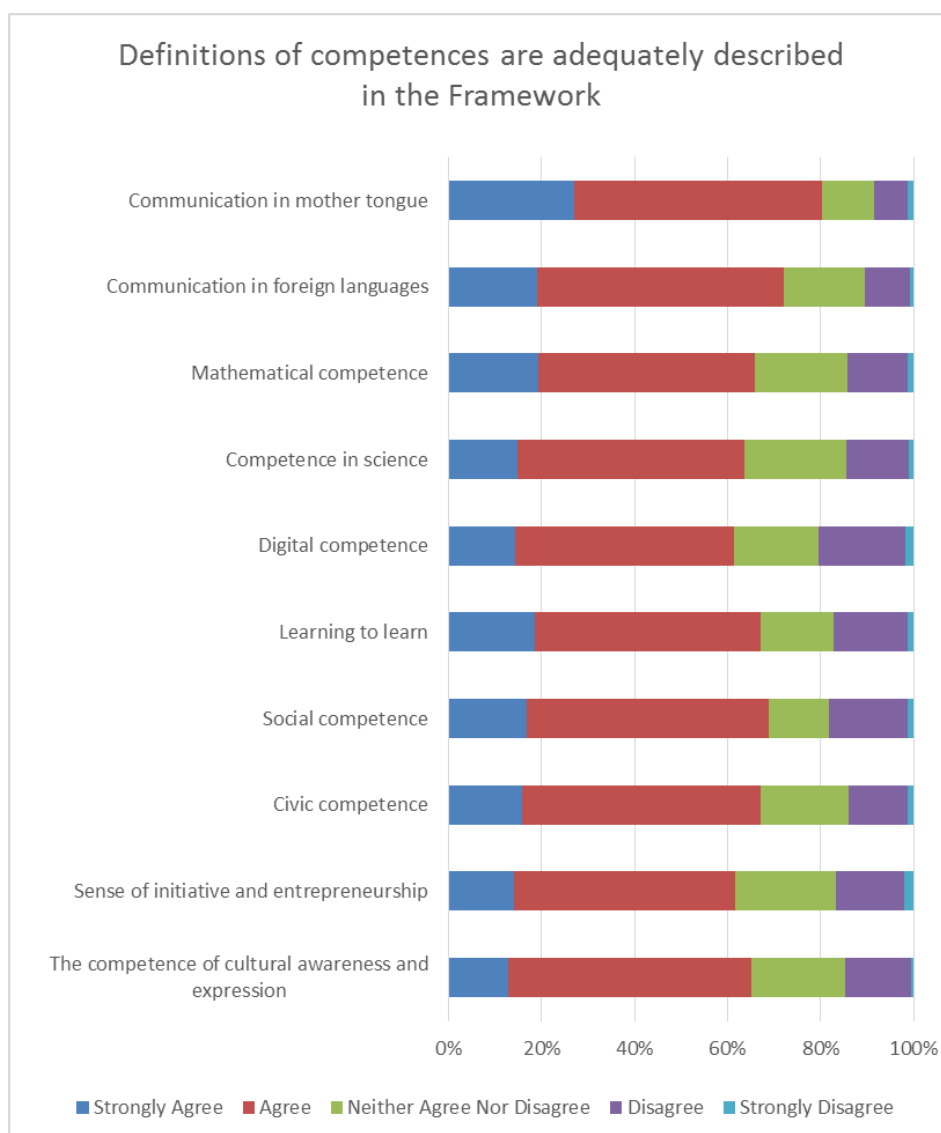
Making the Key Competences approach more operational

For supporting the future use of the Reference Framework, contributors highlighted the following themes:

- Developing detailed reference frameworks – namely for competences that needed more explanation, such as personal and social, civic, and cultural awareness and expression;
- Developing guidelines to support competence based teaching and learning in educational practice. This in particular refers to support for teachers in delivering competence based teaching and ways of organizing learning;
- Assessment – developing practices to assess key competences that may not necessarily correspond to established individual subjects such as those currently covered by the PISA measurements; and
- Mutual learning and collaboration between policy makers and practitioners on the use of the key competence approaches in education, training and learning.

3.3 Findings per key competence

Most participants in the online consultation found that the competence definitions are still relevant and adequate. Analysing the position papers as well as the findings during the consultation meetings alters this first impression of an overall agreement. Here participants outlined more precisely the points that require change or adaption to new terminology.



Communication competences

The communication competences cover two of the current framework's competences: **communication in the mother tongue** and **communication in foreign languages**. In the on-line consultation, a high proportion of survey respondents agreed with the current definitions of the competences (80% for mother tongue, 72% for foreign languages).

However, an issue that came up frequently during the consultation process was whether the distinction between the two competences should be re-considered. Input papers and statements during consultation events pointed especially to the ambiguity of the concepts of "mother tongue" and "foreign language" in view of increased mobility, migration, and bi- or multilingualism in families across Europe. Participants also stressed that multilingualism and cultural diversity were important issues that should be considered in the new reference framework.

In addition, stronger focus should be put on literacy and on language development overall. This may include taking a broader perspective of what, nowadays, constitutes competence in languages, considering specialised or academic language or developments in digital communication.

Mathematical competence and basic competences in science and technology

With respect to mathematical competence, 66% of the survey respondents agreed that the current definition was adequate. 64% agreed also with the current definition of the science and technology competences.

Input papers and other consultation events pointed especially to the need to stress sustainability issues, and to strengthen the environmental sustainability and sustainable development dimension across competences (science and technology, civic, social and personal development, entrepreneurship). Several position papers also called for more prominence to STEM-related competences in general.

Digital competence

The respondents in the public consultation felt the definition of digital competence and its related knowledge, skills and attitudes was in need of an update. Only 61% felt that the current definition was adequate. More than two-thirds thought that the definition should be aligned with the European Digital Competence Framework (DigComp). Input papers and other consultation events also stressed the need for alignment with DigComp, and to emphasise digital media literacy and critical thinking.

Learning to learn

Learning to learn is seen as a competence in its own right but many participants also focused on learning to learn as a transversal element that is linked to all the other competences. Two thirds of the survey respondents agreed that the current definition of learning to learn was adequate. Input papers and other consultation events point especially to personal development, critical thinking, interpersonal skills, career management skills and 'learning to learn' for lifelong learning as important issues to be taken on board.

Social and civic competence

Social and civic competences are grouped together as one competence in the current framework; many stakeholders felt that this competence area was quite broad. In the survey, more than two thirds of respondents agreed that the current definition of social competence and of civic competence were both adequate. However, only 40% agreed that European values were adequately presented in the definition.

Many stakeholders pointed out during the consultation process that the global and intercultural dimension should be strengthened in the new reference framework. The civic competence received a lot of attention with a high number of input papers, and there is clearly a need for this competence to gain more prominence in the new framework. Input papers and other consultation events referred to the Paris Declaration and the Council of Europe and UNESCO Frameworks as sources of inspiration. There were also comments about the need to strengthen critical thinking, active democratic participation and sustainable development.

Sense of initiative & entrepreneurship

Along with digital competence, the entrepreneurship competence had the lowest proportion of survey respondents that agreed that the current definition was adequate (62%), and a small majority agreed that the definition should be aligned with the European Entrepreneurship Competence Framework, EntreComp. Input papers stressed the need for aligning the new framework with EntreComp, as well as the importance of innovation, creativity, risk-taking, teamwork, and of using the term entrepreneurship in its broader sense, i.e. not just focusing on commercial entrepreneurship.

Cultural awareness and expression

As for most of the other competences, two thirds of the survey respondents agreed that the current definition was adequate, but only 55% agreed that the definition adequately reflected the development of different cultural ideas, values and forms and the diverse range of media. Input papers and other consultation events pointed to the outcomes of the Working group on cultural awareness and expression (2014-2015) and the Council Conclusions on a Work Plan for Culture (2015-2018), as well as the need to include modern (including digital) forms of cultural expression, inter-cultural awareness, and the global perspective.

Transversal elements

All of the consultation activities generally pointed to the need to strengthen transversal elements. In the survey, 72% agreed that skills such as critical thinking, decision-making and problem solving should be more prominent in the new framework. In fact, throughout the various consultation activities, critical thinking was strongly emphasised as perhaps the most important skill that should be prominent across the new framework.

Sustainability was a theme raised by many stakeholders as an aspect that is currently missing; they felt it could be included as an element in several of the existing competences, or even as new competence area. Other separate elements that came up multiple times included career management, financial literacy, and physical literacy.

4. The proposal for a Recommendation on Key Competences for Lifelong learning

According to the main findings of the consultation process, future work on the concept of Key Competences for Lifelong Learning needs to focus on the following elements:

- Supporting learners of all ages and in all education and training sectors, including non-formal and informal learning, better in developing key competences for lifelong learning;
- Up-dating the Reference Framework to current and future needs to make sure that people can develop the competences they need;
- Outlining measures to promote competence-oriented education, training and learning in lifelong learning perspective, namely by creation of suitable learning environments, support for teachers and other educational staff, and assessment and validation of competence development.

During the review it was also highlighted that the scope of the Recommendation needs to span clearly from early childhood education and care to adult education, reflecting the need to support competence development in a lifelong learning perspective. This chapter summarises the key elements of the proposal for a Council Recommendation on Key Competences for Lifelong Learning.

4.1 Recommendations to Member States and Commission

The recommendations to Member States and Commission focus on initiatives and actions needed to strengthen competence-oriented education, training and learning and to support learners in their competence development throughout their lives. They are based on the results of the public consultation and recent studies and literature reviews. They are written with a clear understanding of the variety of situations in Member States and in different education, training and learning settings. While some Member States work since years with own national competence frameworks, others are currently developing or up-dating such frameworks.

Overall, Member States are asked to support the right to quality and inclusive education, training and lifelong learning and to reinforce opportunities for the development of key competences and basic skills for all. Challenges exist especially with regard to the lifelong learning perspective and the support of disadvantaged learners. Development of key competences needs to start at early age and to continue throughout life. Measures to improve competence development need to reach all learners, independently from their background and individual capacities.

The Recommendation maintains the concept of a broad set of key competences needed for personal fulfilment, employability and social inclusion. It also refers explicitly to the need to increase the level of achievement of basic skills (literacy, numeracy and basic digital skills) both as a basis for further learning and to reinforce competence development in other areas. Research shows that increasing basic skills and increasing competence levels overall are mutually reinforcing processes; moreover, countries which have competence oriented education, training and learning in place perform better in basic skills⁴⁹. It furthermore recommends that Member States pay special attention to fostering the acquisition of

⁴⁹ OECD (2016), PISA results 2015

competences in sciences, technology, engineering and mathematics (STEM); to increasing the level of digital competence; to fostering development of entrepreneurship competence especially among young people, including by promoting opportunities for entrepreneurial experiences; and to increasing the level of languages competences and support learners to learn different languages. Member States are in addition recommended to mainstream the ambitions of the UN Sustainable Development Goals into education, training and learning and to report on experiences and progress in promoting key competences in all education and training sectors, including non-formal learning.

In addition to an up-dated description of the eight key competences, the annex also sets out good practice examples including the promotion of a variety of learning approaches and contexts; strengthen support to educational staff; support the development of assessment and validation of key competences; reinforce collaboration between education, training and learning settings at all levels; and reinforce tools, resources and guidance in education, training, employment and other learning settings to support people in managing their lifelong learning pathway.

To illustrate a variety of learning approaches and contexts the annex provides examples of innovative learning methodologies, such as inquiry based, experimental learning and cross-discipline learning. In addition, it stresses the added-value of cross-sectoral cooperation and partnerships between education and training institutions and external actors such as business, arts, sport and youth community, higher education or research institutes.

Most Member States face challenges in implementing competence oriented education, training and learning, e.g. translating competence based curricula into teaching practice. To make this happen, educational staff i.e. teachers, trainers, teacher educators, leaders of education and training institutes, employees in charge of training colleagues, researchers and university lecturers, youth workers and adult educators play a decisive role. Educational staff therefore needs adequate support that can be provided for example in their initial education and continuing professional development, peer exchange or via guidance tools and materials created to enhance competence oriented education, training and learning. Member States are recommended to invest in this as a crucial step to improve competence development.

Also assessment has a powerful impact on what is taught and learned and which competences are developed. Recommendations to Member States in relation to assessment ask for developing assessment strategies and improving the validation of learning outcomes acquired through non-formal learning.

Member States have the sole competence for the content and structure of their education and training systems. Commission initiatives can therefore only complement and support the activities of Member States. To provide targeted and useful support to Member States, the Commission intends to work in close cooperation with Member States and embed this work in the Strategic Framework for Cooperation in Education and Training.

The Commission proposes to work in close cooperation with Member States on targeted reference material, guidelines and tools to support competence development. This can include also the development of competence frameworks for specific competences, support tools for teachers, trainers and educators as well as guiding material on supportive learning approaches and contexts. Important work needs to be done to further develop further approaches to the

assessment of key competences following up on previous work on the assessment of key competences in the context of ET2020⁵⁰.

The Commission also proposes to support initiatives to develop and promote education for sustainable development with regards to the UN Sustainable Development Goal 4 on inclusive and equitable quality education and lifelong learning opportunities for all⁵¹.

The Commission intends to strengthen the monitoring of the development of key competences based both on existing surveys on competence development (e.g. PISA, PIAAC, TIMSS, PIRLS as well as data collection in language learning, digital competence, civic competence) and structural indicators providing information on the measures implemented to support competence development.

It will consider the possibility to develop a scoreboard on the provision of competence-oriented education, training and learning and on competence development in the Union; it will be developed in line with next cycle of the strategic framework for European cooperation in education and training.

4.2 Changes to the European Reference Framework of Key Competences

This chapter presents the changes to the Reference Framework. They reflect the findings of the public consultation as well as conclusions drawn from the comparison of national and international frameworks.

As in 2006, key competences are defined as a combination of knowledge, skills and attitudes. The proposal for a revised European Reference Framework of Key Competences for Lifelong Learning lists now the following key competences:

- Literacy competence;
- Languages competence;
- Science, technological, engineering and mathematical competence;
- Digital competence;
- Personal, social and learning competence;
- Civic competence;
- Entrepreneurship competence; and
- Cultural awareness and expression competence.

Changes to individual competences concern the following points:

- A good level of literacy is the basis for the development of key competences. However, underperformance in literacy is still a widespread phenomenon in all age groups in Europe. Literacy can be developed in the mother tongue, in the language of schooling and/or the official language of a country or a region. The 'communication in the mother tongue' competence is changed into 'Literacy' competence to further highlight the importance of literacy in at least one language and to address literacy demands in the context of today's globalized society with its migration and mobility trends.

⁵⁰ SWD (2012) 371

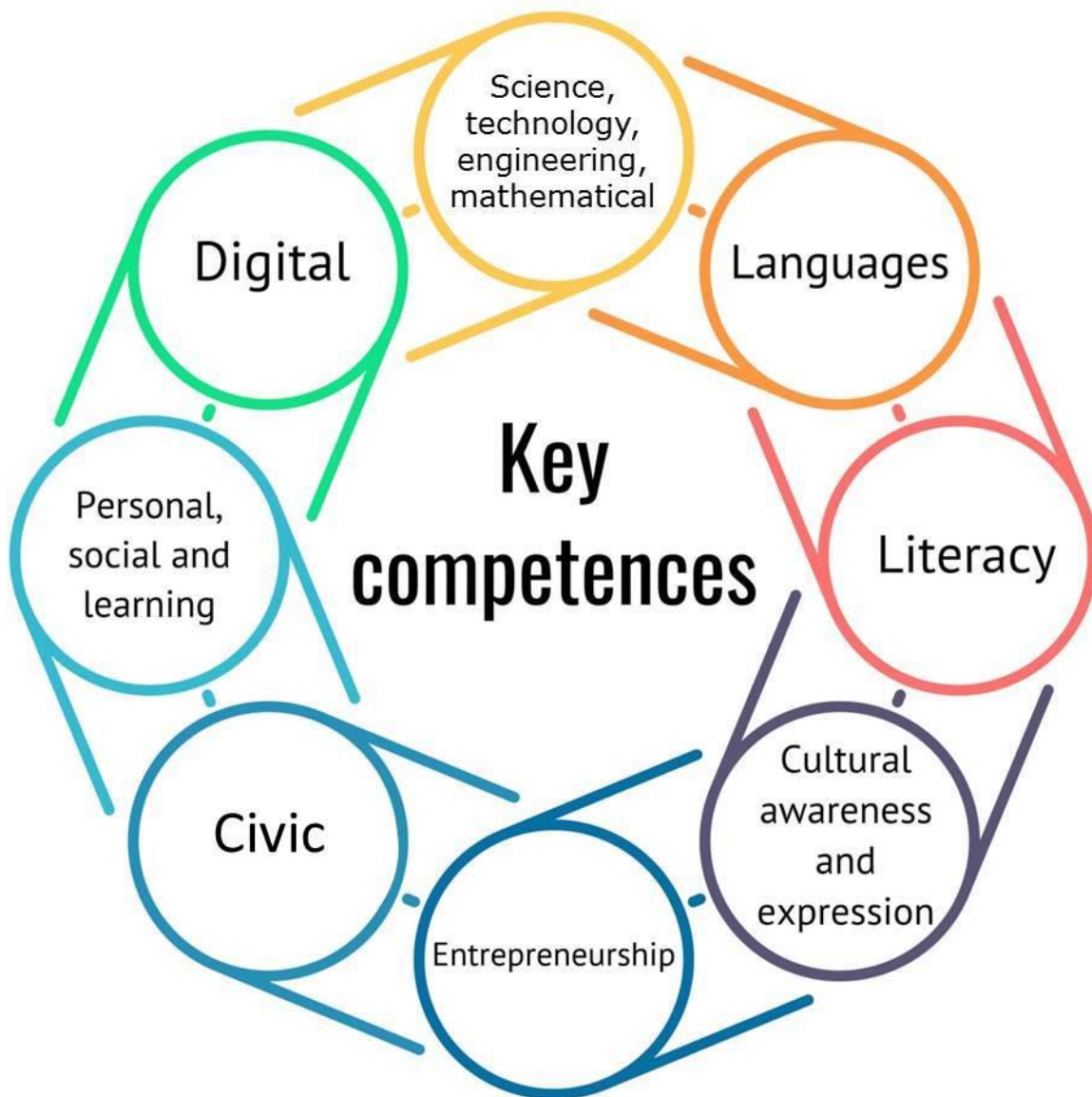
⁵¹ <https://sustainabledevelopment.un.org/sdg4>

- Learning languages and being able to communicate in more than one language remains one of the key competences for lifelong learning. The focus of the 'Languages competence' is on improving the development of linguistic competences and stressing the importance of learning languages as a tool for communication within multilingual societies and work environments.
- While the description of the necessary key competences in mathematics, science and technology reflects well today's requirements, more needs to be done to support their acquisition and to motivate especially young people to enter careers in science, technology, engineering and mathematics (STEM). The description stresses the nature of science as a process and a way of thinking, underlining the plea that everyone needs an understanding of scientific thinking to cope with the wealth of information, data and interpretations offered. The title of the 'Mathematical competence and basic competences in science and technology' has been aligned with the more prominently used terminology of 'Science, technological, engineering and mathematical competences (STEM)'.
- To respond to the fast changing digital and technological environments, the definition of digital competence is updated and aligned with the Digital Competence Framework developed by JRC⁵². In addition, emerging issues, such as robotics and artificial intelligence are included. *Media literacy* and *critical thinking*, especially in relation to the usage of social media, are strengthened.
- Personal and interpersonal skills, sometimes referred to as 'life skills', socio-emotional, 'soft skills', or 'transversal skills', have become more important in today's society. They can respond to the growing needs of individuals to deal with uncertainty and change, remain resilient, develop personally and build successful interpersonal relations. Personal, social and learning competence encompasses elements of the previous 'learning to learn' and 'social competence'. The skills such as *critical thinking*, *teamwork*, *intercultural skills* and *problem solving* are further strengthened in the Framework overall.
- The civic competence is given more prominence and further highlights the role of citizenship, democratic values and human rights in today's increasingly connected global societies. Understanding of the need to support sustainable societies, economies and ecosystems, as well as practice sustainable lifestyles is a key element of this competence. It is important to empower individuals to act as responsible, active citizens able to contribute to peaceful, tolerant, inclusive and secure societies. In this context, media literacy and intercultural skills are further strengthened.
- The up-dated definition of entrepreneurship competence is aligned with the JRC Entrepreneurship Competence Framework⁵³. In addition, *creativity* and the *ability to plan and manage processes* are highlighted as essential dimensions of an entrepreneurial mind-set.
- Cultural awareness and expression competence is revised to take into account a wider range of contemporary *forms of cultural expression* and also to more clearly describe how this competence is a crucial element in understanding, developing and expressing ideas and one's place or role in society – in other words, a fundamental part of being

⁵² <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>

⁵³ <https://ec.europa.eu/jrc/en/entrecomp>

able to view and shape the world with a sense of identity that is constructed in relation to others. *Positive and open-minded attitudes* towards other cultures and cultural differences are highlighted.



Underlying concepts

The descriptions of these key competences follow concepts such as sustainability, European common values, including gender equality and equal opportunities, openness to cultural diversity, creativity and innovation, and media literacy. The paragraphs below clarify the understanding used here.

- Sustainability

Following the UN Decade of Education for Sustainable Development (2005 – 2014) and in line with the UN Sustainable Development Goals⁵⁴, the knowledge, skills and attitudes "needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development" are further stressed throughout the reference framework.

The knowledge needed to understand the requirements of sustainable development can be mainly covered by competences in science, civic competences and entrepreneurship, whereas relevant skills form part of all competences. They include interdisciplinary and intercultural understanding; participatory and collaborative skills; the ability to reflect on one's own position and take different perspectives; effective communication; critical reflection; initiative-taking and problem-solving; taking responsibility; empathy, compassion and solidarity. A related description of attitudes can also be found across the whole Reference Framework, notably within science and technologies, civic competence, and entrepreneurship.

- European common values, including gender equality and equal opportunities

As expressed in the article 2 of the Treaty on European Union⁵⁵, European common values are respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities, pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men. These values are further strengthened by the Charter of Fundamental Rights of the European Union⁵⁶.

In the field of education, the Paris Declaration on Promoting citizenship and the common values of freedom, tolerance and non-discrimination⁵⁷ calls for promotion of inclusion and fundamental values in education, training and learning through continued cooperation at EU-level. The Strategic engagement for gender equality 2016-2019⁵⁸, preceded by the Commission Strategy for equality between women and men 2010-2015, sets the framework for the Commission's future work towards improving gender equality. Recent Council

⁵⁴ United Nations, Resolution adopted by the General Assembly on 25 September 2015, Transforming our world: the 2030 Agenda for Sustainable Development

http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E ;

<https://sustainabledevelopment.un.org/sdg4>

⁵⁵ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012M%2FTXT>

⁵⁶ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012P/TXT>

⁵⁷ http://ec.europa.eu/dgs/education_culture/repository/education/news/2015/documents/citizenship-education-declaration_en.pdf

⁵⁸ http://ec.europa.eu/justice/gender-equality/document/files/strategic_engagement_en.pdf

Conclusions on Inclusion in Diversity to achieve a High Quality Education For All⁵⁹ promote equal opportunities for all learners throughout education, training and learning.

References to common European values appear in civic competences, but also cultural awareness and expression.

- Openness to cultural diversity

The Paris Declaration on Promoting citizenship and the common values of freedom, tolerance and non-discrimination through education⁶⁰ and the ET 2020 Joint Report of November 2015⁶¹ have underscored the need to deepen the role of education to ensure that learners acquire solid social, civic and intercultural competences.

Openness to cultural diversity and intercultural understanding includes an understanding of one's own cultural identity within local and national contexts, where the languages, traditions and social relations may be the same, similar or different to one's own heritage and experiences. This understanding of one's own cultural identity is also situated within a world of cultural diversity, whether or not those cultures are directly interacted with.

The Reference Framework uses the phrases 'intercultural' and 'cultural understanding' to refer to the knowledge, skills and attitudes an individual has that influences their respect for and engagement with the cultures of others, including their value systems. The Council of Europe White Paper on Intercultural Dialogue (2008)⁶² states that it is an open and respectful exchange of views between individuals and groups belonging to different cultures that leads to a deeper understanding of the other's global perception.

'Intercultural' is also used with the understanding that cultural heritage is rarely isolated from other cultures and that, over time, languages, traditions and cultural products have influenced each other's development. Understanding the cultural diversity of European societies and how national cultural identity contributes to the European identity is part of this.

References to intercultural understanding and cultural diversity appear in the competences of: languages; personal, social and learning; civic; and cultural awareness and expression.

- Creativity and innovation

It is important to equip current and future generations – regardless of social and cultural background – with the characteristics of successful innovators – including curiosity (or inquisitiveness), use of imagination, critical thinking, problem-solving, and perseverance (resilience or persistence) which includes positive risk-taking.

These characteristics are associated with 'creativity', which is a process typically of imagining possibilities, creating something new, and reflecting upon and modifying what is being created. In a broader sense it is a way of interpreting and acting upon the world.

'Innovation' means to create something new within a particular context or strive towards a goal in a new way. The process of innovation will involve reflecting upon the impact that the new artefact or approach has had in that context.

⁵⁹ <http://data.consilium.europa.eu/doc/document/ST-5741-2017-INIT/en/pdf>

⁶⁰ COM 2015/C 417/04

http://ec.europa.eu/dgs/education_culture/repository/education/news/2015/documents/citizenship-education-declaration_en.pdf

⁶¹ <http://eur-lex.europa.eu/legal->

content/EN/TXT/?uri=uriserv:OJ.C_.2015.417.01.0025.01.ENG&toc=OJ:C:2015:417:TOC

⁶² https://www.coe.int/t/dg4/intercultural/source/white%20paper_final_revised_en.pdf

The Reference Framework uses the phrase 'creativity and innovation' to describe where specific knowledge, skills and attitudes may contribute to the development of new ideas, approaches or things. The Framework definitions also refer to specific skills – such as critical thinking - and attitudes – such as curiosity - that comprise creativity.

Supporting the early and lifelong development of a range of competences that contribute to an innovative capacity can expect to have wider benefits to society beyond innovation, equipping the next generation with a fundamental basis for employability, personal fulfilment and development, social inclusion, and active citizenship.⁶³

Education research has found that in learning experiences that embrace creativity, there is evidence of accepted failure, reworking, perseverance, ambiguity and imagination. This challenges the myth that creativity is undisciplined but rather demonstrates that in order to better fulfil their potential to turn ideas into action, people need to operate within a culture of disciplined resilience and engagement with possibilities.⁶⁴

'Creativity and innovation' appear in the competences of: literacy; mathematical, science and technology; digital; entrepreneurship; and cultural awareness and expression.

- Media literacy

With growing access to different news media and with the opening up of communication channels for sources of different facts and opinions, it has become vital to strengthen the capacity of people – particularly children and young people - to think critically and exercise judgement so that, especially in the context of the internet and social media, they are able to grasp realities, to distinguish fact from opinion, to recognise propaganda and to resist all forms of indoctrination and hate speech.⁶⁵

Media literacy does not only relate to the exchange of news and current affairs and evaluating the quality (accuracy, relevance, currency, reliability, and completeness) of information, distinguishing facts from opinion, and being aware of timing (new/news/obsolete). It also requires a broader understanding of underlining ideologies and values, and of how social, economic, political, professional, and technological forces can shape media content⁶⁶ - both what is produced and how it reaches us.

Media production – the creating of written, drawn, audio- or video-recorded and other content – provides a way for individuals to document and share knowledge and their perspective of the world. It is also a way for them to shape the ideas and opinions of others and thereby have potential to change the world around them. It is important that this is done in an ethical and responsible manner and with respect for the intellectual property of others.

The knowledge, skills and attitudes relating to media literacy appear in the competences of: literacy; languages; digital; personal, social, and learning; civic; and cultural awareness and expression.

⁶³ See the [Council conclusions on the role of early childhood education and primary education in fostering creativity, innovation and digital competence](#), 2015

⁶⁴ Jefferson, Miranda and Anderson, Michael (2017) Transforming Schools, London: Bloomsbury

⁶⁵ [Council Conclusions on Developing media literacy and critical thinking through education and training](#), June 2016

⁶⁶ See [UNESCO Media and Information Literacy online pages and resources including policy and strategy guidelines](#)

Literacy

A good level of literacy is the basis for the development of key competences⁶⁷. It represents the basis for any further learning, it is the greatest predictor of school achievement⁶⁸ and a prerequisite for cognitive progress across the curriculum.

In the 2006 Reference Framework, literacy is addressed under the 'Communication in the mother tongue' competence. Nevertheless, the title 'Communication in the mother tongue' created an ambiguous situation in which 'mother tongue' is regarded as being identical with the language of schooling, not taking into account the fact that for many children in Europe language of schooling and mother tongue might not be the same. A footnote to the 2006 'Communication in the mother tongue' addressed this issue by stating: "It is important to recognise that many Europeans live in bilingual or multilingual families and communities, and that the official language of the country in which they live may not be their mother tongue." It continued stating that "(m)asures to address such cases, and apply the definition accordingly, are a matter for individual Member States in accordance with their specific needs and circumstances."

Defining literacy as a key competence has to take note of the fact that literacy can be developed in the mother tongue, in the language of schooling and/or the official language in a country or region and that these languages can be different. The key element here is that a good level of literacy needs to be ensured in at least one of these languages to allow for further competences development.

Underperformance in literacy is still a widespread phenomenon in all age groups in Europe.⁶⁹ When it comes to progress towards the Education and Training 2020 benchmark for basic skills⁷⁰, the EU as a whole is lagging behind. According to latest PISA data, 17.8% of five 15-year-olds⁷¹ lack basic literacy skills. This proportion has remained more or less stable since 2009, and even slightly dropped in 2015 as compared to 2012 (from 19.7% in 2012). In 2015, there were 64 million people, more than a quarter of the Union population aged 25-64, who had left initial education and training with at most a lower secondary education qualification. While there are no means to measure the basic skill levels of those people, the Organisation for Economic Co-operation and Development (OECD) Survey of Adult Skills ('PIAAC'), which tested levels of literacy, numeracy and problem-solving in technology-rich environments, indicates that similar proportions of adults aged 16 to 65 performed at the lowest level of proficiency in 20 Member States.⁷² This limits opportunities for employment and civic participation, and increases risks of social exclusion. By defining literacy as a key competence, the Reference Framework emphasises the importance of literacy achievement for all.

Council conclusions in 2010 on increasing the level of basic skills (literacy, numeracy and basic digital skills) called on both the Commission and Member States to take concerted

⁶⁷ COM(2009)640 final

⁶⁸ PISA 2009 Results: What Students Know and Can Do - Student Performance in Reading, Mathematics and Science <https://www.oecd.org/pisa/pisaproducts/48852548.pdf>

⁶⁹ Education and Training Monitor 2016 : https://ec.europa.eu/education/sites/education/files/monitor2016_en.pdf

⁷⁰ The Education and Training 2020 Framework set the benchmark that by 2020 less than 15% of 15-year-olds should be classed as 'low-achieving' in those basic skills, as measured by PISA.

⁷¹ This proportion has remained stable since 2009. Source: <https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf>

⁷² Council Recommendation on Upskilling Pathways: New Opportunities for Adults; 2016/C 484/01

action in order to improve reading literacy⁷³. In its follow-up, a High Level Group of Experts on Literacy was established in 2011 by the Commission, bringing together European academics and policy-makers to map Europe's literacy landscape, identifying changing needs and requirements, as well as to examine the most effective and efficient ways to improve reading skills in Europe. The final report⁷⁴ of the High Level Group underscores the importance of literacy in the 21st century, as well as the need to ensure political ownership and cooperation to ensure genuine improvement. Council conclusions in 2012 on literacy⁷⁵ highlighted the broader personal, economic, cultural and social dimension of literacy, besides a sole educational purpose, and called for creating a broad ownership of a range of players in society in order to improve literacy levels. As a follow-up, the Commission funded a European network of literacy organisations⁷⁶ (ELINET) to facilitate the sharing of good practices and policy initiatives, and promote transnational cooperation aimed at improving literacy performance across the European Union.

Literacy and Migration

Socio-economic status as well as student's migrant and/or minority background play a strong role in low achievement in literacy. An increasing number of young people in European school systems speak a different language at home than in the classroom. It raises specific challenges for their literacy attainment. In 2015 - according to latest PISA data – the proportion of 15-year-old pupils with a migrant background varied from 52% in Luxemburg (the highest in Europe), to 17 % in Sweden and Germany, 14 % in France and 11% in the Netherlands, and to less than 1% in Romania or Poland.

A recent study on multilingual classrooms⁷⁷ conducted by the European Commission proved that children with migration background or being part of a national minority develop better literacy in the language of schooling if they also develop literacy in their mother tongue, or if at least their mother tongue is taken into account and valued in school⁷⁸.

Schools and teachers need to be better prepared to support bilingual learners. Teachers need specific training and support for working with children who are learning the language of the school as an additional language, or who are bilinguals. Moreover, teaching in a multilingual classroom requires a different set of competences⁷⁹. In the latest TALIS survey⁸⁰ (2013), teaching in a cultural and linguistic diverse classroom appeared as one of the areas where teachers needed most help for professional development. The 2017 Eurydice report⁸¹ on 'Teaching languages at school in Europe' indicated that only in two countries future teachers were trained to work with students with a migrant background.

⁷³ OJ C 323, 30.11.2010

⁷⁴ Final Report, EU High level group on literacy, 2012

⁷⁵ OJ C 393, 19.12.2012

⁷⁶ <http://www.eli-net.eu/>

⁷⁷ http://ec.europa.eu/dgs/education_culture/repository/languages/library/studies/multilingual-classroom_en.pdf

⁷⁸ http://ec.europa.eu/dgs/education_culture/repository/education/policy/school/doc/literacy-report_en.pdf

⁷⁹ https://ec.europa.eu/education/news/20170510-diversity-teaching-report_en

⁸⁰ http://www.keepeek.com/Digital-Asset-Management/oecd/education/talis-2013-results_9789264196261-en

⁸¹ https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/0/06/KDL_2017_internet.pdf

Languages competence

European integration includes the principle of freedom of movement and linguistic diversity as a fundamental component of European culture. Learning languages and being able to communicate in more than one language remains one of the key competences for lifelong learning, as defined in the 2006 Reference Framework.

The 2006 Reference Framework referred to 'Communication in a foreign language', however the concept of 'foreign language' can cause ambiguity when trying to define what is foreign and to whom⁸². It also excludes sign languages which could hardly be described as foreign. Therefore, it is proposed to refer to 'Languages competence' in a revised Reference Framework, stressing the importance of learning languages as a tool for communication within multilingual societies and work environments.

Learning languages remains one of the key competences for lifelong learning. Focus is on improving the development of linguistic competences and on helping people to communicate across borders, to make use of mobility within Europe and in a globalised economy. The public consultation as well as a study on cross-border cooperation in Europe⁸³, completed by European Commission's Directorate general for regional policy in 2016, showed that language barriers (i.e. lack of knowledge of a neighbouring country's language) was the most important obstacle to cross-border cooperation. Language differences have been also identified as a barrier and risk factor to increase fragmentation in the context of the Digital Single Market⁸⁴.

Successive Council conclusions in 2008 and 2011⁸⁵ called on EU Member States to work together to enhance European cooperation on multilingualism and to take appropriate steps to improve effective language teaching and strengthening linguistic competence. A good command of more than one language is essential to making one's way in the modern world and labour market. The New Skills Agenda for Europe⁸⁶ (2016) recalled the importance of formal education and training in equipping every citizen with a broad range of skills which open doors to personal fulfilment and development, social inclusion, active citizenship and employment, which includes foreign languages.

The Barcelona European Council of 2002 already called for action "to improve the mastery of basic skills, in particular by teaching at least two foreign languages from an early age"⁸⁷. This goal has led most of the EU-level and national policies aimed at monitoring and promoting the development of language competences across Member States, including discussion about the establishment of a linguistic competence indicator.⁸⁸

In May 2014 Council conclusions on multilingualism and the development of language competences highlighted that the level of language skills of many young people in Europe

⁸² UNESCO defines 'foreign languages' either as a "language that is not spoken in the immediate environment of the learner" or "a language that a person is unfamiliar with and that she/he does not master". (<http://unesdoc.unesco.org/images/0021/002122/212270e.pdf>)

⁸³ http://ec.europa.eu/regional_policy/en/newsroom/consultations/overcoming-obstacles-border-regions/

⁸⁴ https://ec.europa.eu/commission/commissioners/2014-2019/ansip/blog/how-multilingual-europes-digital-single-market_en

⁸⁵ OJ C 140, 6.6.2008; OJ C 372, 20.12.2011,

⁸⁶ COM(2016) 381 final

⁸⁷ Presidency conclusions, Barcelona European council, 15-16 March 2002; available at http://ec.europa.eu/invest-in-research/pdf/download_en/barcelona_european_council.pdf, accessed on 6.11.207

⁸⁸ COM/2005/0356 final

could be improved and that, despite some progress in recent decades, there is still considerable variation across countries in terms of access to language learning. Indeed, the First European Survey on Language Competences (2012)⁸⁹, which provided the first-ever European scale comparison of the foreign language proficiency of pupils in secondary education, revealed, on average, a low level of competence. Only 42% of the tested pupils overall reached the level of independent user in the first foreign language, and merely a quarter of pupils did so in the second foreign language. This means that after several years of studying a language in school, a majority of young Europeans cannot have a simple conversation in the languages they have studied.

The **Key Data on Teaching Languages at School in Europe**⁹⁰ (Eurydice, 2017) Report gives an overview on what languages students are learning in schools across Europe, at what age they begin studying their first and second foreign language, and what level of proficiency they are expected to reach by the end of compulsory education. The 2017 edition also includes data on how the language skills of newly arrived language pupils are being assessed and what type of language support is available to them.

Highlights of the 4th edition of the Key data on teaching languages at school in Europe:

- Students are learning a foreign language from a younger age, compared with a decade ago;
- More lower secondary students are now learning two foreign languages compared with 10 years ago;
- Learning a second language is not compulsory in all countries;
- English is the most studied foreign language, and many more primary education students learn English compared with 10 years ago;
- French, German, Spanish are popular choices for the second foreign language;
- Foreign languages other than English, French, German or Spanish are rarely studied;
- The students are expected to reach 'independent user level' in their first foreign language by the time they finish school;
- VET students learn fewer foreign languages than their counterparts in general education;
- Only around half of all foreign language teachers in Europe have travelled abroad for professional reasons;
- The majority of European countries provide language support for newly arrived migrant students, but only in two countries are all prospective teachers prepared to work with migrant students.

Science, technological, engineering and mathematical competence

Competences in mathematics, science and technology are increasingly important. With their emphasis on critical questioning and problem solving they are prerequisite for the functioning

⁸⁹ European Commission (2012), First European Survey on Language competences – available at http://ec.europa.eu/dgs/education_culture/repository/languages/policy/strategic-framework/documents/language-survey-final-report_en.pdf, accessed on 13-12-2017

⁹⁰ Eurydice, Key Data on Languages 2017, available at https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/0/06/KDL_2017_internet.pdf, accessed on 6.11.2017

of technologically advanced, knowledge based societies and economies. Challenges like climate change, energy supply, healthy aging and digitalisation further increase the imminent need for competences in mathematics, science and technologies.

The Reference Framework already provided a good and comprehensive definition of these competences. This is also confirmed by the results of the consultation process dedicated to the review of the Recommendation on Key Competences. They indicate that the descriptions of these two competences correspond to the commonly accepted understanding among education experts and the Member States' authorities. Looking at it more than a decade later might lead only to minor changes, adapting the title of this competence to current terminology, strengthening the understanding of science as a process and way of thinking, and including a reference to the increasing need of financial literacy.

However, about 20% of Europe's 15-year olds do not reach a minimum level of skills in mathematics and science⁹¹. Furthermore, a number of countries experience shortages of highly qualified graduates in the so-called STEM disciplines (science, technology, engineering and mathematics); the share of STEM graduates compared to the total number of graduates in the European Union is further decreasing⁹². Therefore, in the context of the review of the Recommendation on Key Competences for Lifelong Learning it is important to address the challenge of helping learners to develop competences in mathematics, science and technology.

Mathematics is an instrument; mathematical reasoning is essential for a wide range of daily activities, tasks and professions. It is also key to academic areas of study such as sociology, psychology, history, geography, economics or politics. Together with literacy, a basic level of mathematical reasoning is a basic skill that is a pre-requisite for the development of other key competences⁹³.

The ability to understand and use different financial instruments and statistical data has become an increasingly important skill in the modern economy. The 2008 financial crisis exposed the lack of understanding of financial products by European consumers⁹⁴. PISA 2015 is the latest international study to assess the financial literacy of young people⁹⁵. Its results indicate that around one in four students in the 15 countries and economies that took part are unable to make even simple decisions on everyday spending, while only one in ten can understand complex issues, such as income tax⁹⁶. The latest OECD financial literacy study among adults point that the “overall levels of financial literacy - indicated by combining scores on knowledge, attitudes and behaviour - are relatively low”⁹⁷. Mathematical reasoning is the key to financial education⁹⁸. Financial literacy skills are positively correlated with mathematics and reading skills⁹⁹. The expectation is that “students who have a better understanding of mathematical concepts will also be able to apply that understanding to

⁹¹ <http://www.oecd.org/education/pisa-2015-results-volume-i-9789264266490-en.htm>;

https://ec.europa.eu/education/sites/education/files/pisa-2015-eu-policy-note_en.pdf

⁹² http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/145en.pdf

⁹³ https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/educ/117853.pdf

⁹⁴ [http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/557020/EPRS_BRI\(2015\)557020_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/557020/EPRS_BRI(2015)557020_EN.pdf)

⁹⁵ <http://www.oecd.org/finance/financial-education/pisa-2015-results-volume-iv-9789264270282-en.htm>

⁹⁶ <http://www.oecd.org/newsroom/many-teenagers-struggle-to-understand-money-matters.htm>

⁹⁷ <http://www.oecd.org/finance/oecd-financial-literacy-study-finds-many-adults-struggle-with-money-matters.htm>

⁹⁸ <http://www.oecd.org/finance/financial-education/PISA2012FrameworkLiteracy.pdf>

⁹⁹ <https://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf>

financial contexts”. Furthermore, the financial aspect provides the much-needed context in mathematics education that should help with the development of mathematical skills¹⁰⁰.

The science and technology competence refers to the natural and material world. This competence is essential for understanding the natural environment and for acting in a responsible way vis-à-vis our planetary resources.

The UN Decade of Education for Sustainable Development (2005-2014)¹⁰¹ emphasised the need to shed more light on the need for sustainable development, the responsibility of all people and the role of education to motivate children and young people to support sustainable development. Sustainability education draws on numerous academic areas and provides the crucial comprehension of the inter-connectedness and inter-dependence of nature and human activities¹⁰². In addition, the environmental aspects of science provide a powerful vehicle for teaching science and understanding scientific and technological developments in their cultural, economic, social, and political contexts¹⁰³.

It is more and more relevant to foster the understanding of science not only as knowledge but also as a process for investigation of the living and non-living matter. The work of scientists constantly refines, and extends this knowledge¹⁰⁴ which is based on the consensus of the science practitioners who study professionally a specific natural phenomenon. In order to help educators and policy makers, the updated Reference Framework offers a more concrete description of the science competence.

Scholars have identified some essential characteristics of science as a process which (i) involves the use of the experimental method in controlled conditions¹⁰⁵; (ii) develops a way of thinking which does not come naturally to most people¹⁰⁶; and (iii) follows the strictly hierarchical structure of its knowledge development¹⁰⁷. The ever-evolving comprehension of the material world based on newly accumulated, reproducible evidence sits at the core of the scientific endeavour. “Scientific knowledge is simultaneously reliable and tentative”¹⁰⁸. Therefore, the science classroom and the laboratory experiments provide an important tool for the development of the general ability to change one’s mind when presented with evidence that contradicts one’s previous convictions.

Modern science has evolved to an extent, which makes it rarely distinguishable from technology, engineering or applied science¹⁰⁹. Today’s technology-rich environment expects from every citizen to comprehend the connection between a technological application or an engineering solution and their respective underlying scientific principles. Therefore, technology and engineering are intrinsically linked to the science competence and rely heavily on the mathematical reasoning competence.

¹⁰⁰ <https://www.pfeg.org/resources/details/maths-matters-using-financial-contexts-secondary-mathematics>;
<https://www.theguardian.com/education/teacher-blog/2013/mar/04/financial-education-teaching-resources>

¹⁰¹ <http://en.unesco.org/themes/education-sustainable-development/what-is-esd/un-decade-of-esd>

¹⁰² <http://www.humansandnature.org/humans-nature-the-right-relationship>

¹⁰³ <https://www.acs.org/content/acs/en/education/resources/undergraduate/chemistryincontext.html>

¹⁰⁴ <http://ngss.nsta.org/NSforCC.aspx?id=5>

¹⁰⁵ Losee, J. 2001. A historical introduction to the philosophy of science. Oxford University Press. Fourth edition.

¹⁰⁶ Cromer, A. 1995 Uncommon Sense: The Heretical Nature of Science, Oxford University Press.

¹⁰⁷ Silver, B. 2000. The Ascent of Science, Oxford University Press.

¹⁰⁸ <http://www.nsta.org/about/positions/natureofscience.aspx>

¹⁰⁹ McClellan J.E. and Dorn H. 2006 Science and Technology in World History: An Introduction. The Johns Hopkins University Press; 2nd edition;

Digital competence

The understanding and relevance of digital competences has experienced a dramatic boost since 2006. In revising the 2006 Reference Framework, these developments need to be reflected leading not to a redefinition of digital competences, but to an alignment with the Digital Competence Framework¹¹⁰, its associated tools, such as frameworks specifically for consumers, educators or organisations as well as other existing national frameworks. This was a particularly strong point that was expressed during the review and consultation process.

The terminology used in the competence definition also needs to be updated to reflect language used by the sector. Instead of 'IST' (Information Society Technology) and 'ICT' (Information Communication Technology) that were used in the 2006 definition, 'digital technologies' is considered the most appropriate term to refer to the full range of devices, software or infrastructure. With the increased, varied and embedded use of mobile devices and applications, references to 'computers' and the 'Internet' are removed, but are still classed under the broad term of 'digital technologies'.

The 2015 Joint Report of the Council and the Commission on the implementation of the strategic framework for European cooperation in education and training (ET 2020)¹¹¹ stressed both the need for digital competences and the positive contribution of digital technologies in teaching and learning as well as education governance. The Communications "Rethinking Education: Investing in skills for better socio-economic outcomes" (2012)¹¹² and "Opening up Education" (2013)¹¹³ were also dedicated to digital and innovative education and stressed the relevance of digital skills and competences and the role of Open Educational Resources (OER).

More recent Communications on education, such as on the Modernisation of Higher Education (2011)¹¹⁴ and Improving and Modernising Education (2016)¹¹⁵, and A Digital Single Market Strategy for Europe (2015)¹¹⁶, highlighted the importance of developing digital competence and noted the potential for innovation in education to include the use of digital tools. The New Skills Agenda for Europe (2016)¹¹⁷ placed the need for digital competence as a priority, and called on Member States to ensure they have comprehensive strategies in place for improving the digital competence of people. Beyond the European level, a number of national coalitions¹¹⁸ have also been set up, and while structure and activity vary by country, some of these are closely linked to national education policy.

¹¹⁰ The Digital Competence Framework has proven useful at European level – in the revision of Europass and Measurement of Digital Skills (Digital Skills Indicator of Digital Agenda Scoreboard) - and at Member State level - by 14 Member States and 5 regions in Spain for curricula review, teacher education (including continuous professional development), student self-assessment, policies regarding digital skills and strategies, and for employment, such as jobseekers self-assessment, and the development of training offers and certification for employees and jobseekers.

¹¹¹ COM 2015/C 417/04

http://ec.europa.eu/dgs/education_culture/repository/education/news/2015/documents/citizenship-education-declaration_en.pdf

¹¹² COM(2012) 669 final

¹¹³ COM/2013/0654 final

¹¹⁴ COM(2017) 247

¹¹⁵ COM/2016/0941 final

¹¹⁶ COM/2015/0192 final

¹¹⁷ COM(2016) 381 final

¹¹⁸ <https://ec.europa.eu/digital-single-market/en/national-local-coalitions>

First published in 2013 and since updated, the widely used Digital Competence Framework describes 21 learning outcomes in 5 areas:

- 1) Information and data literacy, including management of content;
- 2) Communication and collaboration, and participation in society;
- 3) Digital content creation, including ethical principles;
- 4) Safety; and
- 5) Problem solving.

Aligning the definition of digital competence in the European Reference Framework on Key Competences reflects these five areas whilst retaining the basic format of knowledge, skills and attitudes.

A revised description should try to be sufficiently flexible to be relevant in today's society and in the future, recognising the embedding of social media and the emergence of technologies such as Artificial Intelligence, robots, virtual and augmented reality. It needs to enhance references to digital safety by including the management of one's own digital identities in a way that positively encourages engagement in a responsible and critical manner. The phrase 'digital identities' has two meanings in this context: one about data protection (such as email accounts) and one about the perception of self in online environments (such as behaviour on social media). An ethical, safe and responsible approach is strengthened with an added reference under 'attitude'.

Personal, Social and Learning Competence

Most children entering primary school today will end up working in completely new job types that do not yet exist, and half of today's work activities could be automated by 2055. Cross-disciplinary competences and creative skills will become crucial in performing the non-automated tasks. To boost resilience and resist increasing levels of uncertainty and stress, future generations need to develop strong personal, social and learning competences in order to successfully navigate their personal and social lives and careers.

The 2006 definition of the competence 'learning to learn' focussed on personal development through learning strategies and management of learning and career, while omitting broader personal development and social interrelations. Having in mind the new challenges described above, a new 'personal, social and learning competence' is able to encompass a comprehensive approach to personal development, learning strategies and social competences. The competence includes three specific aspects:

- Personal, including self-awareness, physical and mental well-being;
- Social, covering interpersonal interactions and working with others; and
- Learning, with focus on lifelong learning strategies and career management skills.

Personal, social and learning competence addresses also a number of transversal skills from the 2006 Framework as well as some new ones such as resilience, ability to deal with uncertainty and complexity.

Various international documents have stressed the importance of 'life skills'¹¹⁹, 'soft', 'non-cognitive', 'social and emotional' or '21st century skills'¹²⁰. Their definitions vary, but include a

¹¹⁹ Partners in Life Skills Education: Conclusions from a United Nations inter-agency meeting, WHO, 1999;

range of cognitive (critical thinking and responsible decision-making), personal (awareness, drive, self-management) and interpersonal skills (communication, negotiation, cooperation and teamwork, inclusion, empathy and advocacy).

A number of EU Member States' national competence frameworks include personal competences on 'well-being', 'health', 'personal development', 'taking care/managing oneself', 'managing information', '(critical and creative) thinking', 'learning to learn', as well as interpersonal, social competences such as 'working with others', 'interpersonal relationships', 'empathy, respect, responsibility' or 'socio-relational development'. Similarly, different international organisations' competence frameworks (OECD, Council of Europe, WEF, UNESCO) include among other competences: analytical and critical thinking, autonomous learning skills, understanding of the self, problem-solving, team working, conflict resolution, global awareness, collaboration, empathy, flexibility and adaptability, persistence, responsibility, respect, tolerance of ambiguity¹²¹.

An overview¹²² of recent and on-going projects funded by the EU European Commission and academic literature reviews¹²³ shows the interest and the need to integrate this set of competences and skills into the curricula of European education systems.

The impact of social and emotional skills on education, labour market and social outcomes has been proven by research¹²⁴. From an economic point of view, non-cognitive skills have important effects both on school attainment and on labour market outcomes, including education and earnings. These effects are often as important as the effects of cognitive skills¹²⁵. Evidence shows the associations between early social, emotional and cognitive skills (looking at pre-school age) and a range of later outcomes, including educational attainment, employment, income, health, and wellbeing¹²⁶. Self-regulation and self-awareness have

Global Evaluation of Life Skills Education Programmes, [Final Report](#), UNICEF, 2012; see http://www.who.int/mental_health/media/en/30.pdf

Council Conclusions on the role of youth work in supporting young people's development of essential life skills that facilitate their successful transition to adulthood, active citizenship and working life, 22 May 2017

¹²⁰ The World Bank has reviewed literature from different disciplines in order to understand how these terms are currently used. 'Soft skills' is often used in business contexts to describe skills such as creativity, critical thinking, teamwork, whereas 'socio-emotional skills' is used in psychology literature, particularly in reference to learning. 'Non-cognitive' tends to be used by economists. '21st century skills' tends to refer to creativity and innovation, ICT, critical appreciation of a range of media (including 'new media'), and a kind of independence or sense of initiative. See: <https://openknowledge.worldbank.org/handle/10986/24737>

¹²¹ Inception Report and Comparative Analysis (2017), Support of the stakeholder consultation in the context of the Key Competences Review, European Commission

¹²² WORK IN PROGRESS Carmel C.; Bartolo P. A.; Cavioni V.; Downes, P.; 2017, Integrating Social and Emotional Education (SEE) in the School Curriculum across the EU, NESET II report, Luxembourg: Publications Office of the European Union

¹²³ Siarova, H.; Sternadel, D.; Mašidlauskaitė, R. (forthcoming). Re-thinking assessment practices for the 21st century learning. NESET II report, Luxembourg: Publications Office of the European Union.

¹²⁴ OECD (2015), Skills for Social Progress: The Power of Social and Emotional Skills, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264226159-en>

Cefai, C., Bartolo P. A.; Cavioni V.; Downes, P.; 2017, Integrating Social and Emotional Education (SEE) in the School Curriculum across the EU, NESET II report, Luxembourg: Publications Office of the European Union, *forthcoming*

¹²⁵ Brunello, G. and Schlotter, M., Non Cognitive Skills and Personality Traits: Labour Market Relevance and their Development in E&T Systems, 2011, EENEE Analytical Report No. 8

¹²⁶ Schoon, I. et al., 2015, The Impact of Early Life Skills on Later Outcomes, Final Report, OECD; Study on the effective use of early childhood education and care in preventing early school leaving, 2014, European Commission, Luxembourg: Publications Office of the European Union

significant influence over a range of outcomes later in life, independently of the cognitive ability of the child.

Research also indicates that achievement tests do not adequately capture non-cognitive skills, personality traits, goals, character, motivations, and preferences that are valued in the labour market, in school, and in other domains. An analysis of skills enhancement programmes¹²⁷ from the pre-school to the adult age shows that many effective programmes work because they foster non-cognitive skills. Development of social and emotional competences is indicated as one of the key aspects of inclusion in schools and school systems¹²⁸.

The evidence furthermore shows that academic learning and social and emotional learning support one another. Social and emotional education enables students to regulate their emotions and deal with stress, cope with school requirements, solve problems more effectively, have healthier relationships, and work more collaboratively with others, providing thus a foundation for effective learning and academic success¹²⁹. A meta-analysis of over 200 studies¹³⁰ reported that students who participated in social and emotional learning programs, scored significantly higher on standardized achievement tests when compared to peers who did not participate.

One of the most commonly used frameworks of social and emotional competences across different countries has been developed by the Collaborative for Social and Emotional learning (CASEL)¹³¹. It identifies five interrelated sets of socio emotional competences that can be taught in schools and other contexts, namely self-awareness and self-management (intrapersonal), social awareness and relationship skills (interpersonal), and responsible decision making (cognitive). Recent psychological research¹³² into the ‘character strengths’ of school students proposes a three-partite taxonomy: intrapersonal competencies (which facilitate the regulation of behaviour, thoughts, and emotions in seeking to achieve one’s goals), interpersonal competencies (which enable children to develop harmonious, positive relationships with other people), and intellectual competencies (which support active engagement in learning)¹³³.

Taking into account the plethora of definitions concerning social and emotional, non-cognitive, life, soft or 21st century skills, as well as the variety of their scope, the personal, social and learning competence has been defined to encompass personal (intrapersonal), social (interpersonal) and learning (intellectual) aspects. The link between the personal, social and learning aspects reflects also current neuroscientific evidence underlying the foundational

¹²⁷ Kautz, T. et al., 2014, Fostering and Measuring Skills: Improving Cognitive and Non-cognitive Skills to Promote Lifetime Success, OECD Education Working Papers, No. 110, OECD Publishing, Paris
<http://dx.doi.org/10.1787/5jxsr7vr78f7-en>

¹²⁸ Downes, P.; Nairz-Wirth, E.; Rusinaitė, V., Structural Indicators for Inclusive Systems in and around Schools, NESET II report, Luxembourg: Publications Office of the European Union, 2017

¹²⁹ Cefai, C.; Cavioni, V. (2014) Social and emotional education in primary school: integrating theory and research into practice. NY, USA: Springer

¹³⁰ Durlak, J. A.; Weissberg, R. P.; Dymnicki, A. B.; Taylor, R. D. (2011). The impact of enhancing students’ social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82 (1), 474-501

¹³¹ <http://www.casel.org/core-competencies/>

¹³² Park, D.; Tsukayama, E.; Goodwin, G. P.; Patrick, S.; Duckworth, A. E. (2017). A tripartite taxonomy of character: Evidence for intrapersonal, interpersonal, and intellectual competencies in children. *Contemporary Educational Psychology*, 48, 16-27.

¹³³ Similar to the UK Social and Emotional Aspects of Learning (SEAL) framework

role of emotions and relationships in academic learning as well as scientific evidence that social and emotional education contributes to academic learning¹³⁴.

Looking at the situation in education systems, international reports¹³⁵ show that most countries include fostering of social and emotional skills as part of general objectives of education or curricula frameworks, usually within physical (and health) education, civic / citizenship and moral / religious education. Some countries, such as England or Ireland, have dedicated schools subjects for development of social and emotional skills (personal, social and health education), whereas other countries adopt curriculum-wide approaches to these skills. Findings from rigorous evaluations of more than 80 programmes show that most programmes to develop socio-emotional skills are embedded within innovative education and training curricula, as well as pedagogical and classroom practices. Evidence shows that programmes are particularly effective when targeted to highly vulnerable populations and, in particular, to young children. High-quality programmes for young children tend to foster cognitive abilities in the short run and to impact socio-emotional skills over the long run. Programmes that take a whole-school approach and those integrated into the school day are more successful. Studies also show that universal interventions (programmes implemented throughout the schools for all pupils) have positive social, emotional, as well as cognitive and academic impact on all children at school, including children at risk such as children from ethnic and cultural minorities, children from low socio-economic background and children experiencing social, emotional and mental health difficulties¹³⁶.

Career management is part of the personal, social and learning competences, which includes the knowledge of one's capacities and interests, self-evaluation, social skills, planning, engagement with learning, capacity to analyse information about learning and work opportunities in relation to one's self-knowledge and the capacity to make career decisions and successful transitions¹³⁷. Since the 2008 Council Resolution on better integrating lifelong guidance into lifelong learning strategies¹³⁸, there has been an awareness of the need to equip the individuals with the right skills to better cope in the world of fast changing jobs, education, training pathways, and in general to manage their life effectively. Mobility, including international experiences, is a valuable way of gaining career relevant competences and skills, such as problem solving, tolerance and self-confidence¹³⁹.

Career education has already been introduced in most EU countries with the objective to enhance career management skills: 12 countries integrate Career Management Skills as a learning outcome in their curricula as a separate subject with specific time allocation; 7

¹³⁴ Cefai C.; Bartolo P. A.; Cavioni V.; Downes, P.; 2017, Integrating Social and Emotional Education (SEE) in the School Curriculum across the EU, NESET II report, Luxembourg: Publications Office of the European Union, *forthcoming*

¹³⁵ OECD (2015), Skills for Social Progress: The Power of Social and Emotional Skills, OECD Publishing, Paris.

<http://dx.doi.org/10.1787/9789264226159-en>;

Sánchez Puerta, Maria Laura; Valerio, Alexandria; Gutiérrez Bernal, Marcela. 2016. [Taking Stock of Programs to Develop Socio-Emotional Skills: A Systematic Review of Program Evidence](#). Directions in Development--Human Development; Washington, DC: World Bank

¹³⁶ Cefai C.; Bartolo P. A.; Cavioni V.; Downes, P.; 2017, Integrating Social and Emotional Education (SEE) in the School Curriculum across the EU, NESET II report, Luxembourg: Publications Office of the European Union

¹³⁷ [Guidelines for Policies and Systems Development for Lifelong Guidance](#): A reference framework for the EU and for the Commission, 2015, ELGPN Tools 6

¹³⁸ [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:42008X1213\(02\)](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:42008X1213(02))

¹³⁹ The Euroguidance Network Position Paper on the Review of the Key Competences Recommendation

countries integrate them in other school subjects or give the schools autonomy to allocate specific hours¹⁴⁰.

Mental, emotional and physical well-being depend to a large extent on one's physical fitness. Evidence shows that physical activity is associated with improvement of brain functioning, cognition and school results. The annex to the Report of the expert group on "health-enhancing physical activity" (2015)"¹⁴¹ gathers scientific evidence on the links between children's level of physical activity vs. sedentarity and their school results.

The current physical activity recommendations for health¹⁴² indicate that children and adolescents should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity every day, with preferably at least three sessions of vigorous-intensity activity each week. Adults and seniors should undertake at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic physical activity, and at least two sessions of muscle strengthening activities, each week.

Civic competence

The 2006 Reference Framework included social and civic competences as a dual competence, including both a personal and a societal perspective. Some aspects of the social competence were more interlinked with personal elements, as specified in the learning to learn competence. Other aspects of the social competence were interlinked with civic, in the sense of knowledge of societies and respect of diversity.

Civic (citizenship) competence as a concept has recently been developed further through several international frameworks and surveys. This calls for giving "civic competence" a separate place in the framework. In addition, the requirement to create sustainable societies and economies needs stronger reflection within a Reference Framework of Key Competences for lifelong learning.

European societies are experiencing changing traditional bonds, shifts towards individual values and new issues of tolerance and respect for others; more people globally are moving across the countries, pushed by instability, climate change and population surge, which can have an impact on the composition of future European populations¹⁴³. New forms of solidarity, social engagement and civic participation are emerging as a response¹⁴⁴. As a result, citizenship has been a prominent issue in European and international discussions related to education.

Sustainability of ecosystems, as well as of societies and economies has become a crucial element in understanding future social, economic and climate trends, as well as developing innovative solutions to unforeseen problems. As part of global citizenship, sustainable development goes beyond environmental protection and includes the (individual) responsibility for building a sustainable future, including values and choices. It requires the

¹⁴⁰ Kraatz, S., Vuorinen, R., 2016, Key competence "Career management skills": Taking up ongoing national policy developments at EU level

¹⁴¹ <http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=19860&no=1>

¹⁴² World Health Organization, 2010, Global recommendations on physical activity for health. Geneva, World Health Organization.

¹⁴³ European Commission, 2017, [Reflection Paper on Harnessing Globalisation](https://ec.europa.eu/commission/publications/reflection-paper-harnessing-globalisation_en)
https://ec.europa.eu/commission/publications/reflection-paper-harnessing-globalisation_en

¹⁴⁴ European Commission, 2016, [Reflection Paper on the Social Dimension in Europe](https://ec.europa.eu/commission/sites/beta-political/files/reflection-paper-social-dimension-europe_en.pdf)
https://ec.europa.eu/commission/sites/beta-political/files/reflection-paper-social-dimension-europe_en.pdf

knowledge, skills and attitudes to be able to manage change and uncertainty, think and act critically, deal with complexity, be creative and able to assess and take risks. In this sense, sustainability cuts across several other key competences: based on scientific thinking, it includes a number of personal and social competences, entrepreneurship, as well as cultural awareness. Sustainability is linked with the civic competence in order to stress the learner's role in deciding and contributing to the development of peaceful, inclusive and sustainable world.

Citizenship has been an important topic for education in the EU, in particular following the Paris Declaration¹⁴⁵ of 17 March 2015. Also the Working Group on promoting citizenship and the common values of freedom, tolerance and non-discrimination through education¹⁴⁶, set up under the Framework for European cooperation in education and training, has been working on topics such as media literacy and critical thinking, social and civic competences, social inclusion. In 2018 the Group will deliver an online compendium of good practices and the key elements of a policy framework to support citizenship and inclusive education.

The Council of Europe has recently developed a broad Reference Framework of Competences for Democratic Culture¹⁴⁷ for use in primary and secondary schools, higher education and vocational education institutions throughout Europe, as well as in national curricula and teaching programmes. The competences cover a range of values, attitudes, skills and knowledge and critical understanding, centred on the concept of citizenship:

- Values:
 - Valuing human dignity and rights; valuing cultural diversity; valuing democracy, justice, fairness, equality and the rule of law
- Attitudes:
 - Openness to cultural otherness; respect; civic mindedness; responsibility; self-efficacy; tolerance and ambiguity
- Skills:
 - Autonomous learning; analytical and critical thinking skills; skills of listening and observing; empathy; flexibility and adaptability; linguistic, communicative and plurilingual skills; co-operation skills; conflict resolution
- Knowledge and critical understanding
 - Knowledge and critical understanding of the self; knowledge and critical understanding of language and communication; knowledge and critical understanding of the world

Accompanying descriptors were piloted in the Council of Europe member states and guidance on curriculum development, teaching and learning strategies and appropriate assessment methods has been prepared in dialogue with European governments and the education community. The full Council of Europe Reference Framework will be published at the beginning of 2018¹⁴⁸.

UNESCO has developed Global Citizenship Education (GCED)¹⁴⁹, linked to Education for Sustainable Development and guided by Target 4.7 of the Sustainable Development Goals¹⁵⁰.

¹⁴⁵ http://ec.europa.eu/dgs/education_culture/repository/education/news/2015/documents/citizenship-education-declaration_en.pdf

¹⁴⁶ http://ec.europa.eu/education/policy/strategic-framework/expert-groups/citizenship-common-values_en

¹⁴⁷ <http://www.coe.int/en/web/education/competences-for-democratic-culture>

¹⁴⁸ www.coe.int/competences

¹⁴⁹ <http://en.unesco.org/gced>

GCED aims to empower learners to assume active roles to face and resolve global challenges and to become proactive contributors to a more peaceful, tolerant, inclusive and secure world. Key learning outcomes, key learner attributes and topics for 5-18+ year-olds are divided into cognitive, socio-emotional and behavioural domains. Learning objectives are cover four levels of education¹⁵¹.

In order to influence the formation of attitudes and values, early childhood is the best place to start with global citizenship education, where early learners acquire the right mindsets for global citizenship. Information and knowledge about global citizenship have to be combined with practice, actual experiences and opportunities for learners to develop, test and build their own views, values and attitudes and to learn how to take actions responsibly. Participation in community activities and opportunities to interact with populations of different backgrounds or of different views are necessary¹⁵².

The Eurydice report on citizenship education¹⁵³ also stresses the importance of a variety of teaching and learning approaches in citizenship education, from active, interactive, critical, collaborative and participative learning to whole school approaches and learning through extra-curricular activities. Student participation in school governance and parents' engagement are however crucial in sending a strong message about democracy and inclusion in the school as a whole.

Critical thinking, understanding, and critical use of all forms of media are part of civic competences and citizenship education¹⁵⁴ and at the same time linked to literacy, digital and cultural awareness competences. Encouraging open discussions among learners, supporting teachers and school leaders in the use of new technologies and open educational resources, engaging with parents and other actors in society, are all part of developing critical thinking and civic competence, as a critical ability for navigating the digitalised world¹⁵⁵.

Entrepreneurship competence

Already the 2006 Reference Framework listed 'Sense of initiative and entrepreneurship' among the eight key competences for lifelong learning. But since then, the understanding of entrepreneurship competence has developed further and consequently also the public consultation called for better alignment between the Reference Framework and the recently developed Entrepreneurship Competence Framework¹⁵⁶.

Entrepreneurship competence has become a priority in policy agendas of modern economies and societies with the belief that this is a vital competence within the labour market and for people in their daily lives, even for those who are not classed as 'entrepreneurs' in the sense of

¹⁵⁰ Target 4.7. calls on countries to "ensure that all learners are provided with the knowledge and skills to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development".

¹⁵¹ <http://unesdoc.unesco.org/images/0023/002329/232993e.pdf>

¹⁵² <http://unesdoc.unesco.org/images/0024/002482/248232E.pdf>

¹⁵³ Eurydice (2017) Citizenship Education at School in Europe,

https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/9/97/Citizenship_Study_EN_2017.pdf

¹⁵⁴ http://ec.europa.eu/education/sites/education/files/literacy-thinking-preventing-radicalisation_en.pdf

¹⁵⁵ Council conclusions on developing media literacy and critical thinking through education and training, 2016

¹⁵⁶ <https://ec.europa.eu/jrc/en/entrecomp>

creating new business opportunities. The 2013 Communication 'Entrepreneurship 2020 Action Plan'¹⁵⁷ states that "investing in entrepreneurship education is one of the highest return investments Europe can make" and that the benefits include essential knowledge, skills and attitudes that help transform ideas into action and also significantly increase an individual's employability.

Most Member States have engaged in promoting and developing entrepreneurship competence in their respective countries in some way with the understanding that education, training and learning (formal and non-formal) plays a key role in developing an entrepreneurial mind-set and skills. Many aspects of this competence are present in education reforms that have taken place across Europe since 2006¹⁵⁸. The 2014 Final Report from the Thematic Working Group on Entrepreneurship¹⁵⁹ noted many differences between definitions of entrepreneurship competence, which were judged to be detrimental to effective or coherent policies and practices. The Report also urged national policy makers to take further steps to embed entrepreneurship competence in education. As highlighted in the 2016 Eurydice Report on 'Entrepreneurship Education at School in Europe'¹⁶⁰, about half of the countries in Europe have made use of the Key Competence Framework definition of entrepreneurship competence. A recent study on Youth Work and Youth Entrepreneurship¹⁶¹ has also found the use of the Key Competence definition in non-formal learning.

The Entrepreneurship Competence Framework has been created as a reference tool to help improve the entrepreneurial capacity of European people and organisations. The framework aims to build consensus around a common understanding of entrepreneurship competence by defining 3 competence areas and a list of 15 competences, learning outcomes and proficiency levels.

'Sense of initiative', which was addressed separately in the title of the entrepreneurship competence, describes only one of many 'attitudes' that are part of the competence. Aligning the definition with the Entrepreneurship Competence Framework and other European initiatives makes a strong case for not placing this phrase in the title of the competence. A number of projects and guidance documents developed since 2006 use 'entrepreneurial' as a way of referring to a state of being (processes) and mind-set (attitude).

Emphasis in the definition of entrepreneurship competence remains on the broad understanding of turning ideas into action and creating value, both as something that happens over time and that involves people and things (resources). Social, commercial and cultural processes and outcomes refer to activity that makes a positive contribution to individuals' lives and to the sustainable development of society as a whole. This contribution is also reflected in the skill of 'negotiating with others with empathy' and the attitude of 'taking care of people and the world'. Whereas 'creativity' and 'innovation' are sometimes thought of as

¹⁵⁷ [Entrepreneurship 2020 Action Plan](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52012DC0795) <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52012DC0795>

¹⁵⁸ 'Entrepreneurship Competence: An Overview of Existing Concepts, Policies and Initiatives', European Commission 2015; and 'Final report on a literature review of reforms related to 2006 European Framework of Key Competences for lifelong learning and role of the Framework in these reforms', European Commission, 2017.

¹⁵⁹ [2014 Final Report from the Thematic Working Group on Entrepreneurship](http://ec.europa.eu/dgs/education_culture/repository/education/policy/strategic-framework/archive/documents/entrepreneurship-report-2014_en.pdf) http://ec.europa.eu/dgs/education_culture/repository/education/policy/strategic-framework/archive/documents/entrepreneurship-report-2014_en.pdf

¹⁶⁰ European Commission (2016) [Entrepreneurship Education at School in Europe](https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/4/45/195EN.pdf) <https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/4/45/195EN.pdf>

¹⁶¹ European Commission 2017 [Youth Work and Youth Entrepreneurship](https://publications.europa.eu/fr/publication-detail/-/publication/8f5910d8-6b64-11e7-b2f2-01aa75ed71a1/language-en/format-PDF/source-36638558) <https://publications.europa.eu/fr/publication-detail/-/publication/8f5910d8-6b64-11e7-b2f2-01aa75ed71a1/language-en/format-PDF/source-36638558>

discrete skills (alongside risk-taking) *within* entrepreneurship competence, they are more accurately understood as processes that entrepreneurship skills play a part in.

A strong call was made in the consultation process to be clear about risk as part of making informed decisions, rather than including 'risk-taking' as a discrete skill, as well as highlighting the important skill of coping with uncertainty and ambiguity. This is strengthened in the 'attitudes' of perseverance and a sense of initiative and agency – the latter referring to a confidence in one's capabilities.

There are recognised challenges with the perceived meaning and translation of the term 'entrepreneurship competence' to be too narrowly focused on the creation and management of business opportunities. Promoting a broad definition should help to support a more appropriate understanding of the broad nature of the knowledge, skills and attitudes, as well as opportunities for the development of the competence in a range of contexts – including through cross-sectoral cooperation.

Cultural awareness and expression

The OMC Working Group on Cultural Awareness and Expression (2014-15) both reviewed the 2006 definition of cultural awareness and expression competence and generated a collection of examples from education, training and learning together with policy recommendations. Whilst not a discrete Framework, the work represents a strong desire across Member States to ensure a broad and common understanding of how the competence refers not merely to passive appreciation but a more active and engaged participation in cultural development and the sustainability of society.¹⁶²

Like 'entrepreneurship competence', the benefits of the competence of cultural awareness and expression can be of socio-economic value. The Council Conclusions on a Work Plan for Culture (2015-2018)¹⁶³ recall the substantial contribution of the cultural and creative sectors to economic, social and regional development, and the importance of these sectors to the Europe 2020 strategy for smart, sustainable and inclusive growth.

'Cultural awareness and expression competence' means both actually having a voice and a way (tools/processes) to view and shape the world. This also relies on an awareness of how culture, as a collective social construct, shapes the views of the individual in return. It is important to highlight the crucial process of developing a sense of one's own place or role in society – which may be understood as one's 'socio-cultural identity' - as well as a sense of the identity of others with positive open-minded attitudes towards diverse cultural differences. This understanding of culture, based on the individual existing within particular contexts and communities implies interaction, inclusion and mobility as key issues and opportunities in society. Whilst this has strong links to the competences of personal, social and learning, and of civic, the distinction is made through the tools and processes; in other words the forms of cultural expression.

Consultation with experts highlighted that 'culture' is less static as a concept – a sum of its products - but more dynamic. Again this refers to the way of being as individual or

¹⁶² European Commission (2016) [Open method of coordination \(OMC\) working group of EU Member States' experts on 'cultural awareness and expression - Study](https://publications.europa.eu/fr/publication-detail/-/publication/6066c082-e68a-11e5-8a50-01aa75ed71a1) <https://publications.europa.eu/fr/publication-detail/-/publication/6066c082-e68a-11e5-8a50-01aa75ed71a1>

¹⁶³ [Council Conclusions on a Work Plan for Culture \(2015-2018\)](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2014.463.01.0004.01.ENG) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2014.463.01.0004.01.ENG

community and how we as individuals or communities interact with our environment, influencing both how we construct it, and how we understand it.¹⁶⁴ Cultural ideas, values and products also transcend cultural borders, and influence other cultures. In this way cultural ideas and products are mobile across cultural borders. Equally, the 'ideas' that an individual might possess are also not always predetermined or fixed but can be influenced by cultural expression, expressed in the revised definition.

The phrase 'creatively expressed' remains important, in recognition of how cultural products are formed by seeing and showing the world in new ways. Research literature contains many varied definitions of creativity but broadly along a similar understanding of the ability to foresee needs and problems, and respond imaginatively, innovatively, and flexibly to them.¹⁶⁵ The ability to work both individually and collectively is also an important part of the creative process, aligned with entrepreneurship competence.

Recognising the increased opportunity and ease with which to share cultural products, particularly through digital means, and it is important to recognise the legal and ethical principles relating to intellectual property as a crucial attitude of respect within this competence.

A contemporary understanding of cultural forms is broader than works of art. 'Forms' of expression¹⁶⁶ should include a broader reference to languages and cultural heritage and traditions, including architecture, rituals and games. Such forms can also include digital texts and interdisciplinary and hybrid forms that have emerged in recent years thanks to new tools and practices, as highlighted in the Working Group Handbook.¹⁶⁷ Engagement with these forms is not merely figurative but offers a particular opportunity to also engage in abstract thought and expression; an important element of creativity and innovation.

Having in mind a broad understanding of culture makes it difficult to refer to a non-specific 'canon' of 'major works'. The difficulties with such a concept include the tricky action of dictating of what is 'important' or 'worth preserving' from far outside of the group of people required to experience such works.¹⁶⁸ Other difficulties are that they are normative claims when such works are not of value in themselves and that it sets up an unquestioning reverence when modern pedagogy - and the Framework itself - places such importance on critical reflection¹⁶⁹. However, the concept of appreciation is still a relevant element of the competence, in that it 'requires knowledge' of other cultures and expressions, but should be left open for users of the Framework to specify the level of detail as appropriate to their

¹⁶⁴ Aneas, María Assumpta & Sandín, María Paz (2009). Intercultural and Cross-Cultural Communication Research: Some Reflections about Culture and Qualitative Methods [57 paragraphs]. Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 10(1), Art. 51, <http://nbn-resolving.de/urn:nbn:de:0114-fqs0901519>.

¹⁶⁵ O'Toole, J. in Sinclair et al, 2009, In Education in the arts: teaching and learning in the contemporary curriculum., eds. C. Sinclair N. Jeanneret and J. O'Toole. Melbourne, Vic.: Oxford University Press. p. xxiii

¹⁶⁶ The short list in the 2006 definition was incorrectly referred to as 'a range of media' (which are instruments, theatre performance, books, paintings, etc.). It was also a limited list compared to a list of Traditional Cultural Expression (stories, thought forms, rituals, architecture, etc.)

¹⁶⁷ European Commission (2016) [Open method of coordination \(OMC\) working group of EU Member States' experts on 'cultural awareness and expression - Study](#)

¹⁶⁸ Fleming, M. (2007). The Literary Canon: reflections from a school curriculum perspective. In The Literary Canon: Approaches to Teaching Literature in Different Contexts. Samihaihan, T. Bucharest: Bucharest: University of Bucharest.

¹⁶⁹ Ibid.

context. This is important for education and training systems in supporting access to a range of cultural experiences by all.

It is important not to retract from references to elements of the more intangible kind¹⁷⁰ within creative processes. 'Empathy' – the ability to understand the world from the perspective of another - is recognised an important part of the skill set of cultural awareness and expression. To be able to appreciate and value the contexts and actions – past and present - of diverse cultures, groups and nations, requires empathy¹⁷¹ as a kind of inter-personal problem solving.

'Curiosity', 'imagining new possibilities' and 'participation' are also crucial elements to recognise in this competence as part of generating a sense of engagement, active citizenship, and contribution to the sustainability of society.

¹⁷⁰ 'Intangible' referring to what might be observed without the use of complex technology. However, there are indeed recent developments in neuroscience that can identify brain activity related to these functions. See, for example, Damasio, A. (2011) *The Brain: Creativity, Imagination, & Innovation*, talk delivered at Ross Institute Summer Academy 2011, East Hampton, NY. Accessed at <https://www.youtube.com/watch?v=EF--dEGzh-g> [23/4/14]

¹⁷¹ Nussbaum, Martha C. (2010) *Not For Profit: Why Democracy Needs The Humanities*. Princeton: Princeton University Press

5. Good practices to support Key Competences Development

How to make better use of the European Reference Framework of Key Competences for lifelong learning was the most important question during the public consultation. 44% of the respondents stated that practitioners needed more support and training to use the Framework. This leads to the question how possible initiatives at EU level can support the use of the Reference Framework and, more broadly, help to further develop competence-oriented education, training and learning.

Respondents highlighted the need to create detailed reference material for each key competence, making better use of existing practical tools and guidance on assessment and validation and developing new ones, supporting mutual learning on understanding and use of the Framework among Member States and practitioners and finally raising awareness about the Reference Framework.¹⁷²

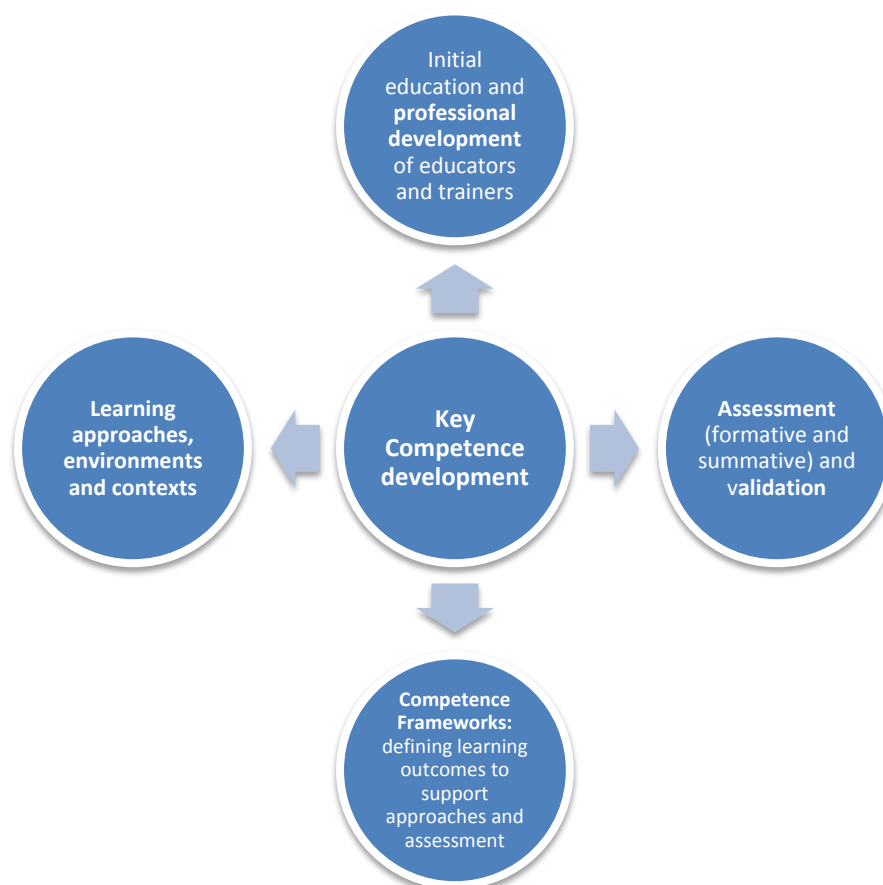
Competence-oriented teaching and learning requires a significant shift from "traditional" content based approaches towards learning through real world situations, with new forms of assessment. They have implications for teaching, learning and assessment, and call for comprehensive and coherent policies at national, regional, local level and within education, training and learning settings.

This chapter will therefore look at the challenges identified in implementing the 2006 Recommendation on Key Competences for lifelong learning and the possible initiatives to better support its implementation. It will especially then focus on a) support for teachers, trainers and educators in changing their practice, b) the assessment of key competences by developing coherent assessment, evaluation systems, including testing and using new assessment methods, as well as approaches for validating competences and c) learning approaches, environments and contexts, including innovative partnerships between education institutions and external stakeholders that can provide more opportunities for "real life" learning¹⁷³.

¹⁷² Report on the results of the stakeholder consultation - Study, p.30

<https://publications.europa.eu/en/publication-detail/-/publication/0ce06c4a-8b9d-11e7-b5c6-01aa75ed71a1/language-en> Report on the results of the stakeholder consultation - Study , p.30

¹⁷³ Looney, J., Michel, A., 2014: KeyCoNet's Conclusions and recommendations for strengthening Key Competence development in policy and practice



5.1 Challenges for implementation

In 2012, a Commission Staff Working Document on the assessment of key competences in initial education and training took note of the main challenges in implementing the European Framework of key competences. It analysed that the main challenges for its wider use are the insufficient support to teachers' and trainers' competence development, the development of suitable assessment methods and the introduction of new ways to organise learning.¹⁷⁴

This analysis has been confirmed by a recent literature review on the use of the European Framework of Key Competences. It sees a key barrier in the challenges faced by individual learning institutions (e.g. schools and colleges) in adapting teaching and learning to develop the defined competences. For example, teachers in Slovakia, during the initial implementation phase found the competences “*unclear and difficult to operationalise*”. They also struggled to assess key competences. No standard approaches or national guidelines on how to assess learner achievements were made available; hence some schools had to develop their own assessment procedures.¹⁷⁵

CEDEFOP reported that the implementation of key competences in VET faced similar challenges. Countries made the experience that key competences in initial vocational education and training can be integrated through work based learning and other learning

¹⁷⁴ European Commission (2012) Assessment of Key Competences in initial education and training: Policy Guidance, SWD(2012)371

¹⁷⁵ 'Final report on a literature review of reforms related to 2006 European Framework of Key Competences for lifelong learning and role of the Framework in these reforms', European Commission, 2017.

methods. But "whether they are assessed in VET or not, and in what way, depends on the specific key competence, the type of programme and the end qualification. In VET programmes that give access to higher education, maths, mother tongue and foreign languages, have traditionally formed part of upper secondary school-leaving exams. In other cases, key competences, in particular soft skills, may be assessed in a cross-curriculum manner, for example in the context of occupational skills demonstrations, within training firm or projects learners carry out jointly with or for enterprises."¹⁷⁶ Evidence suggests also that teacher and trainer training on key competences in VET is organised when curricula are revised, but countries do not report if it is provided regularly, once the curricula are introduced.¹⁷⁷

The experiences in VET also point to another key challenge: the implementation of competence oriented education, training and learning depends strongly on the institutional setting of the education institution or the learning provider. For VET it was stated that, "form and extent depend on type and level of programmes and the degree of autonomy that VET institutions have in shaping or adjusting programmes and curricula. In many countries, key competences have been part of VET for a long time; school-based VET usually includes mother tongue, maths and science and often foreign language learning. In several cases, the recommendation gave a new impetus to reinforce them in line with the EU framework. In recent years, the emphasis on learning outcomes, the work on educational and vocational standards, and the revision of curricula has drawn more attention to key competences."¹⁷⁸

5.2 Competence Frameworks

Translating key competences into learning outcomes is a major step to overcome difficulties in implementation. They can guide day-to-day teaching and learning and pre-define also assessment. Translating key competences into learning outcomes can be done at different levels, by policy makers, but also teachers and learners within their individual education systems, institutions and programmes of learning. The JRC Competence Frameworks for Entrepreneurship and for Digital Competences can be regarded as examples at EU level which can support work at national, regional or institutional level¹⁷⁹. The most prominent example is probably the Common European Framework of Reference for Languages developed by the Council of Europe.¹⁸⁰

Policy makers can ensure that these learning outcomes are consistently specified across curricula, syllabi, specifications, standards or similar framework documents. Teachers have a crucial role to play in interpreting these documents. Importantly, they can identify and plan opportunities for learners to develop their key competences within their specific subjects, across several subjects in collaboration with other teachers or beyond subjects as, for example, in whole school projects.

¹⁷⁶ Cedefop (2012). Curriculum reform in Europe. The impact of learning outcomes. Luxembourg: Publications Office of the European Union.

¹⁷⁷ COUNTRY REPORTS ON "KEY COMPETENCES IN VOCATIONAL EDUCATION AND TRAINING", Cedefop 2016, <http://www.cedefop.europa.eu/en/publications-and-resources/country-reports/key-competences-in-vet>

¹⁷⁸ Cedefop (2012). Curriculum reform in Europe. The impact of learning outcomes. Luxembourg: Publications Office of the European Union.

¹⁷⁹ <https://ec.europa.eu/jrc/en/entrecomp>; <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>

¹⁸⁰ <http://www.coe.int/en/web/common-european-framework-reference-languages>

In 2012, the SWD on Assessment of Key Competences presented some examples how key competences can be translated into learning outcomes. For example, an EU funded project in Lithuania at that time identified four elements within the 'Learning-to-learn' competence for learners in the age groups 11-12 and 13-14 years: 1) attitude towards learning and willingness to learn, 2) setting objectives and planning activities, 3) organisation and management of activities and 4) reflection on learning activities and outcomes and self-assessment. These elements were then described in more detail, including the definition of different levels towards development of the competence.¹⁸¹

Building on the experiences with Competence Frameworks for Entrepreneurship and for Digital Competences, a key task in the next years will be to develop similar approaches also for the other competences within the Reference Framework and work on related guidance tools.

5.3 Supporting educational staff

Educational staff has a decisive impact on learners' achievement and motivation. The student-centred and inquiry-based approaches typically associated with the concept of key competences put even more emphasis on the qualities and competences required of effective educators. Educational staff includes teachers, trainers, teacher educators, leaders of education and training institutes, employees in charge of training colleagues, researchers and university lecturers, youth workers and adult educators.

Educational staff also plays a key role in implementing changes in education. Effective reforms of curricula, learner assessment or the organisation of learning depend on their capacity, ability and willingness to successfully adapt teaching practice. Moving towards competence-based learning therefore requires appropriate and sustained support to these professionals and their work environment.

- Involve staff in the design and implementation of changes

Practitioners should be considered as important stakeholders in moves towards competence oriented education. Involving them, from the outset, in the formulation, monitoring and evaluation of policy and curricular reforms can add valuable expertise and feedback from practice to the process. It also increases the chances of broad acceptance among practitioners and a vision of education that is shared across different stakeholders.

- Support educational staff with guidance, tools and material to enhance teaching

At the same time teaching staff need clear guidelines, access to appropriate tools and materials, and exemplars of effective practice. This is particularly the case for key competence approaches that a majority of teachers may not be familiar with.

- Encourage collaboration within and beyond educational institutions

Developing key competences across curricula and programmes may require staff to work together in new, unfamiliar ways (including across departments and with external partners). It is therefore crucial that both staff and leaders have a shared understanding of the key competences to be developed and the responsibilities and roles of each member of the school community in how key competences are taught, learned and assessed. Effective cooperation and collaboration between teaching and leadership staff will enable learners to make

¹⁸¹ SWD(2012)371

connections across their learning and develop broader perspectives that prepare them for life and work.¹⁸² Collaboration with researchers, through action research or controlled studies, can help staff improve their practice and can provide institutions (and education systems) with valuable feedback.

The EU-funded CO-LAB project¹⁸³ tests the collaborative learning and teaching approaches, including project- and problem-based learning, at the national and school level, including the use of a range of adapted assessment methods. The implementation of collaborative approaches in national education systems is discussed among practitioners and policy makers in an evidence-informed dialogue.

- Consider the role of educational leadership

In most education systems, institutional leadership extends beyond management or administrative functions and plays an important role in defining and shaping instruction and the organisation of learning. Where institutions introduce competence-based teaching, leaders need to accompany the process of change by ensuring that all staff receives sufficient time to develop their practice and that the work environment encourages collaboration and innovation. Creating a vision that is shared across the institution, and responds to external expectations, leaders may need to address scepticism and create links with external stakeholders.

- Invest in the education and professional development of staff

Implementing competence-based education may require fundamental changes to teaching practice. Some staff may need to update or develop additional competences through Continuing Professional Development (CPD), others may benefit from mentoring schemes. The effectiveness, and cost, of CPD have come to the focus of education policies and gain particular importance where major reforms need to be supported. At the same time, reforming the initial education of educational staff in line with competence-based approaches, is becoming a priority to ensure sustainability. Both areas have been found to lag behind curricular reforms.

According to the Eurydice reports on mathematics and science education, in many countries, while there are policies addressing raising achievement in literacy, little is done for achievement in mathematics and science¹⁸⁴. A large proportion of primary teachers appears to have had little training in teaching science and may sometimes lack confidence in teaching the subject¹⁸⁵. This is less the case for mathematics¹⁸⁶.

The [DigCompEdu framework](https://ec.europa.eu/jrc/sites/jrcsh/files/digcompedu_leaflet_final.pdf)¹⁸⁷ aims to capture educator-specific digital competences. The framework is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational training, special needs education, and non-formal learning contexts.

¹⁸² SWD(2012)371

¹⁸³ <http://colab.eun.org/>

¹⁸⁴ http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/133EN.pdf

¹⁸⁵ Ibid

¹⁸⁶ http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/132EN.pdf

¹⁸⁷ https://ec.europa.eu/jrc/sites/jrcsh/files/digcompedu_leaflet_final.pdf

The '[SELFIE' tool](#) (piloted in 2017) is designed to give schools a holistic view of how students, teachers and administration perceive the digital status quo of their organisation. The aim is not to bring schools to a fixed level of digital readiness, but rather to help schools develop a plan to integrate digital technologies effectively, decide the concrete next steps and continuously measure progress and improve further.¹⁸⁸ Possibilities for adapting this tool for Higher Education institutions is being explored.

'SELFIE' tool is based on the [Digitally-Competent Educational Organisations \(DigCompOrg\) conceptual framework](#)¹⁸⁹ that offers a detailed description of what it takes to educational organisations of any kind to be digitally competent.

5.4 Assessment of learners

Assessment influences individuals and their progress in learning and education and training systems in general. For learners, assessment shows what is valued in a learning outcome; it can increase awareness of one's learning process and learning needs, and help overcome obstacles in order to learn more effectively. Assessment can help people learn to gain, assimilate and process new knowledge and skills, help them understand their preferred learning styles and become autonomous and confident learners. Assessment leading to qualifications may also help (or hinder) the learner to communicate his/her real competences when seeking further learning opportunities or employment.

Having this in mind, it is key for the development of competence oriented education, training and learning to develop approaches and tools which capture in how far a learner succeeds in developing certain competences. But assessment is not only important for the learner, it shapes the whole learning process, the way education, training and learning is organised and governed.

For the teacher or facilitator of the learning process, assessment has a powerful impact on what and how is taught. This can be both beneficial, using assessment as a tool for clarifying learning outcomes and future goals, and detrimental, narrowing learning to the content and methods likely to be tested ("teaching to the test"). Teaching, learning and assessment are closely intertwined and any policy or strategy which impacts on one of these elements, will also affect the others. This means that decisions made in relation to assessment have a major influence on how the key competences are taught, and therefore, on what learners learn.¹⁹⁰

Its relevance in the context of key competence development cannot be overestimated. Working on key competence assessment will therefore be an important task in supporting the use of the Reference Framework.

Different approaches to and purposes of assessment

Assessment methods most often include the following elements:

- **Formative assessment** to assist learning. Such assessment is designed to provide diagnostic feedback to teachers and learners during the learning process.
- **Summative assessment** for use at the classroom, institution, or regional level to determine learner attainment levels. Such assessment includes tests, given at the end

¹⁸⁸ <https://ec.europa.eu/jrc/en/digcomporg/selfie-tool>

¹⁸⁹ http://publications.jrc.ec.europa.eu/repository/bitstream/JRC98209/jrc98209_r_digcomporg_final.pdf

¹⁹⁰ Background Paper for the Belgian Presidency meeting for Directors General for school education in 2010; see also SWD(2012)371

of a module, course or academic year, and are designed to determine what individual learners have achieved.

- **Assessment for programme evaluation**, used in making comparisons across classrooms, institutions, regions, or nations. Such assessment often includes standardized tests designed to measure variation in the outcomes of different instructional programs.

To provide useful assessment both in a formative and a summative perspective, any European Reference Framework may need to be translated into more detailed learning outcomes. The amount of detail varies according to the purposes of the assessment. For example, high stakes summative assessments need to be highly detailed in their rubric to ensure that the data is comparable and the consequences are fair.

Defining learning outcomes in excessive detail risks having a negative effect on pedagogical approaches, reducing learning to sequences of isolated tasks. It can also restrict learners' opportunities to demonstrate the range of their competences. A balance therefore needs to be struck between specification in policy documents and scope for interpretation by teachers and learners themselves in practice. This impacts equally on the learning process and the assessment.

Overview of different assessment purposes¹⁹¹

Context	Function	Use
System	International comparisons; National standards; Accountability.	Policy development, system monitoring
Institution	Monitoring against national standards; Internal quality assurance; Developing internal policies and procedures	Feed into national data-gathering processes; Feedback to tutors, trainers, teachers, learners, parents.
Learner	Monitor achievement against national standards and curriculum objectives; diagnose strengths and weaknesses; track progress	Feedback to learner on progress; feedback to tutors and teachers on success of teaching approach.

A Commission Communication from 2009 on "Key Competences for a changing world" analysed that "(...) most current assessment methods have a strong emphasis on knowledge and recall and do not sufficiently capture the crucial skills and attitudes dimension of key competences. (...) The experience of those countries using complementary methodologies such as peer assessment, portfolios, individual learning and/or school assessment plans, and project-based assessment should be further examined and built upon."¹⁹²

The 2013 European Commission Youthpass Impact Study¹⁹³ put a specific focus on the use of an guided self-assessment tool to increase the young people's ownership of the learning process, the improvement of the learning process through the use of self-assessment, the ability to better identify and describe learning outcomes and raising the young people's self-confidence which enables them to better participate in education and employment.

¹⁹¹ SWD(2012)371

¹⁹² COM (2009) 640

¹⁹³ European Commission, Youthpass Impact Study – Young people's personal development and employability and the recognition of youth work, 2013

In 2010 a Thematic Working Group within ET2020 started to work on Assessment of Key Competences; their findings were summarised in a Staff Working Document on "Assessment of key competences in initial education and training: Policy Guidance" in 2012. Member States identified key principles to be taken into account in developing and implementing assessment policies: assessment should be fair, reliable, valid and learner-centred.¹⁹⁴

Since then, a number of literacy reviews and studies have been published:

- Thematic Working Group 'Assessment of Key Competences', Literature Review, Glossary and Examples (2012)
- KeyCoNet 2013 Literature Review; Assessment for Key Competences
- NESET: Rethinking Assessment practices for the 21st century (2017)

During the public consultation on the review of the 2006 Recommendation on Key Competences, the general conclusion was that important areas of development are the development of assessment tools to support the development of key competences as well as including tools to support the validation of competences.

Responses highlighted the need to develop new forms of assessment that fully take into consideration the different approaches and aims of formal, non-formal learning and of informal learning. The competence model should clearly refer to the holistic character of learning with the aim to contribute to the shaping of impact oriented learning processes.

Moreover, the balance towards assessment should be shifted in a way that allows increasing flexibility, creativity and innovation and the European Commission is recommended to provide further support to Member States in the implementation process.

However, not all respondents agreed with an increased focus on assessment. Some argued that recent EU initiatives in the area of education policies put too much value on tests and studies about learning outputs rather than showing how and to what extent key competencies are promoted.

International assessment, evaluation and comparison

All Member States have systems in place to assess literacy, numeracy and science. PISA, PIAAC, TIMSS and PIRLS are used in many Member States to allow also for international and national comparison - PISA since 2000, on a 3 years basis, and PIRLS since 2001, on a 5 years basis, and PIAAC since 2013.

OECD's Programme for International Student Assessment (PISA)¹⁹⁵ and the Survey for Adult Skills (PIAAC) evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students, or adult population respectively, and established an international comparison basis. The PISA assessment is the basis for the Education and Training 2020 benchmark for basic skills.

The International Association for the Evaluation of Educational Achievement (IEA)¹⁹⁶ has been conducting international comparative assessments of student achievement in mathematics, science, and reading in more than 60 countries and runs the PIRLS (the Progress

¹⁹⁴ SWD(2012)371

¹⁹⁵ www.oecd.org/pisa/aboutpisa/

¹⁹⁶ IEA (www.iea.nl) is a non-profit and independent organization of national research institutions, government research agencies, scholars, and analysts working to evaluate, understand and improve education worldwide.

in International Reading Literacy Study) and TIMSS (the Trends in International Mathematics and Science Study)

Both PISA and PIRLS surveys are based on an expanded notion of reading, i.e. 'reading literacy' rather than simply 'reading'. This construct includes not only the processes and skills of reading comprehension, but also the uses of, and attitudes toward reading that characterise proficient readers. Both PIRLS and PISA view reading as an interactive, constructive process and emphasise the importance of students' ability to reflect on reading and to use reading for different purposes.

PISA does not include a foreign language assessment component. However, plans to assess Global competence¹⁹⁷ in 2018 include assessing the 'ability to communicate in more than one language'¹⁹⁸, as being an important asset for employability in an interconnected world. Global Competence includes the acquisition of in-depth knowledge and understanding of global and intercultural issues; the ability to learn from and live with people from diverse backgrounds; and the attitudes and values necessary to interact respectfully with others.

PISA and TIMSS are internationally recognised and statistically validated tools¹⁹⁹ which allow for evaluation of individual students, schools, regions as well as the policy measures taken to improve performance in mathematics, science and technologies.

PISA 2015 also introduced a test on social (interpersonal) competences which focused on the assessment of collaborative problem-solving, considering the types of problems and collaborative interactions that 15-year-old students face in and out of the classroom, as well as a consideration for their "preparedness for life" in the workplace and in further studies. Three main competences: establishing and maintaining shared understanding; taking appropriate action to solve the problem and; establishing and maintaining group organisation are at the core of 12 specific skills measured²⁰⁰.

Health Behaviour in School-aged Children (HBSC) is a study coordinated by the World Health Organisation which provides information about health, well-being, social environment and health behaviour of 11-, 13- and 15-year-old boys and girls in 42 countries and regions in Europe and North America. It includes social context (relations with family, peers and school), health outcomes (subjective health, injuries, obesity and mental health), health behaviour (patterns of eating, tooth brushing and physical activity) and risk behaviours (use of tobacco, alcohol and cannabis, sexual behaviour, fighting and bullying) of young people. It is a useful tool for international comparison and detecting national trends in youth's health and general well-being.

The project 'Assessing progression in creative and critical thinking skills in education'²⁰¹, led by the Centre for Educational Research and Innovation at OECD, is aiming to produce an international rubric to assess creativity and critical thinking and may contribute to the development of a possible module on creativity for PISA 2021. The project is aligned with the long-standing interest of the PISA Governing Board in higher order skills and the plan to expand the learning outcomes that PISA assesses internationally. It should be noted that this

¹⁹⁷ Global Competence includes the acquisition of in-depth knowledge and understanding of global and intercultural issues; the ability to learn from and live with people from diverse backgrounds; and the attitudes and values necessary to interact respectfully with others.

¹⁹⁸ <https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf>

¹⁹⁹ <http://www.oecd.org/pisa/>; <https://nces.ed.gov/timss/>

²⁰⁰ <http://www.oecd.org/pisa/pisaproducts/Draft%20PISA%202015%20Collaborative%20Problem%20Solving%20Framework%20.pdf>

²⁰¹ '[Assessing progression in creative and critical thinking skills in education](#)'

does not cover all elements of the Cultural Awareness and Expression competence. It is, however, examining assessment in some art forms and in interdisciplinary contexts.

European Frameworks to support assessment

An important tool that has shaped language and literacy assessment is the [Common European Framework for Reference for Languages](#) (CEFR). The CEFR was published by the Council of Europe in 2001 (the European Year of Languages) to promote transparency and coherence in language learning and teaching in Europe. It includes a descriptive scheme of language use and scales of proficiency by the different parameters of this scheme. The Framework is not language specific. It is a tool for reflecting on what is involved not only in language use, but also in language learning and teaching, and it provides a basis and common language for the elaboration of guidelines, textbooks, teacher training programme, and for relating examinations to one another. Since its inception, the Framework has been widely used for developing coherence in provision across different languages, including for designing the PISA Reading Literacy survey. The CEFR introduced the notion of 'communicative language competences' and described the individual learner as 'social agent' who develops a range of competences, therefore it introduced a competence based approach to teaching and assessing language competence. As such, it represented the main tool that many countries have used to stimulate curriculum and examination reforms in different educational sectors.

In terms of self-assessment tools, the CEFR inspired the European Language Portfolio, which has been widely used in Europe and also incorporated into Europass.

- The [European Language Portfolio](#) (ELP) is a document in which those who are learning or have learned a language - whether at school or outside school - can record and reflect on their language learning and cultural experiences. The ELP is composed of three parts: a Language passport which its owner regularly updates. A grid is provided where his/her language competences can be described according to common criteria accepted throughout Europe and which can serve as a complement to customary certificates.
- The [Europass Language Passport](#), an electronic version of the standard Language Passport for adults, was jointly developed by the Council of Europe and the European Union. It can be completed on line or downloaded.

The ELP also contains a detailed language biography describing the owner's experiences in each language and which is designed to guide the learner in planning and assessing progress. Finally, there is a dossier where examples of personal work can be kept to illustrate one's language competences. Portfolio models vary according to countries and educational contexts. They are all examined by a European Validation Committee which accords an accreditation number. Note: Models are not available from the Council of Europe.

As part of its plans to promote learning languages on the continent, the European Commission organised a first European Survey on Language Competences²⁰² in 2011, providing the first-ever European scale comparison of the foreign language proficiency of pupils in secondary education.

²⁰² http://ec.europa.eu/dgs/education_culture/repository/languages/policy/strategic-framework/documents/language-survey-final-report_en.pdf

While the CEFR represents an established good practice and model of how to work with competence frameworks, a substantial amount of investment has been made during the last years to support also the development and assessment of the digital competence of people, as well as educators and organisations (see 5.2 above). The report DigComp 2.0: The 'Digital Competence Framework for Citizens'²⁰³ presents the DigComp conceptual reference model together with 'DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use' (published 2017)²⁰⁴. It offers people a tool to improve citizen's digital competence for work and employability, learning, leisure, consumption and participation in society. It also offers policy makers a way to monitor citizen's digital skills and support in curricula development. It has already been used and adapted by many countries and implemented in many ways across Europe²⁰⁵.

Based on the positive response to tool development derived from the Digital Competence Framework, similar work was undertaken to support Member States in promoting the development of entrepreneurship. The 'Entrepreneurship Competence Framework'²⁰⁶ was published in 2016. Extensive research was undertaken as part of its development in order to understand the most recent policy and practice developments in different countries. Its first version consists of 3 interrelated and interconnected competence areas: 'Ideas and opportunities', 'Resources' and 'Into action' and each of the areas is made up of 5 competences which are described in terms of what the individual "is able to do". The 15 competences are also placed in a progression model, describing a spectrum from Foundation to Expert: relying on support from others; to building independence; to taking responsibility; and finally at the level of driving transformation, innovation and growth. The European Commission is exploring further development of this framework to support to countries and individuals working in education, training and learning.

National testing

A Eurydice study from 2009²⁰⁷ on national testing in school education emphasises that national level tests – in addition to their function of awarding grades or certificates - have become an increasingly important tool for Member States to monitor their school education systems. However, evaluation policies vary in subject coverage, frequency of assessment, use of sampling or universal assessment, and how the results are used to feed back to schools and the systems as a whole. Also, the study concludes that out of the eight key competences set out by the European Framework three, namely 'communication in the mother tongue', 'communication in foreign languages', and 'mathematical competences and basic competences in science and technology', are the most commonly assessed in national tests.

By contrast, in many European countries the key competences such as 'learning to learn' or 'social and civic competences', which usually relate to more than one subject, are not generally assessed in national evaluations. This was also confirmed by a later Eurydice report

²⁰³ <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-20-digital-competence-framework-citizens-update-phase-1-conceptual-reference-model>

²⁰⁴ <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-21-digital-competence-framework-citizens-eight-proficiency-levels-and-examples-use>

²⁰⁵ <https://ec.europa.eu/jrc/en/digcomp/implementation>

²⁰⁶ <https://ec.europa.eu/jrc/en/entrecomp>

²⁰⁷ http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/109EN.pdf

from 2011/2012 which looked at 6 out of the eight Key Competences and the ways they are addressed in national testing.²⁰⁸

To improve this situation, comprehensive assessment strategies are recommended that should be constructed around four main steps:

- 1) analysing which of the key competences are covered by national tests and other forms of summative assessment;
- 2) how key competences can be turned into more detailed learning outcomes that can be accurately and meaningfully assessed;
- 3) how broadening the scope of assessment can reveal, report and develop more of those competences and, finally,
- 4) how reforms of assessment can be implemented and what other policy areas are needed to support implementation.

Assessment strategies differ with regard to the different key competences; while this is due to the specific character of the different competences, there is also a considerable difference with regard to experiences in assessing competences.

Literacy: All Member States have systems in place to assess reading literacy. The national information collected by Eurydice for the 2016²⁰⁹ update on basic skills shows that almost all European education systems organise nationally standardised tests in compulsory education and the majority of European countries publish national reports on achievement in each of the basic skills based on national performance data. In many cases, these reports are complemented by reports based on the country results from international surveys such as PISA and PIRLS.

Bilingual learners and migrant children

Literacy assessment usually takes place in the language of instruction of schools, which is also the first language for most children living in Europe. However, for many children, usually those with a migrant background, the language of instruction is not their mother tongue. Numerous studies show that migrant pupils tend to perform less well in reading than children of the host country. How to teach and assess reading skills to children whose mother tongue is not the language of instruction is, therefore, a crucial issue. A problematic situation arises, for example, when bilingual learners are assessed by using monolingual assessment tools. New ways of assessment should be considered including assessments that take place in different modes of observation and appraisal. 'Systemic and learning-oriented approaches', such as the Learning Oriented Assessment²¹⁰ developed by Cambridge English learning assessment, aim to promote informal and formal assessments to comprehensively understand learners' progress. This field is subject to current research, since the number of bilingual children in Europe's schools (and who do not speak the language of schooling at home) is on the rise.

Mathematics, science and technology: The competences of mathematics, science and technologies have always been included in EU Member States' curricula albeit not necessarily as competences which cover not only knowledge and skills but also *attitudes*, i.e. attitudes and

²⁰⁸ Eurydice (2012) Developing Key Competences at school,

http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/145en.pdf

²⁰⁹ https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/1/1b/Achievement_in_Basic_Skills_.pdf

²¹⁰ <http://www.cambridgeenglish.org/research-and-validation/fitness-for-purpose/loa/>

understanding of science as a process and the scientific way of reasoning as a pre-requisite for critical thinking and global awareness. Students achievement levels in mathematical reasoning are normally included in national and international assessment frameworks²¹¹. As the EU working group on raising achievement in mathematics, science and technologies²¹² and the Eurydice²¹³ reports revealed, the science competence is not always considered as a basic skill and is not assessed as universally as the literacy and mathematics competences²¹⁴. It may be concluded that the competence in science/technology represents a somewhat more challenging task in terms of its implementation and assessment than its mathematics counterpart²¹⁵.

Personal, social and learning competences: Taking into account the interconnectedness and broadness of personal, social and learning competences, their development is bound to be cross-curricular and involve new learning and assessment approaches. Many countries already have guidelines for schools to assess student social and emotional skills, which tend to be administered in a formative manner, but also make part of end-of-term student reports. Some countries advocate self-assessment, complementing it with peer assessments based on fixed criteria. National surveys of pupil well-being at school, such as in Norway, also help analyse and improve the engagement and learning environment at school²¹⁶.

Civic competence: The IEA International Civic and Citizenship Study (ICCS), which will be published in November 2017 and which concerns 14 EU Member States, will provide important data for policy-makers and stakeholders on the development of civic competence²¹⁷. Concerning student assessment, the forthcoming Eurydice report on Citizenship education in schools in Europe finds that only in a slight majority of European countries, student assessment in the classroom is framed by official guidelines through basic principles, including general aims and sometimes a range of recommended approaches and/or methods. Only twelve education systems in the EU organize such tests for certification purposes, to summarise students' achievements, while five administer standardised tests in citizenship education with the purpose of evaluating and monitoring the education system as a whole and/or of individual schools²¹⁸. These assessments concern citizenship education, mainly knowledge-based and not including all the aspects of the civic competence, which indicates the difficulty of grasping civic competence development in student assessment.

Entrepreneurship: Learning outcomes linked to entrepreneurship education are fragmented in most European countries; they are not comprehensive and lack progression between education levels. Most importantly, the penetration rate is still low. The assessment of entrepreneurial competences in schools and Higher Education is underdeveloped. More than half of the Member States have few or no guidelines for teaching methods.

Cultural awareness and expression: Research looks at suitable approaches to assessment that can support progression in the development of cultural awareness and expression and provide data for monitoring. Whilst there are several examples within and outside Europe of

²¹¹ <http://www.oecd.org/pisa/>; <https://nces.ed.gov/timss/>

²¹² http://ec.europa.eu/education/policy/strategic-framework/archive/documents/wg-mst-final-report_en.pdf

²¹³ https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/1/1b/Achievement_in_Basic_Skills_.pdf

²¹⁴ https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/1/1b/Achievement_in_Basic_Skills_.pdf

²¹⁵ https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/1/1b/Achievement_in_Basic_Skills_.pdf

²¹⁶ OECD (2015), *Skills for Social Progress: The Power of Social and Emotional Skills*, OECD Publishing, Paris.
<http://dx.doi.org/10.1787/9789264226159-en>

²¹⁷ <http://iccs.iea.nl/>

²¹⁸ Eurydice (2017) *Citizenship Education at School in Europe*,
https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/9/97/Citizenship_Study_EN_2017.pdf

frameworks to (self)assess intercultural competence²¹⁹, and with varying definitions, there are relatively few concerning cultural expression that are not tied to specific formal education curricula, even in the rare cases where these exist.

Compared to other competences, there are comparatively few examples of policy development or research literature on the assessment of a) the creative process or b) the quality of learners' creative products²²⁰. This is believed to reflect the lack of reference standards and teachers' either reluctance or barriers (time, curricula, different testing demands) to judge learners' efforts and products.²²¹ Nevertheless, examples are emerging of models and approaches that may contribute to competence assessment and development.

The integration of digital technologies²²² and the approaches to assessment of arts education practitioners – over several decades - are making a strong contribution to ways in which framing the self-reflection and critical analysis by the learner can become an effect and robust approach to assessment. Not only are these shared experiences shifting the educator-learner relationship in the learning process but are also proven to enhance the development of the competence itself with the focus on the personal within a socio-cultural context.

This has implications across the Key Competence Framework, where creativity, including a sense of curiosity and initiative, problem solving, and critical thinking, are an integral part of many competences.

5.5 Learning environments and learning approaches

Competence-oriented learning is part of a movement in education to move away from merely factual knowledge and understanding to strategic thinking and decision-making coupled with the skills and sense of agency to make changes in the world – in other words to become more responsible and active people. It also signals a shift in pedagogical approach based on the understanding that learners have different strengths and needs.

It requires a flexible approach to teaching and learning that moves away from the concept of educator as the single 'knowledge authority' and allows the use of a variety of learning approaches to scaffold the progression and growing independence of each learner – of any age - according to their strengths, needs and interests. As competences comprise knowledge, skills and attitudes, and are not strictly confined to traditional subject domains or industries, the educator-facilitator is required to structure multi-dimensional learning processes and content. At the same time, these learner-centred environments and approaches have the potential to increase the motivation and engagement of learners in the learning process, and their sense of responsibility for learning outcomes.

²¹⁹ See, for example, the [INCA project](https://ec.europa.eu/migrant-integration/librarydoc/the-inca-project-intercultural-competence-assessment) (2009) <https://ec.europa.eu/migrant-integration/librarydoc/the-inca-project-intercultural-competence-assessment>

²²⁰ An accompanying document to 'Rethinking Education (2012), 'Assessment of Key Competences in initial education and training' makes reference to an example from the Malta national framework but no others.

²²¹ Collard, Paul and Looney, Janet, Nurturing Creativity in Education, European Journal of Education, Volume 49, Issue 3, September 2014, Pages 348–364

²²² See for example, Flanagan, Eilis and Hall, Tony, Digital Ensemble: The ENaCT design-based research framework for technology-enhanced embodied assessment in English education, English in Education, Volume 51, Issue 1, Spring 2017, Pages 76–99

According to research evidence²²³, there are particular approaches that can have a positive impact on competence development as a multi-dimensional, inter-disciplinary way of learning. These include:

- Role of the learner in the lifelong development of competences

In order to provide each learner with equal opportunities for development of all competences, learners need to have an active and equal role in the creation of the learning process. This calls for more participatory methods in learning, where the learner is active in a task rather than passively receiving information, and may even be involved themselves in decision-making on the learning content, approaches and organisation.

For this to be effective, a sense of autonomy within learners should be fostered from an early age through self-reflection and self-assessment. Peer learning and peer assessment also contribute to the autonomy and personal, social and learning competences, and underpin the continuous development of learner involvement and responsibility for learning pathways and career management.

Learning environments that provide solutions for the varying needs of different learners achieve better results. Diversity of learners should be matched by a diversity of learning approaches and differentiated learning support systems, to provide targeted and individualised learning when necessary.

- Social learning environments

Learning is not always a transaction between one educator and one learner – such as lecturing followed by individual question and answer or set assignment. Learning is often organised in groups where learners are dependent on each other and learn with or from each other. The nature of competences also means that attitudes – often socially-constructed – are being developed alongside knowledge and skills. In order to support competence development, learning environments need to be safe and respectful, with a concern for the well-being of all educators and learners. Therefore the personal, social and learning competence itself is important in competence-based learning, required from an early age.

This social and often collaborative nature of learning also presents an added challenge or complexity to the assessment of individual learner progression, meaning that the ability of a learner to self-reflect as part of team work is even more crucial.

- Problem-solving and project-based learning

Inquiry-based and project-based learning can support competence development as they take the fundamental approach of setting up an open inquiry based on a problem. The learner is then required to draw on a broad range of knowledge, skills and attitudes, and follow a particular cyclical process of design, creation, reflection, and adaptation, complementing this with the input of other individuals.

Similarly, game-based learning environments - working toward a goal, choosing actions and experiencing the consequences of those actions along the way – provide a complex, social and personally engaging way to draw on and develop a range of competences simultaneously.

²²³ For example, Cörvers et al (2016) [Problem-Based and Project-Based Learning for Sustainable Development](#).

In: Heinrichs H., Martens P., Michelsen G., Wiek A. (eds) Sustainability Science. Springer, Dordrecht

This kind of learning process – ideally situated in the context of real-world problems and solutions – is particularly well-defined in Entrepreneurial Learning as well as recent approaches to Science, Technology, Engineering and Mathematics (STEM) learning. In these approaches, the process ideally begins by stimulating the curiosity and sense of agency of the learner which has the added positive effect of increasing motivation and engagement in the learning process. Support to competence development would therefore be particularly enhanced by including opportunities for entrepreneurial experiences, especially for young people during their initial education and training, but also for adults during up-skilling processes.

Again, the often collaborative nature of learning also presents an added challenge or complexity to the assessment of individual learner progression

- Experiential learning

Experiential learning is not merely 'learning about' content in theory but a process of *thinking-in-action*, doing and reflecting on a personal level to those processes necessary for a task. Important to the learning process – and the transferability of competences life-wide and life-long – is that the initial experience is captured by the learner in abstract thought and transferred to new situations²²⁴. This transfer is also fundamental to the way innovation arises from creativity, combining problem-solving with reflection-in-action. Again, entrepreneurial learning is a prime example of an approach that creates this context.

An even deeper and potentially more meaningful learning experience can be facilitated by process drama or in-role learning of arts-based education²²⁵, including 'play' and some virtual world learning. What typically happens through these approaches is that the learner is imagining that they are acting as someone else would. This might be a generic person in society (e.g. a worker in-role as a manager), an 'expert' (e.g. a child being an adult scientist), or a historical figure. The learner is not totally removed from their own consciousness but draws on their own experience in order to make decisions as their second persona would, i.e. with empathy. Decision-making and reflection therefore still happen at the same time but in two realms: the fictional and the real. Here there is a dual *creative* process, offering an enhanced learning context for this important set of skills and attitudes and adding a sense of empowerment within a safe environment.

- Cross-discipline collaboration and cross-sectoral partnerships

Collaboration inside the education, training and learning settings, as well as outside with a variety of partners is essential for quality competence development. Collaborative and cross-discipline teaching and learning within learning settings, for example through projects, team teaching and learner-led activities, improves engagement and learning outcomes in a range of competences. This calls for a more distributed leadership²²⁶ and management where education and non-education staff, learners and others are more involved in the learning process and may propose, coordinate or lead activities and projects.

²²⁴ Kolb, D. A. (1984) *Experiential Learning*, Englewood Cliffs, NJ

²²⁵ See, for example, Winston, J. and Stinson, M. (2013) *Drama education and second language learning*, Routledge

²²⁶ Distributed leadership in schools aims to better share tasks and responsibilities across the entire school community, encouraging teachers, non-teaching staff, learners or other stakeholders to take on leading roles in a particular area of expertise, assume responsibility and take initiatives as individuals or groups. It promotes teamwork, multi-disciplinarity and professional collaboration and enhances a variety of competences in all participants.

This approach not only requires different education, training and learning settings to network and create partnerships with each other but also establish cross-sectoral cooperation with external actors such as business, arts, sport and youth community, higher education or research institutes²²⁷. Such broad partnerships and networks can provide rich learning environments, but need to be built through a long-term strategy based on trust and common objectives.

In order to ensure quality competence development, monitoring and evaluation mechanisms should be established, allowing for continuous feedback and improvement not only on the learner progression but also on the relationship between those facilitating the learning experiences and the resources they can draw on²²⁸.

- Making optimal use of digital technologies

Digital technologies have the capacity to challenge and change the relationships between educator and learner and between learner and the learning process and content²²⁹. Digital tools can enable flipped classrooms and blended learning, actually increasing the contact time between educator-facilitator and learner whilst also promoting a consciousness and increased responsibility in the learner of their own progression. Other tools can capture competence development in innovative ways, allowing for variables within and between learners, and help educators, trainers and policy makers generate, analyse and respond to a range of data, helping to build a more rounded understanding of individual and groups of learners' competence development.

Improving the digital capacity of education, training and learning providers by supporting the use of self-assessment tools²³⁰ can help them make best educational use of digital technologies to enhance teaching and learning, but also support the development of digital competence specifically.

Digital technologies and web-based opportunities, such as MOOCs, can also open up education and training to more learners, creating a more equitable provision for competence development.

5.6 Monitoring and evaluation of the use of the Recommendation for Key Competences for Lifelong Learning

The public consultation showed also overall agreement to better monitor and evaluate the use of the Reference Framework. To be effective, monitoring should focus strongly on aspects which can help and support implementation of the Recommendation overall. Key elements to be monitored are:

- policy reforms in Member States
- support provided to educational staff
- competence development of learners

²²⁷ European Commission, 2015, Science Education for Responsible Citizenship, Report of the expert group on science education

²²⁸ European Commission, 2015, A whole school approach to tackling early school leaving, Policy messages

²²⁹ Cameroon, L. and Tanti, M. (2011) Students as learning designers: Using social media to scaffold the experience https://www.openeducationeuropa.eu/sites/default/files/legacy_files/asset/papers_27_InD_3.pdf

²³⁰ E.g. SELFIE tool, <https://ec.europa.eu/jrc/en/digcomporg/selfie-tool>, or HEInnovate, <https://heinnovate.eu/>

- the development of assessment tools
- experiences with competence frameworks

Monitoring will focus on developments in formal education and training, but also take account of non-formal learning and experiences.

Monitoring of policy reforms in Member States

Monitoring policy reforms in Member States will support the identification of strengths and weaknesses in different approaches, their relevance for specific education, training and learning sectors or within specific education systems. It will include policy reform that specifically supports educational staff, as well as the development of approaches to assessment that can generate useful data for the development of education, training and learning directed towards competence development.

A particular example is in establishing and maintaining a high-quality approach to entrepreneurship education EU-wide. This is believed to require reform involving a range of policy tools, for example: the possibility of defining stronger benchmarks and setting European targets for participation in entrepreneurship education (% of schools and % of students); adopting a clear definition of and developing effective recognition in entrepreneurship education; providing more stable and coherent funding for entrepreneurship education, training and learning; and developing and introducing appropriate assessment methods in entrepreneurship education, training and learning, including self-assessment of individuals and institutions.

Monitoring of support provided to educational staff

While the Commission proposes to support the further development of reference material, guidelines and tools in cooperation with Member States, monitoring the development of competence frameworks for specific competences, support tools for teachers, trainers and educators as well as guiding material on supportive learning approaches and contexts will help to get an impression on the use of the Reference Framework. Another important indicator is the development in the area of teacher education, such as training courses, MOOCs, support of peer learning and exchange for educational staff.

Monitoring the competence of learners

The Commission intends to strengthen monitoring competence development using existing surveys on competence development (e.g. PISA, PIAAC, TIMSS, PIRLS as well as data collection in language learning, digital competence, civic and sustainability competence). A main tool for this could be the Education and Training Monitor which is published on an annual basis and compiles evidence on the development of education and training systems as well as competence development. The work of Eurydice will also be of crucial importance in this context.

Competence development is also measured at national level and although the results of national tests are usually not comparable, they can hint at progression of the support to competence development. However, overall comparability might not be realistic or desirable as experiences in the area of language learning demonstrate.

Council conclusions on multilingualism in May 2014, agreed that the “assessment of language competences could help to promote multilingualism and the effective teaching and learning of languages in school” and invited the Commission to “explore the feasibility of assessing language competences in the Member States, including by using national data.” Two studies

were launched, providing a mapping of national tests and a comparison of the tests used across Europe to assess the language competences of secondary school pupils. The "Languages in Secondary Education – An overview of national tests in Europe 2014/15"²³¹ provided a detailed inventory of the approaches adopted to test the language competences of secondary school pupils in the Member States of the European Union, while the "Study on Comparability of Language Testing in Europe"²³² aimed to explore the possibility to compare the language competences of pupils in secondary education. However, these studies concluded that the data available at national level were not comparable, although new avenues could be tried to make them comparable ex post, through an evaluation of test tasks and items.

Monitoring the development of assessment tools

Important work needs to be done to further develop the assessment of key competences following up on previous work on the assessment of key competences in the context of ET2020²³³.

This can be achieved through the proposed working group and complemented by research and ongoing policy support work in the different competence areas to gain a deeper understanding of the technical nature of these tools and the specific contexts in which they are developed.

As described above (see 5.3), these tools can be developed with different functions in mind: summative and formative of learner competence, and evaluative of initiatives. It should be noted that there may be some overlap, for example where a self-assessment questionnaire on teacher competence might also contribute to an evaluation of a schools programme.

There are a number of existing bodies who are well-placed to contribute to the ongoing monitoring of assessment tools. One example is the Joint Research Centre of the European Commission who have developed the Digital Competence Framework for Educators based on the analysis, mapping and clustering of the elements of educators' digital competence, as detailed in existing national and international frameworks, self-assessment tools and certification schemes. Another example is SEECEL²³⁴ (see box below) who support participating countries in their efforts to accommodate EU recommendations for promotion of entrepreneurship as a key competence.

The South East European Centre for Entrepreneurial Learning (SEECEL) is governed by an International Steering Committee and a Management Support Team. It is based in Croatia and co-funded by the European Union.

In 2010, SEECEL began structured cooperation of eight EU preaccession countries for the development of a common Entrepreneurial Learning: a Key Competence Approach (ELKCA) instrument. Their 2013 publication 'Entrepreneurial Learning: School Professional Toolkit' presents the results of the strategic piloting of the ELKCA instrument in 31 schools in eight countries during the school year 2011/2012. The factorial analysis of the school professionals' questionnaire resulted in scales in affective and cognitive learning domain. In addition, the quantitative section of the study addressed the question on entrepreneurial learning activities impact on the teachers' and school management staff's entrepreneurship-related learning outcomes.

²³¹ http://eacea.ec.europa.eu/education/eurydice/documents/facts_and_figures/187EN_HI.pdf

²³² http://ec.europa.eu/dgs/education_culture/repository/languages/library/documents/edl-report_en.pdf

²³³ SWD (2012) 371

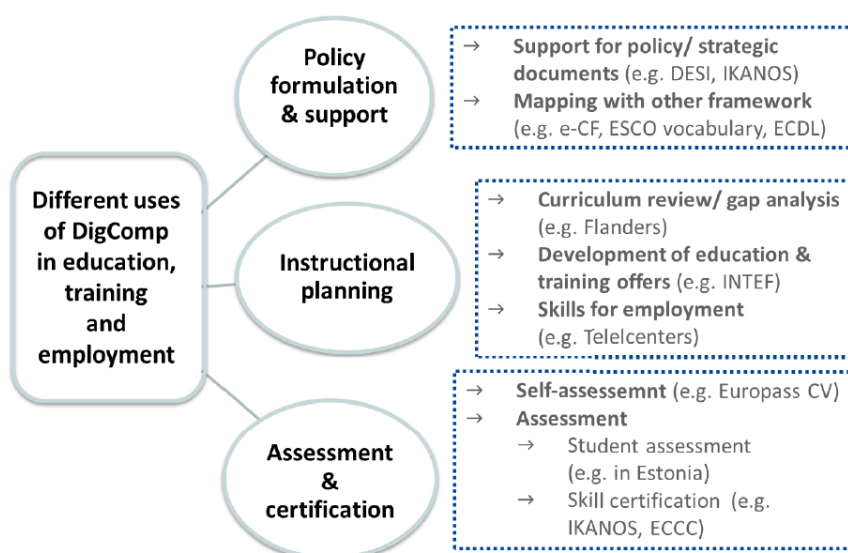
²³⁴ <http://seecel.hr/>

Results obtained with this exhaustive research and the implemented practical solution serve as an example not only on how this competence can be taught effectively in different national systems, and how the tool itself can serve as the foundation for future planning, but also add to a broader understanding of approaches to the assessment of key competences.

Monitoring of experiences with competence frameworks

Monitoring the use of both national and European frameworks can enhance designers' and users' understanding of priorities – both of policy makers and education, training and learning professionals – and identify areas for improvement. This has certainly been the case with the development of the Digital Competence Framework, which was influenced by national uses of the original version in creating DigComp 2.0²³⁵. The Joint Research Centre was able to map the use of the framework across Member States, as well as engage experts in dialogue. This can both serve as an example for monitoring of the European Reference Framework and provide additional insight in the challenges of implementation.

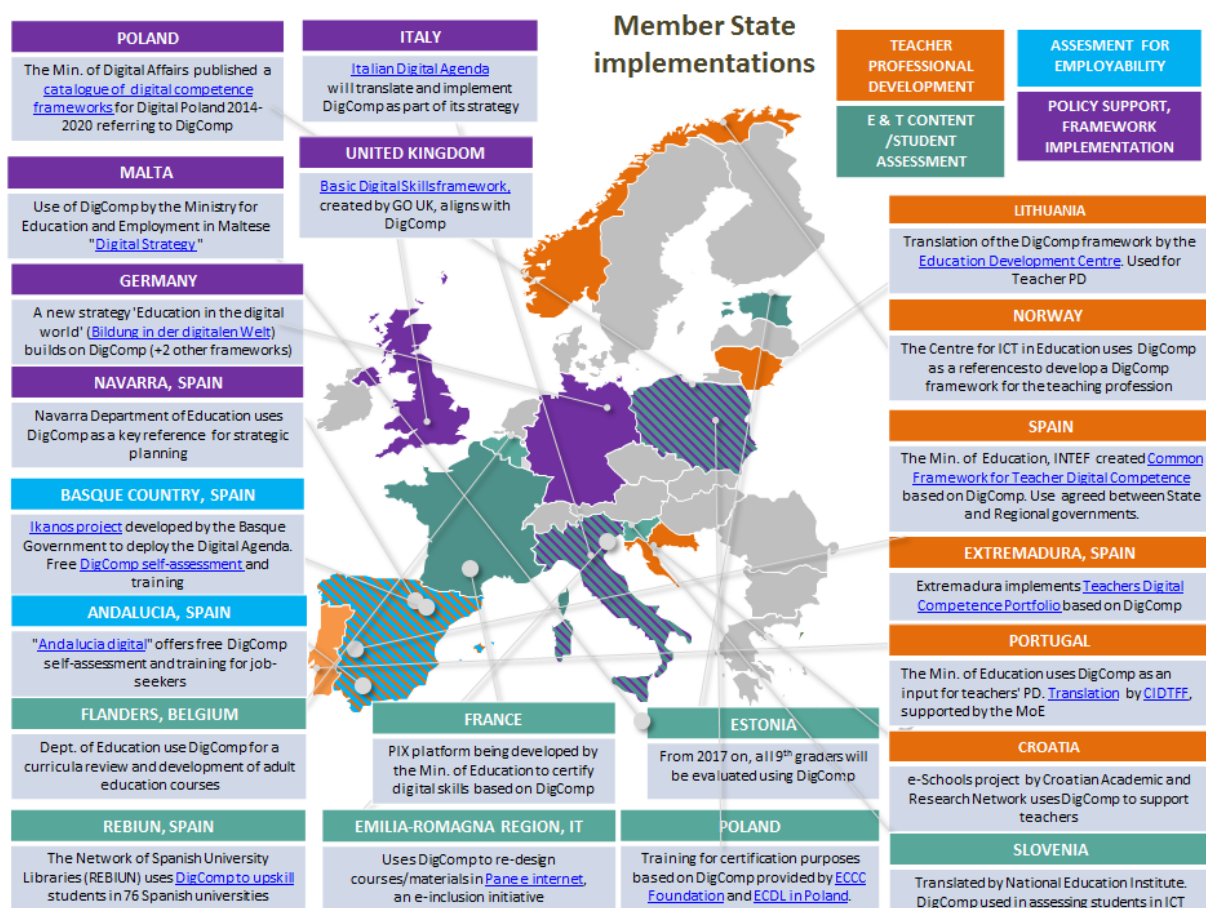
The stakeholders range from policy makers, educational and employment authorities at national and regional levels to public and private training institutions and the third sector bodies, which provide education, training and learning opportunities.



In an attempt to share practices and offer opportunities for peer learning around the implementation of DigComp, in 2015 an “Implementation Gallery” was launched on the JRC Science Hub website. The Implementation Gallery works on the self-reporting principal and presents snapshots of the implementations at a given moment in time. The goal is to display examples of use across Europe. These should not be regarded, by definition, as best practices, but provides another channel for monitoring.

²³⁵ [DigComp 2.0: The Digital Competence Framework for Citizens](http://publications.jrc.ec.europa.eu/repository/bitstream/JRC101254/jrc101254_digcomp%202.0%20the%20digital%20competence%20framework%20for%20citizens.%20update%20phase%201.pdf)

http://publications.jrc.ec.europa.eu/repository/bitstream/JRC101254/jrc101254_digcomp%202.0%20the%20digital%20competence%20framework%20for%20citizens.%20update%20phase%201.pdf



First uses of the Digital Competence Framework as mapped by the Joint Research Centre

Additional investigation

In addition, two years after the Recommendation has entered into force, the Commission will report back to the Council on the implementation of the Recommendation in line with reporting modalities of the Strategic Framework of European cooperation on education and training.

With regard to the next cycle of the strategic framework for European cooperation in education and training, the Commission will investigate in how far it is possible to propose European benchmarks in competence development. These benchmarks could either focus on competence development or on structural indicators.

6. Policies and projects supporting competence development in lifelong learning perspective

The following chapter presents a collection of good practice examples. While they might be inspiring, their main claim is that variety of approaches to support competence development are already tested in practice and can inform further policy development in this area.

The chapter also starts with looking at the relevance of early childhood education and care as a key foundation for future competence development.

6.1 Foundations for lifelong learning: The significance of early childhood for competence development

As recognized by both policy²³⁶ and science²³⁷ it is in the early years²³⁸ that children create the basic foundation and the capacity to learn new competences throughout life. Development of competences is an incremental process, building a strong foundation in the early years is a pre-condition for higher level skill acquisitions.

While learning and physical well-being are connected at all ages, physical development in the first six years of life is critical for competence development. This is due to the high brain plasticity in this period. In interactions with the genetic dispositions early experiences build the basic architecture of the brain. "Just as a weak foundation compromises the quality and strength of a house, adverse experiences early in life can impair brain architecture, with negative effects lasting into adulthood."²³⁹ In order to be able to develop a strong brain architecture, children need good nutrition, stimulating environment, secure attachment and warm responsive relationships. Also as part of physical development gross and fine motor skills as well as visual motor and spatial skills are important prerequisites for skill acquisition and school readiness.

Looking at learning processes the importance of early years is two-fold. Firstly, a range of pre-academic knowledge and skills - such as early numeracy, literacy and science – is necessary for children to develop to be successful in school. Secondly, and with equal importance, there is a range of social, emotional and cognitive skills that children need as enablers of lifelong learning, health and well-being.

Different studies have demonstrated that early literacy and numeracy skills²⁴⁰ and basic knowledge about natural and social science²⁴¹ have great influence on future competence development. Early verbal abilities of very young children also impact on their later numeracy skills and mathematical performance.²⁴² Early literacy skills (children's early oral and

²³⁶ European Commission, COM(2016) 941, Improving and Modernizing Education; and COM (2016) 381, A New Skills Agenda for Europe

²³⁷ Bertenthal, B. and Campos, J. (1987). New directions in the study of early experience. Child Development,

²³⁸ Definition of early years is from birth to usually the age of 6 or 7

²³⁹ [Center of the Developing Child, Harvard university](#) (2017)

²⁴⁰ Joint Research Center, Soto-Calvo E. et al. (2016) Technical Report: The Influence of Early Literacy Competences on Later Mathematical Attainment

²⁴¹ Paul L. Morgan et al. (2016) Science Achievement Gaps Begin Very Early, Persist, and Are Largely Explained by Modifiable Factors

²⁴² LeFevre, J. A., et al. (2010) Pathways to mathematics: Longitudinal predictors of performance. Child development, 81(6), 1753-1767.

phonological awareness and processing skills as well as letter print knowledge) have been found to play a crucial role in reading development and also in mathematical achievement.

At school entry there are large differences in the level of numeracy skills among children. These differences tend to increase during school years²⁴³, suggesting that early numeracy practices before school entry are likely to improve children's later mathematical attainment.

Early transversal skills, or as sometimes referred to as life skills, have also been identified as both having an impact on later competence as well as having a long reach into adulthood and influence health, employability, earnings and life-satisfaction.²⁴⁴ Most important early socio-emotional competences include self-awareness, self-regulation²⁴⁵, emotional stability, pro-social behaviour and empathy. The importance of early self-regulatory skill has seen increased focus in the applied research given the implications of these skills for early school success.

Furthermore, education from early age plays an essential role in learning to live together in heterogeneous societies. Before children can understand abstract social concepts (democracy, responsibility, rule of law, human rights), they need to experience real life situations in which these concepts come into play, and practice the requisite social skills.²⁴⁶ Therefore in order to develop civic competence early social learning needs to take place. Later in life these social skills also play crucial role in the development of entrepreneurial competence and intentions.²⁴⁷

Cognitive and social emotional developments are ultimately intertwined. While social and emotional learning in early childhood education prepares students with transversal skills necessary to live a successful adult life, it is important to consider how it may interact with academic instruction. Emerging evidence suggests that social and emotional learning is not an add-on, but acts more like a catalyst for academic growth.

This leads to relevant policy conclusions. Parents' socio-economic and educational background and the learning environment at home influence strongly on children's competence development in the early years. The second most influential factor is the quality of any form of non-parental care children receive. "Going to a high quality early childhood education and care setting was especially important when starting school and remained so beyond the age of 16. It influences both attainment and progress in early school careers and set children on particularly beneficial learning trajectories".²⁴⁸ This is true for all children²⁴⁹ and especially for those coming from more disadvantaged backgrounds. In short, ECEC participation can compensate, to a degree, for inequalities in family background.

There is a strong positive correlation between participation in ECEC and performance in some of the PISA 2015 domains across Member States. The highest effect could be found for three or more years of ECEC participation. This can amount to the equivalent of a learning

²⁴³ Aunola, K. et al. (2007) Developmental dynamics of math performance from preschool to grade 2.

²⁴⁴ Carneiro P., Crawford C. and Goodman A (2007) The Impact of Early Cognitive and Non-Cognitive Skills on Later Outcomes

²⁴⁵ Referring to constructs such as self-control, delay of gratification, good conduct and conscientiousness

²⁴⁶ Kristen M. Kemple, (2016) Social Studies, Social Competence and Citizenship in Early Childhood Education

²⁴⁷ Schoon, I. and K. Duckworth (2012), "Who Becomes an Entrepreneur? Early Life Experiences as Predictors of Entrepreneurship", *Developmental Psychology*, Vol. 48, No. 6, pp. 1719-1726.

²⁴⁸ Sylva, K., Melhuish, E., Sammons, P., Blatchford, I.-S., & Taggart, B. (2004). The Effective Provision of Pre-School Education [EPPE] Project (Project Final Report).

²⁴⁹ Melhuish E. et al., (2016) CARE Project: A review of research on the effects of Early Childhood Education and Care upon child development

advantage of about three school years. For students who had not attended pre-primary education the chances of being low performers are three times greater than for those who had attended for more than one year.

To recapitulate, there are considerable advantages in providing high quality interventions to improve cognitive and social, emotional skills in early childhood. There is not one silver measure that can address positive adjustment across competences or regarding one specific competence. It is necessary to support the development of different skill sets to enable children reach their full potential. Finally, the results of policies that simultaneously develop multiple skills are likely to be greater than policies concentrating on single skills only.²⁵⁰

Focus areas: supporting strong competence foundation for all children

As established by Principle 11 of the Social Pillar all children need to have access to high quality early childhood education and care.

Providing children with high quality, stimulating learning environment, surround them with warm responsive climate.

Provide a balanced program, curriculum of pre-academic and social-emotional learning in high quality ECEC settings. Treat children as active learners by placing self-directed problem-solving at the heart of children's early learning and development.

Scaffolding children's learning regardless whether they are spending their early years in formal or informal care.

Literacy

Following the Council conclusions of 2010, a High Level Group of Experts on Literacy was established in 2011 bringing together European academics and policy-makers to map Europe's literacy landscape, identifying changing needs and requirements, as well as to examine the most effective and efficient ways to improve reading skills in Europe.

ACT NOW – the Final report²⁵¹ of the EU High level group of experts on literacy (September 2012).

The final report of the High Level Group underscores the importance of literacy in the 21st century, as well as the need to ensure political ownership and cooperation to ensure genuine improvement, and continued economic growth.

It contains a series of concrete proposals and recommendations intended to help EU Member States make their own policies more coherent, efficient and successful. These include: sharing of knowledge and practice; improving access to education; stimulating partnerships; embedding competence development in school education; and improving the professional development of teachers, trainers and non-formal learning practitioners.

Some examples of good practice from this report:

- In Sweden, a 'Swedish as a Second Language' has been developed for immigrant or minority children, stressing the right for these children to have their language development

²⁵⁰ European Commission, COM(2017) 250; Communication on the European Pillar of Social rights

²⁵¹ http://ec.europa.eu/dgs/education_culture/repository/education/policy/school/doc/literacy-report_en.pdf

fully supported in both Swedish and their mother tongue.

- In Cyprus, the Zones of Educational Priority was launched in 2003, aiming to tackle school underachievement mainly in literacy. Students at risk were provided with tailored support in literacy and help in facing social problems. In 2011, afternoon courses were added, including Greek language learning and mother tongue teaching for children with a migrant background.
- In the Netherlands, 'Stichting Lezen & Schrijven' was established in 2004 with the aim to raise awareness, based around the 'literacy chain' notion. High profile campaigns and activities involve a broad range of players – from formerly illiterate people who serve as literacy ambassadors to business and group of 28 celebrities.
- The Portuguese National Reading Plan (2006) focuses not only on children though a childhood-wide approach but also on the entire lifespan. It introduced one compulsory hour of reading per day in early childhood and in primary education. The Plan provides CPD programmes in literacy instruction for teachers and puts strong emphasis on family literacy and inter-generational approaches.
- The Hungarian Reading Association organises a 'National Day of Folk Tales' in hundreds of libraries around the country, and also in theatres, museums, teacher training institutions and kindergartens, with storytellers, puppet shows, lectures about the meaning of folk tales and the role of teachers and parents. In 2012, the focus was on Roma folk tales.
- In Estonia, the project 'Stories' and 'Poems' were developed by the Tallinn Central Library Children's Page. Children write stories and poems that are competitively selected and then published online on the library website.
- In Berlin, Germany, about 2000 'Lesenpaten', adult volunteers, go regularly to schools in social problem areas and read to and with children to cultivate the joy of reading.
- The French nationwide programme 'Coup de Pouce Clé' provides small reading groups for children who are fragile in reading in primary classes. The programme mobilises the whole school during each school year to identify children at risk of falling behind in their reading. Children join an after-school club for 1.5 h per day, led by a reading specialist. Parents are fully involved in the clubs: upon entry to the clubs, parents sign up to following the progress of their child.

Subsequently, the European Commission launched a European Policy Network of National Literacy Organizations, ELINET, in February 2014. This network had the purpose to, amongst others, raise awareness, and exchange good practices, policies, campaigns and initiatives promoting literacy. The network issued a European Declaration on the Right to Literacy which aims to harness a collective effort from both Member States authorities and civil society in order to turn literacy from a right into a reality for every European.

ELINET - a European Policy Network of National Literacy Organizations

In February 2014, the European Commission launched a European Policy Network of National Literacy Organizations²⁵², ELINET. This network had the purpose to, amongst

²⁵² <http://www.eli-net.eu/>

others, raise awareness, and exchange good practices, policies, campaigns and initiatives promoting literacy. The network issued a **European Declaration on the Right to Literacy**²⁵³ which aims to harness a collective effort from both member states authorities and civil society in order to turn literacy from a right into a reality for every European.

Languages

The mandate of the Thematic Working Group on Languages in Education and Training (2012–2014) included exploring new approaches to language learning and teaching for mobility and employability throughout the life span. Two documents outline the results:

- Languages in Education and Training: Final Country Comparative Analysis²⁵⁴;
- Improving the effectiveness of language learning: Content and Language Integrated Learning (CLIL) and Computer Assisted Language Learning (CALL)²⁵⁵.

For several decades, language learning in Europe has benefitted greatly from EU funding, in particular from the Erasmus+ programme, Horizon 2020 and European Social and Regional Development Funds. For example, since 2014, over 50% of the Erasmus+ mobility projects in the school education sector have the topic “teaching and learning of foreign languages” as their main topic. Nearly 3,000 projects have been funded, for a budget of 57 million €, allowing more than 12,000 teachers or school staff to train or teach abroad on a topic related to languages. Funding helped to acquire or develop linguistic skills of school’s staff, either language teachers, or any other staff who may for instance participate in a European project;

- Learn new methodologies to teach languages, e.g. through an enhanced use of ICT in the classroom or experimenting with new methods such as drama, or to teach students with special needs;
- Develop linguistic and professional skills to teach in a CLIL environment (Content and Language Integrated Learning, i.e. teaching subjects such as science, history and geography through a foreign language);
- Learn to teach in multicultural classrooms, and make the most of this linguistic diversity, etc.

European Language Label²⁵⁶

The European Language Label (ELL) is awarded annually or biannually to especially relevant, innovative and well-run projects that promote excellence in language education and help raise awareness of multilingualism issues in the wider society. An initiative of the European Commission since 1995, the ELL is implemented by Erasmus+ National Agencies in Member States. Every year, the label is awarded to the most innovative language learning project in each country participating in the scheme. By supporting these projects, at a local and national level, the label seeks to raise the standards of language teaching across Europe. The label can also be awarded to the individual having made the most progress in foreign language learning, or the best language teacher.

²⁵³ <http://www.eli-net.eu/about-us/literacy-declaration/>

²⁵⁴ http://ec.europa.eu/dgs/education_culture/repository/languages/library/studies/lang-eat_en.pdf

²⁵⁵ http://ec.europa.eu/dgs/education_culture/repository/languages/library/studies/clil-call_en.pdf

²⁵⁶ http://ec.europa.eu/education/initiatives/language-label_en

Relevant to the development of language teaching is especially the work of the Council of Europe's and its European Centre for Modern Languages (ECML) in Graz, Austria. The ECML was founded in 1994²⁵⁷. It aims to promote quality language education in Europe and offers support (training, consultancy, guidelines and toolkits) to teacher educators and provides training and professional development opportunities for other multipliers.

The 'Supporting Multilingual Classrooms' Project enables participants to understand better the challenges and opportunities for students with mixed linguistic backgrounds, and explore ways to maximise the learning potential of these students and to bridge the attainment gap between them and the rest of the students.

The goal of the RELANG project is to help educational authorities relate their language examinations and curricula to the levels of proficiency defined in the Common European Framework of Reference (CEFR). This initiative aims to ensure the valid assessment of learners throughout participating states, and the correct reporting and interpretation of exam results according to the CEFR levels in ways which encourage validity and transparency for all stakeholders.

Mathematics, science and technology

In addition the approaches to support competence development in general, the development of the competences in mathematics, science and technologies can involve a variety of actions and policy measures:

- development of national and/or regional strategies for promotion of STEM (science, technology, engineering, and mathematics) education;
- inquiry-based pedagogy (i.e. inductive, discovery-like, student-centred approach to education) including experiential, hands-on opportunities;
- multidisciplinary education including project-based learning across different subject areas (e.g. science in context - environmental, political, social, economic, cultural and artistic);
- building partnerships with outside actors to ensure relevance to real-life situations, possible career choices, and jobs (e.g. partnerships of schools with the industry or research institutions, setting up science-education centres, between-schools partnerships, etc.).

Some countries created national STEM platforms that promote a wide variety of innovative education, training and learning practices based on the close cooperation of business, education and government. An example of such an initiative is Jet-Net (Youth and Technology Network) in the Netherlands²⁵⁸. Jet-Net is a joint initiative of the Dutch government, leading technology companies and secondary schools. Together the partners provide students with experiences that show the challenging, meaningful and socially relevant nature of technology. Jet-Net is funded by both industry and government. After the success in

²⁵⁷ <http://www.ecml.at/> ECML has now 30 member states. It was founded in 1994 by Austria, France, Greece, Liechtenstein, Malta, the Netherlands, Slovenia and Switzerland. The European Commission cooperates with the ECML and offer support on selected projects.

²⁵⁸ <http://www.jet-net.nl/english>

the Netherlands, the Jet-Net best practice has been successfully introduced in Denmark as "Jet-Net.dk."²⁵⁹

The STEM Learning²⁶⁰ is the largest provider of STEM education and careers support to schools, colleges and other groups working with young people across the UK. It is funded by a partnership of government, charitable trusts and employers. The Network provides subject-specific, career-long professional development; access to free of charge, curated curriculum resources, STEM ambassadors; STEM Clubs support; competitions, recognition and awards with proven impact on outcomes for young people. For example, STEM Ambassadors are volunteers from a wide range of STEM-related jobs and disciplines across the UK - people from all disciplines and backgrounds including engineers, designers, architects, scientists and technicians. They offer their time and enthusiasm to help bring STEM subjects to life and demonstrate their value in life and careers.

After the initial success of transferring initiatives like Jet-Net as well as the STEM platform model to Denmark and Estonia, the national STEM platforms of Denmark, the Netherlands and Estonia have joined forces in the EU STEM Coalition²⁶¹ which has received initial financial support through an Erasmus+ grant. Its mission is to create momentum for the development and implementation of national STEM strategies across Europe. The two main goals of the EU STEM Coalition are: (i) to facilitate and promote the exchange of best practices between national STEM platforms through peer learning activities; and (ii) to support other Member States in the establishing a STEM platform through targeted taskforce meetings.

The Science on Stage Europe²⁶² is a network of and for STEM teachers of all school levels. It provides a European platform for science teachers to exchange teaching concepts and to share ideas. Since its launch in 2000, Science on Stage has reached about 100,000 teachers and teacher trainers in 30 countries. A network of National Steering Committees in these countries provides the interface to their national science teaching communities.

Every two years, Science on Stage Europe organises Europe's biggest educational festival from and for STEM teachers. Each time hosted by a different European country, the festival brings together up to 400 STEM teachers to share and exchange their ideas and concepts for a successful science education from primary to secondary school. The network produces teaching materials, offers travel scholarships for teachers and organises workshops and teacher-training courses. Surveys among participating teachers indicate that 79% of them teachers implement teaching ideas seen at the festivals, 69% state that the festivals have given them back more motivation and joy in their profession, and 50% share long-lasting contacts and have spread ideas seen at Science on Stage activities in teacher trainings.

The Scientix network promotes and supports a Europe-wide collaboration among STEM (science, technology, engineering and maths) teachers, education researchers, policymakers and other STEM education professionals.

²⁵⁹ <http://www.nvhus.dk/jet-netdk/>

²⁶⁰ <https://www.stem.org.uk/about-us>

²⁶¹ <http://www.stemcoalition.eu/>

²⁶² <http://www.science-on-stage.eu/>

In its first stage (2009-2012), the project built an online portal to collect and present European STEM education projects and their results, and organised several teacher workshops. The main networking event was the Scientix conference, held in May 2011 in Brussels.

The goal of the second phase of the Scientix project (2013 – 2015) was to expand this community to the national level. Through a network of National Contact Points (NCPs), Scientix reached out to national teacher communities, and contributed to the development of national strategies for wider uptake of inquiry-based and other innovative approaches to science and maths education.

This activity is continued in the third stage of Scientix (2016-2019), which is funded by the Horizon 2020 programme of the European Union for research and innovation. Scientix was originally born at the initiative of the European Commission and has, since its inception, been coordinated by European Schoolnet, a Brussels-based consortium of thirty ministries of education, which is a driving factor for innovation in teaching and learning and fosters pan-European collaboration of schools and teachers.

Students cannot fully understand scientific ideas without personally engaging in inquiry and discussing ideas. They cannot comprehend scientific practices, nor fully appreciate the nature of scientific knowledge itself, without directly experiencing those practices for themselves²⁶³ through (i) asking questions; (ii) planning and carrying out investigations; (iii) analysing and interpreting data; (iv) engaging in argument from evidence; and (v) obtaining, evaluating, and communicating information.

UniSchoolLabs²⁶⁴: remote access for schools to university science labs

The project produced a tool-kit which supports the teachers in selecting a remote or virtual lab and developing a lab activity based on an inquiry model template. The UniSchoolLabs activities are composed of a number of pages and associated folders that facilitate the teacher in organizing experiments for the students using remote or virtual labs. The use of internet-based services and mobile technologies allows access to science experiments that would not otherwise be possible, because of the difficult or fragmented access to science laboratories in most schools, especially for those based in rural areas. The pedagogical approaches and scenarios developed within the project rely upon inquiry-based learning and problem-solving approaches, where learners learn by doing and through inquiry (science experiments) both in real and in virtual settings. These approaches foster creativity, analytical skills and motivate learners to learn through the pleasure of discovery.

There is a myriad of innovative, excellent projects and initiatives in which Member States have joined forces in applying many of the above-listed ways for the promotion of competence-based learning.²⁶⁵ Those projects are usually multidisciplinary and/or inquiry-based and include different partnerships.

One major such approach is context-based science teaching. This approach emphasises the philosophical, historical or societal aspects of science and technology, as well as connecting scientific understanding with students' everyday experiences. It is also referred to as the science-technology-society (STS) approach²⁶⁶. From a sociological perspective, this includes

²⁶³ <https://www.nap.edu/read/13165/chapter/1#vi>

²⁶⁴ <http://unischoolabs.eun.org/>

²⁶⁵ http://keyconet.eun.org/c/document_library/get_file?uuid=212b151d-92a5-4031-a5f4-329eb616a177&groupId=11028

²⁶⁶ http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/133EN.pdf

examining and questioning the values implicit in scientific practices and knowledge; looking at the social conditions as well as the consequences of scientific knowledge and its changes; and studying the structure and process of scientific activity. From a historical perspective, changes in the development of science and scientific ideas are studied. From a philosophical perspective, context-based science teaching raises questions regarding the nature of scientific inquiry and evaluates the grounds of its validity. It also recognises science as a 'human endeavour' where imagination and creativity play a role.

Science and the environment/sustainability addresses the environmental implications of scientific activity and is recommended for inclusion in science teaching by the steering documents of almost all European countries²⁶⁷ both at primary and at lower secondary levels; it usually applies to all science subjects (biology, chemistry and physics).

Pollution! Find a STEM solution!

This is a project which presents 5 future classroom scenarios about investigating, measuring air, light and noise pollution as well as analysing the measurements and with the accompanying digital content (worksheets, instructions how to assemble the measuring devices and program the LEGO robot). Activities are focused on building the devices for measuring air, light and noise pollution in students' schools and homes, analysing the data and comparing the results with their peers to find a solution.

The project includes a step by step guide how to build an apparatus for measuring air quality, a worksheet-table suggestion for measuring noise pollution, an instructional video on how to make a solar panel model: (<https://www.youtube.com/watch?v=PkSaq7EOMak>) , and an instructional video on how to make a windmill model: <https://www.youtube.com/watch?v=y0gyomo7IOU>.

<http://ec.europa.eu/programmes/erasmus-plus/projects/eplu-project-details-page/?nodeRef=workspace://SpacesStore/81a56dcb-743e-4a4d-9280-c9d7d037a583>

Science education centres are an effective vehicle for fostering competence-oriented STEM education as the examples below show.

Setting up science education centres²⁶⁸

In Finland, the national LUMA centre (LU stands for luonnontieteet, natural science in Finnish, and MA for mathematics) is an umbrella organisation for the cooperation of schools, universities, business and industry, coordinated by the Faculty of Science, University of Helsinki. The main activities are CPD activities for teachers including an annual LUMA science day; the national LUMA activation week for schools; MST camps for children; resource centres for mathematics and science. The LUMA Centre is governed by a management team comprising representatives of various institutions: the Ministry of Education, the National Board of Education, the Faculties of Biosciences, Behavioural Sciences and Science, the Helsinki University of Technology as well as the City of Helsinki Education Department, as well as a representative of Finnish municipalities and various Finnish Industry associations.

The Norwegian Centre for Science Education at the University of Oslo's Faculty of Mathematics and Natural Sciences, is a national resource centre for all education levels. Beside schools, the Centre has various collaborators from universities and university colleges

²⁶⁷ Ibid

²⁶⁸ Ibid

to museums and industry. The Centre develops working methods and teaching materials which help to make natural science teaching more varied, as well as lively and exciting for pupils and students. The centre contributes to the development and the testing of computer based learning materials and the organisation of web-based learning environments in natural science. It also provides teacher professional development activities..

The main challenge at this point is about scaling up of the well-known, proven-to-be-effective approaches to competence-based education in mathematics, science and technology at all levels of intervention: teachers and school leaders, the learner, school organisation, national (regional) system level, and at EU level. Those approaches should also include continuous monitoring of the progress made including quality-assurance mechanisms for further development of the MST educational practices and policies.

inGenius²⁶⁹ is the European Coordinating Body in Science, Technology, Engineering and Mathematics (STEM) Education. It is a joint initiative launched by European Schoolnet and the European Roundtable of Industrialists (ERT) aiming to reinforce young European's interest in science education and careers and thus address anticipated future skills gaps within the European Union.

Through a strategic partnership between major industries and Ministries of Education, inGenious has the objective of increasing the links between science education and careers, by involving up to 1,000 classrooms throughout Europe.

PRIMAS²⁷⁰ is an international project within the Seventh Framework Program of the European Union. Fourteen universities from twelve different countries have worked together over four years to promote the implementation and use of inquiry-based learning in mathematics and science. PRIMAS has developed materials for direct use in class and for professional development. In addition, we have run professional development activities and have supported professional networks in each of the partner countries. PRIMAS has also worked with stakeholders such as policymakers, school leaders and parents to create a supportive environment for inquiry-based learning.

Digital

Support for the development of digital competence has benefitted greatly from EU funding, in particular from the Erasmus+ programme, Horizon 2020 and European Social and Regional Development Funds.

Erasmus+ supports projects focusing on the integration of digital technologies in education or supporting the development of digital competence. The project theme of ICT, new technologies and digital competence features across different actions of the programme. From 2014 to 2016, 1576 projects on these themes, with more than 8000 beneficiary organisations, were funded in the education, training and youth fields.

MOTech – Motivating new technologies for adult education in rural areas²⁷¹

The purpose of the MOTech project was to encourage and guide adult learners in various parts of Europe to participate in creative learning and activities using new information

²⁶⁹ <http://www.ingenious-science.eu/web/guest/home>

²⁷⁰ <http://www.primas-project.eu/en/index.do;jsessionid=96A210FB933D5A31A6245AE841749A18>

²⁷¹ <http://ec.europa.eu/programmes/erasmus-plus/projects/eplu-project-details-page/?nodeRef=workspace://SpacesStore/625123e7-b4c7-464c-a614-190f8ecf3be5>

technology tools. The objective was to develop adult learners' skills in computer literacy and foreign languages using creative education and e-learning methods. The project created a European-wide forum across 6 countries and a sustainable platform for the future development of creative education with a range of resources.

Safe Internet For All – Supporting school teachers and pupils²⁷²

"Safe Internet for all" (SIFA) was a two year (2014-16) Erasmus+ project aiming to increase the awareness and knowledge about the risks and possible consequences in connection with the use of internet as well as to help pupils and teachers to handle such negative consequences. School partners from Greece, Austria, Poland, Norway and Sweden each hosted an international project meeting on a different theme related to Internet use: Addiction, Health, Security, Ethics and Safety. Each school partner developed guidelines for safe Internet use, in order to prevent negative consequences but also to actively promote critical analysis of digital material.

Horizon 2020 has supported projects concerning digital technologies in education, for example, [I-LINC](#), which is an online platform that supports youth employability and entrepreneurship through the use of digital tools. It also funds the European Institute of Innovation and Technology (EIT), which has a dedicated Knowledge and Innovation Community (KIC) for digital issues: ['EIT Digital'](#). This particular KIC brings together entrepreneurs from a partnership of over 130 European corporations, SMEs, start-ups, universities and research institutes and has over 1500 students in digital education programmes.

The European Social Fund provides vouchers for digital skills trainings. The European Regional Development Fund supports infrastructure development, including smart specialisation strategies. The Connecting Europe Facility supports broadband infrastructure and the provision of digital services.

In addition to the Digital Competence Framework for Citizens, the [OpenEducationEuropa](#) (OEE) online platform, originally launched in 2013, was redesigned and re-launched in early 2017. OEE aims to be a central access point for information and discussion on innovative education, with a focus on digital technologies.

European-level research supports Member States in addressing the development of the digital competence of its people. The Commission has undertaken or contracted various studies on digital education and digital competence themes in order to better understand current practices in education, training and learning, for example research on the [use of learning analytics in Europe](#) or an [overview of research and initiatives on computational thinking](#). The Commission has also recently contracted a new version of the [ICT in Schools Survey \(ESSIE\)](#). The aim is to collect data on the availability and use of digital devices in schools across Europe. Results are expected by mid-2018. This complements the work of the ICT Indicators Expert Group which has proposed three dimensions for a cross national comparable statistical 'ICT in Education' Indicator: 1) Uptake in schools; 2) Teachers' use of ICT; and 3) Students' digital competence. The Expert Group works on identifying credible data sources that covers all three dimensions.

European working groups and experts groups play an important role in knowledge-sharing and in discussing and developing key messages that support national policy-making. Within

²⁷² <https://www.sifaplus.eu/en/>

the ET2020 framework six [working groups](#) are currently engaged²⁷³ in this open method of coordination (OMC).²⁷⁴ The ET2020 [Working Group on Digital Skills and Competences](#) discusses both digital education and digital skills and competences. Specific areas have included: coding and computational thinking, teacher skill and training, the gender gap, open educational resources (OER), device provision (such as Bring Your Own Device, BYOD), infrastructure, the use of data in education (learning analytics) or digital assessment and aims to touch on upcoming technologies and approaches, such as open badges, blockchain or makerspaces.²⁷⁵

One area of work for the [Working Group on Promoting Citizenship and Common Values](#) (following the Paris Declaration) has focused on digital and media literacy. A peer learning activity on critical thinking and media literacy was held in the Hague in April 2016, producing a set of [key messages](#) which served as input for the [Council conclusions on media literacy](#) adopted by Education Ministers in May 2016.

A dedicated [Expert Group on Digitalisation and Youth, Youth Work and Youth Policy](#), (2016-2017) discusses the changes in working methods and aims of youth work in a context of increasing digitalisation.

The [Digital Skills and Jobs Coalition](#)²⁷⁶ (launched 1 December 2016) extends the work of the previous Grand Coalition for Digital Jobs to focus more on skills and education. It encourages organisations to pledge concrete actions to improve the digital skills of the population. Beyond the European level, a number of national coalitions have also been set up, while structure and activity vary by country, some of these are closely linked to national education policy.

The Commission's work on the [Digital Single Market Strategy](#)²⁷⁷ is accompanied by the Digital Single Market Steering Committee, including a dedicated Sub-Group on Digital Skills with representatives of telecoms, education or employment ministries discussing digital both in and beyond formal education. It supports the implementation of the Digital Skills and Jobs Coalition and developed a 'shared concept' of issues and potential solutions around the 'digital skills gap'. [The European Digital Skills Award](#) recognises outstanding projects that develop the digital competences of Europeans for work, education and life in general.

[EU Code Week](#) is a grass-roots movement that motivates all individuals – from young children to the elderly – to explore the potential and fun of coding and build their confidence

²⁷³ The cycle at the time of the Review of the Key Competence Framework is 2016 to June 2018. The next cycle will run until June 2020.

²⁷⁴ All ET2020 WGs have a membership of representatives – usually from education ministries – of the EU Member States, the EFTA and candidate countries (usually education ministries), as well as social partners and stakeholders selected through an open call for interest. In 2017, the [Working Group on Vocational Education and Training](#) examined trainers' skills, including holding a special thematic workshop on digital in 2017, whilst the [Working Group on the Modernisation of Higher Education](#) held a Peer Learning Activity on 'Transforming higher education: how we teach in the digital age.' Their work has covered: teacher education in a digital environment; opening up higher education; future skills; and the bridging of the knowledge triangle (innovation, higher education and research). This is further supported by the May 2017 [Communication on a renewed EU agenda for higher education](#) in which the Commission commits to develop and roll out a digital readiness model to help HEIs, their staff and students implement digital learning strategies and exploit the potential of state-of-the-art technology, including learning analytics. Similarly, the Commission communications on [school education](#)

²⁷⁵ https://ec.europa.eu/education/policy/strategic-framework/expert-groups/digital-skills-competences_de

²⁷⁶ <https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition>

²⁷⁷ https://ec.europa.eu/commission/priorities/digital-single-market_en

in using and creating with digital technologies. It covers 46 countries and more than 23.000 events. While led and implemented by volunteers, it is funded by the European Union and the Commission provides logistical and communication support.

Personal, Social and Learning

A number of EU funded projects aim to develop social and emotional competences, for example through an European assessment protocol for children's social and emotional skills (EAP SEL²⁷⁸), by improving students' emotional skills (I-YES²⁷⁹), through a European masters in resilience education (ENRETE²⁸⁰), by developing teacher training such as ENRETE, HOPEs²⁸¹, and EMPAQT²⁸². Various EU reports also collect evidence and examples of competences needed to prevent bullying and violence in school²⁸³, improve social inclusion²⁸⁴, and foster social cohesion and interculturalism²⁸⁵.

The EU-funded **ENABLE** project (European Network Against Bullying in Learning and Leisure Environments), for example, aims to tackle bullying in a holistic way, helping young people exercise their fundamental rights in the home, school, class and community (i.e. peer group). Using a unique approach that combines social and emotional learning with Peer Support, the ENABLE project provides school staff with the skills, knowledge and confidence that can help them establish an effective student Peer Support scheme in their schools and develop their students' social and emotional skills. enabling students deal with bullying²⁸⁶.

Another EU-funded project **RESCUR**²⁸⁷ has developed a resilience curriculum for early and primary education in Europe through intercultural and transnational collaboration. The curriculum was developed on the basis of the current social, economic and technological needs and challenges of the partners involved. It aims to develop in learners the requisite knowledge and skills needed to overcome such challenges in their lives to achieve academic success and social and emotional wellbeing as young people in the EU. It addresses the needs of vulnerable children such as Roma children, children with disability, gifted children, and children of refugees, immigrants and ethnic minorities. The curriculum was piloted in a number of schools in each partner country and final products include manuals for school teachers and parents.

²⁷⁸ <http://www.eap-sel.eu/>

²⁷⁹ <http://www.iyes-project.eu/index.php>

²⁸⁰ <http://www.enrete.eu>

²⁸¹ http://www.icepe.eu/currentprojects/Erasmus-HOPEs_Project

²⁸² <http://empaqt.eu/>

²⁸³ Downes, P.; Cefai, C. (2016). How to Tackle Bullying and Prevent School Violence in Europe: Strategies for Inclusive and Safe Schools. NESET II – AR2. Luxembourg: Office of the European Commission

²⁸⁴ Budginaitė, I.; Siarova, H.; Sternadel, D.; Mackonytė, G.; Spurga, S. A. (2016) Policies and practices for equality and inclusion in and through education. NESET II report, Luxembourg: Publications Office of the European Union

²⁸⁵ Van Driel, B.; Darmody, M.; Kerzil, J. (2016). Education Policies and Practices to foster Tolerance, Respect for Diversity and Civic Responsibility in Children and young People in the EU. NESET II report, Luxembourg: Publications Office of the European Union

²⁸⁶ <http://enable.eun.org/>

²⁸⁷ <http://www.rescur.eu>

Social and emotional learning in Ireland²⁸⁸

Social and emotional learning is compulsory and a core aspect of the school curriculum in Ireland. Social and emotional competences are taught as part of the 'Relationship and Sexuality Education' within the comprehensive programme of **Social, Personal and Health education** (SPHE)²⁸⁹ at both primary and secondary school levels, since 1997, when guidelines were published and in-service training provided. The content varies over education levels, but includes mental health, gender studies, substance use, relationships and sexual education, and physical activity and nutrition. The aim is to enable students to talk about themselves, their feelings, their relationships with others, resolving conflict, developing self-awareness, self-esteem and coping skills. It also aims to develop students' skills for self-fulfilment and living in communities; to promote self-esteem and self-confidence; to develop responsible decision-making skills and critical thinking and to promote physical, mental and emotional health and well-being.

A number of social and emotional education programmes are currently implemented in Irish schools. One of them, **Incredible Years**, has been developed over the last 30 years to cover Parent, Teacher and Child Training Series and specifically designed to prevent and deal with emotional and behavioural difficulties during childhood. The implementation of this school based program in Ireland started in 2004. A 2012 report²⁹⁰ describes findings from two separate long-term (12-month) follow-up studies on the effectiveness of the Incredible Years Basic Parent Training programme and Incredible Years Teacher Classroom Management programme in Ireland. Longer-term benefits revealed a significant reduction in children's conduct disorders and hyperactive behaviours and improvements in prosocial skills. Parents who participated in the program described significantly progress in the parent-child relationship and in sibling relationships. Notably, findings indicated a decreasing use over time of health, special educational and social care services. Long-term outcomes for teachers included an increase in positive classroom climate and improvements in their classroom management skills. Teachers were more confident to deal with students with behavioural problems, more able to build and support relationships with the students and to encourage prosocial and positive social development. Teacher well-being was also improved.

Several EU-funded projects link education, youth work and sports with the aim of promoting a variety of competences and well-being of learners, for instance as education in and through sport with special focus on skills development. Erasmus+ project 'Promoting National Implementation for **Sports Club for Health** (SCforH) Programmes in EU Member States' has produced guidelines for health-enhancing sports activities in a club setting²⁹¹, which also presents evidence of benefits of physical activity on physical and mental health, as well as on social well-being (including social networks, interactions, participation).

²⁸⁸ Cefai C.; Bartolo P. A.; Cavioni V.; Downes, P.; 2017, Integrating Social and Emotional Education (SEE) in the School Curriculum across the EU, NESET II report, Luxembourg: Publications Office of the European Union, *forthcoming*

²⁸⁹ <http://www.curriculumonline.ie/Primary/Curriculum-Areas/Social-Personal-and-Health-Education-Curriculum>

²⁹⁰ <http://www.incredibleyears.com/article/the-incredible-years-ireland-study-parents-teachers-and-early-childhood-intervention-long-term-outcomes-of-the-incredible-years-parent-and-teacher-classroom-management-training-programs-combined-1/>

²⁹¹ https://www.scforh.info/content/uploads/2017/03/scfh2017_verkko.pdf

Competences for career management may be separately defined in national and regional curricula²⁹², such as for example the Scottish **Career Education Standard**²⁹³. It includes four areas of competences: 1. Self - competences that enable individuals to develop their sense of self within society, 2. Strengths - competences that enable individuals to acquire and build on their strengths and to pursue rewarding learning and work opportunities, 3. Horizons - competences that enable individuals to visualise, plan and achieve their career aspirations throughout life, 4. Networks - competences that enable individuals to develop relations and networks of support. Placing the individual at the centre stage of all interventions, the related career education standards formulate the learning outcomes as “I can” statements for different educational levels.

Civic competence

European countries have recently been updating their curricula with policies related to development of social, civic and intercultural competences, critical thinking and media literacy or promoting intercultural dialogue. Eurydice reported in 2016²⁹⁴ that two thirds of countries introduced new initiatives only in the year after the adoption of the Paris Declaration. Initiatives targeted mostly (pre-)school education and included notably teaching and learning content and student assessment; enhanced student participation within or outside school and initial teacher education and continuing professional development.

The **Norwegian** Government suggested in a recent White Paper²⁹⁵ (April 2016) that three interdisciplinary themes are prioritized when revising the curriculum. These are Democracy and citizenship, Sustainable development (which includes both environmental challenges and technological changes), as well as Public health and Life skills. It is underlined that these interdisciplinary topics will be emphasized within the existing subjects' scope. They should not be at the expense of existing subjects in school. The Norwegian Parliament supports the development of a guide to the curriculum that provides support for the teachers' planning and implementation of these themes.

Following the reform on compulsory education and the public demand for a change in the education system with an emphasis on democracy, critical thinking and morality, a new curriculum was introduced for pre-schools, compulsory and upper secondary schools in **Iceland**. Six fundamental pillars of the curriculum include democracy and human rights, equality, sustainability and well-being. The long-term objective is to promote change in school practices and educational outcomes, strengthening democratic values, critical thinking and moral education. This includes development of teacher competences in working with democracy both as a subject and as a teaching method. Broad information and dissemination activities included education providers, parents, partners in the labour market, school staff; local educational authorities, teacher education providers, teachers' associations etc. Six booklets were published with the aim of explaining the six pillars, while courses were developed by teacher education institutions.

²⁹² See Kraatz, S. 2017, Skills development and employment: the role of Career management skills, Briefing for the EMPL Committee, European Parliament, Policy Department for Economic and Scientific Policy, Brussels

²⁹³ <https://www.education.gov.scot/Documents/dyw2-career-education-standard-0915.pdf>

²⁹⁴ https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/images/1/14/Leaflet_Paris_Declaration.pdf

²⁹⁵ Meld St.28 (2015-2016) Fag,- Fordypning – Forståelse – En fornyelse av Kunnskapsløftet
<https://www.regjeringen.no/no/dokumenter/meld.-st.-28-20152016/id2483955/sec1>

In Austria, the Alpen-Adria University provides a three-year Masters programme in Global Citizenship Education (GCED), a specialised programme for educationalists, teacher trainers, NGO associates and teachers. The programme aims to create specialists in the field of GCED, who can serve as resource multipliers for other teachers and educators, as well as schools. In addition, the Centre for Citizenship Education in Schools (**Zentrum Polis**)²⁹⁶ is the central education service institution for citizenship education in schools in Austria. The organisation helps teachers to bring citizenship and human rights education into the classroom, serves as an information platform and advisory centre, develops new materials for the classroom, carries out initial and ongoing teacher education, and organises events for students. As part of its activities, Polis publishes a magazine for teachers, coordinates the annual Austrian Citizenship Days, and has developed a manual to help teachers to integrate social and civic competences in the new Austrian curriculum (implemented since Autumn 2016).

In Belgium, a **Committee on Society and Education** was established within the Flemish Education Council (Vlor), as teachers report that they do not always feel adequately trained to teach citizenship education and schools still struggle to develop clear policies and strategies to implement cross-curricular competencies in this field. The Committee on Society and Education has been created with the aim of bringing together all actors involved in citizenship and health education to exchange information and expertise, facilitate and promote implementation of activities in schools and stimulate whole school approaches. In addition, a Special Committee on Remembrance Education was established in the Flanders in 2008 to support teaching teams and supervise the development of didactic materials and a database of good practices. The main tool developed by the committee is Touchstone Remembrance Education²⁹⁷, a manual including suggestions for all those working with collective memories to ensure the quality of remembrance education projects. The tool has been translated in French and English and is transferable to other contexts. Another initiative - **Knowledge Centre 'Kleur Bekennen - Confessing colours'**²⁹⁸, was established with the aim to provide a link between educational policy, practice and research in the field of global citizenship education. It connects the main actors in this field and helps them build new initiatives and innovative practices, such as innovation labs organised around specific topics.

Looking specifically at the **sustainability** in school curricula, the UN Decade of Education for Sustainable Development had a significant impact on raising awareness and developing curricula, teaching material and partnerships for learning on sustainable development, from early childhood learning through to private sector training²⁹⁹.

As an example, the **German** Conference of Ministers of Education and Cultural Affairs already addressed Education for Sustainable Development with decisions on "Environment and Education" of 1980 and "One World/Third World School" of 1998. In 2007 the Conference presented a comprehensive "Guidance Framework for the Learning Area Global Development", developed together with the Federal Ministry for Economic Cooperation and Development, which can be used as a basis for the development of curricula, offers concrete recommendations and offers material for teaching. The Federal government's report on education for sustainable development from 2013, as well as the current report "On the Situation and Perspectives of Education for Sustainable Development, provides a comprehensive overview of activities in the German Länder.

²⁹⁶ <http://www.politik-lernen.at/>

²⁹⁷ <http://herinneringseducatie.be/wp-content/uploads/2015/11/Touchstone-Remembrance-Education.pdf>

²⁹⁸ <http://www.kleurbekennen.be/>

²⁹⁹ <http://unesdoc.unesco.org/images/0023/002301/230171e.pdf>

EU-funded programmes have extensively supported development of teaching material, as well as creative approaches to teaching and promoting active citizenship and sustainability, as well as raising intercultural awareness. **Erasmus+** has funded a number of projects which produced innovative and useful resources on raising intercultural awareness and social understanding among learners of different ages, valuing cultural diversity and combating discrimination, teaching citizenship education and developing appropriate teaching tools. A recent compendium of project outcomes can inspire teachers, non-governmental organisations, project applicants and policymakers to develop their professional practice³⁰⁰.

Some of successful Erasmus+ projects promoting sustainability include: raising awareness on environmental sustainability and climate change among elementary school children through on-line simulation and demonstrations and blended learning³⁰¹; environmental awareness through outdoor learning activities³⁰²; motivating students, parents and teachers to learn more about solar energy and current energy revolution³⁰³; and developing STEM and ICT skills through learning about clean energy and ecology³⁰⁴.

Entrepreneurship

While some Member States demonstrate effective entrepreneurship education approaches, in most Member States this is not the case. The result is that many people leave education or training without having benefitted from opportunities to develop their entrepreneurship competence. They and Europe as a whole pay the price of lost opportunities. Defining stronger benchmarks and setting European targets for participation in entrepreneurship education (% of schools and % of students) could help the Member States to recognise their challenges and take action. Another way to tackle this challenge is to promote more effective forms of exchanging practices in entrepreneurship education and training that support a culture of collaboration within institutions, between them, and across the Member States. There are efforts to link and share practice in education, training and learning between experts, project leaders, and policy makers – particularly through online networks and platforms – and extending this support could help improve competence development.

The **E360 project**³⁰⁵ was a joint initiative between the European Commission and the Organisation for Economic Co-operation and Development (OECD) to examine entrepreneurial learning in primary and secondary education and in vocational education and training. Experts and representatives from across Europe shared examples of good practice and helped to create guiding notes for policy makers and educators to help encourage and improve the practice of entrepreneurial leadership, culture, teaching and learning in schools and VET institutions. Individual country fiches were created with examples of successful entrepreneurship education initiatives.

³⁰⁰ <https://publications.europa.eu/en/publication-detail/-/publication/253a1b4b-8c65-11e7-b5c6-01aa75ed71a1/language-en>

³⁰¹ [ENVKIDS](http://ec.europa.eu/programmes/erasmus-plus/projects/eplplus-project-details-page/?nodeRef=workspace://SpacesStore/e6396039-c1a6-465c-bdf2-67e9b8f93fa5) <http://ec.europa.eu/programmes/erasmus-plus/projects/eplplus-project-details-page/?nodeRef=workspace://SpacesStore/e6396039-c1a6-465c-bdf2-67e9b8f93fa5>

³⁰² [Sustainable Outdoor Activities](https://erasmusoutdoor.weebly.com/) <https://erasmusoutdoor.weebly.com/>

³⁰³ <http://www.erasmus-sun.eu/the-project/>

³⁰⁴ [Pollution! Find a STEM solution!](https://twinspace.etwinning.net/654/home) <https://twinspace.etwinning.net/654/home>

³⁰⁵ [E360 project](https://www.schooleducationgateway.eu/en/pub/resources/e360---successful-entrepreneur.htm) <https://www.schooleducationgateway.eu/en/pub/resources/e360---successful-entrepreneur.htm>

The European Commission supports the sharing of good practices in Higher Education through platforms and networking opportunities such as the University Business Forum³⁰⁶ and HEInnovate³⁰⁷.

The prerequisites for successfully realising entrepreneurial education are managing and developing an entrepreneurial culture, entrepreneurial pedagogy and teaching and making use of learning environments that support this. Cooperation between different levels of education is important as is cooperation with businesses and organisations. The ideal for entrepreneurship education is that education and business life are engaged in an active dialogue, where educational institutions operate in an entrepreneurial manner, and above all, young people receive adequate training during their studies to enter working life.

The **European Entrepreneurship Education NETwork (EE-HUB)**³⁰⁸ is a focal point for entrepreneurship education in Europe bringing together organizations and individuals from both the public and private sectors with strong records of accomplishment in entrepreneurship education at regional, national and European level. The EE-HUB is an online space where these stakeholders can work collectively to increase levels of entrepreneurial activities in schools across Europe.

It comprises a network of individual experts are committed to entrepreneurial learning and engaged with organisations or sister networks in the field and/or with national or regional governments. In addition, MEP Ambassadors endorse and promote recommendations of the EE-HUB through their policy work.

A particular contribution to this key competence development has been made by the regional organisation South-East European Centre for Entrepreneurial Learning (SEECCL)³⁰⁹, which has developed definitions of learning outcomes, teacher support tools and dissemination networks.

Understanding further possibilities in school education are supported by the Erasmus+ programme, for example in the case of “Innovation Cluster for Entrepreneurship Education” (ICEE)³¹⁰ - analysing the impact of entrepreneurship education having practical entrepreneurial experience before leaving school.

Entrepreneurship as a tool to tackle societal challenges and solving community problems is present in many youth work activities and has the potential to be explored and developed further.

The European Commission supports youth entrepreneurship initiatives through the Erasmus+ programme such as “Youth Start – entrepreneurial challenges”³¹¹. There are other independent initiatives, such as JADE- the European Confederation of Junior Enterprises³¹². The recent study ‘Taking the future into their own hand - Youth work and entrepreneurial learning’ has found out that youth work and non-formal learning contribute implicitly to the development of transversal skills as part of entrepreneurial competence. Evaluation finds that this learning

³⁰⁶ [University Business Forum http://ec.europa.eu/education/policy/higher-education/university-business-cooperation_en](http://ec.europa.eu/education/policy/higher-education/university-business-cooperation_en)

³⁰⁷ [HEInnovate https://heinnovate.eu/en](https://heinnovate.eu/en)

³⁰⁸ [European Entrepreneurship Education NETwork \(EE-HUB\) http://www.ee-hub.eu/](http://www.ee-hub.eu/)

³⁰⁹ [South-East European Centre for Entrepreneurial Learning http://www.seecel.hr/](http://www.seecel.hr/)

³¹⁰ [Innovation Cluster for Entrepreneurship Education http://icee-eu.eu/](http://icee-eu.eu/)

³¹¹ [Youth Start – entrepreneurial challenges http://www.youthstartproject.eu/](http://www.youthstartproject.eu/)

³¹² [JADE- the European Confederation of Junior Enterprises http://www.jadenet.org/](http://www.jadenet.org/)

could be made more explicit through raising awareness among youth workers what entrepreneurial learning encompasses.

In the field of adult learning, Erasmus for Young Entrepreneurs³¹³ is a cross-border programme facilitating the exchange of entrepreneurial and management experience. The exchange sees a newly established or potential entrepreneur make a one to six month visit to an experienced entrepreneur running an SME in another country. In the last five years, more than 2 500 pairs of entrepreneurs have benefitted from the programme.

The [European Institute of Technology](#) aims to create a favourable environment in Europe for talent and entrepreneurship driven innovation. Together with its five Knowledge and Innovation Communities (KICs), the EIT supports the development of entrepreneurial talent and encourages and supports individuals and companies to develop innovative ideas and take them to the market. The EIT KICs education programmes support the development of entrepreneurs and promote an entrepreneurial attitude and culture. KICs programmes combine excellent science and multidisciplinary curricula with entrepreneurship education, business creation services and mobility and outreach schemes, all designed and implemented together with business across boundaries.

Cultural awareness and expression

The Council Conclusions on a Work Plan for Culture (2015-2018)³¹⁴ make a commitment to take into account the intrinsic value of culture and the arts to enhance cultural diversity and to encourage cross-sectorial cooperation. Its four priorities are:

- i. Accessible and inclusive culture;
- ii. Cultural heritage;
- iii. Cultural and creative sectors: creative economy and innovation;
- iv. Promotion of cultural diversity, culture in EU external relations and mobility.

The Cultural Agenda contributes to both the Europe 2020 strategy for growth and jobs³¹⁵ and satisfying Europe's commitments to international agreements, such as the United Nations Convention on the Protection and Promotion of the Diversity of Cultural Expressions.³¹⁶

Also in 2015, Council conclusions on cultural and creative crossovers³¹⁷ to stimulate innovation, economic sustainability and social inclusion, focused on the potential of collaborative approaches and noted the benefits, such as:

- for school education, increasing pupils' attendance and achievements, and fostering creative learning and pupils' well-being;

³¹³ [Erasmus for Young Entrepreneurs https://www.erasmus-entrepreneurs.eu/index.php](https://www.erasmus-entrepreneurs.eu/index.php)

³¹⁴ The Official Journal of the European Union, [OJ C 463, 23.12.2014, p. 4–14](#)

³¹⁵ https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en

³¹⁶ http://portal.unesco.org/en/ev.php-URL_ID=31038&URL_DO=DO_TOPIC&URL_SECTION=201.html

³¹⁷ The Official Journal of the European Union, [OJ C 172, 27.5.2015, p. 13–16](#)

- the potential of combining arts, culture and creativity with technology, science and business, as well as insufficient exchange of good practices, which is still underestimated and thereby underused; and,
- the development of creative skills and critical thinking throughout formal education and non-formal and informal learning that allows individuals to better meet the needs of an increasingly diverse and knowledge-based society as well as of a demanding and rapidly changing labour market.

This is supported by the 2015 Council conclusions on the role of early childhood education and primary education in fostering creativity, innovation and digital competence³¹⁸, which note that "Education and training systems, together with non-formal and informal learning, have a fundamental role to play in developing creative ... capacities from an early age as key factors ... in promoting personal fulfilment and development, social inclusion and active citizenship."

In 2016, a Joint Communication proposed an EU Strategy for International Cultural Relations³¹⁹ that focuses on advancing cultural cooperation across three main strands: supporting culture as an engine for sustainable social and economic development; promoting culture and intercultural dialogue for peaceful inter-community relations; and reinforcing cooperation on cultural heritage.

Following the successful implementation of the EU's Culture³²⁰ and MEDIA³²¹ programmes, in 2014 the Commission launched Creative Europe³²²; a consolidated framework programme in support of Europe's cultural and creative sectors. Programme funding is complemented by peer learning activities between EU Member State governments (through the Open Method of Coordination³²³) and between cities and regions³²⁴, as well as regular reports and studies³²⁵, and data-gathering³²⁶.

The OMC Working Group on Cultural Awareness and Expression (2014-15) brought together experts from ministries of culture and national cultural institutions to meet over 18 months and to exchange evidence of good practice, with over 40 examples from across Europe. They produced a Handbook³²⁷ that makes a number of clear recommendations which would improve implementation and development of this competence. They span cultural and educational policy, but also require a connection between the two. Whilst the Handbook expands on each with actions points, the main Recommendations are to:

In policy:

1. Connect different policy areas/sectors within Member States, supported by cross-sectoral infrastructure, in order to achieve better access and sustainability.
2. Improve the knowledge base for policy making in the field of cultural awareness and expression through the exchange of projects and research findings.

³¹⁸ The Official Journal of the European Union, [OJ C 172, 27.5.2015, p. 17–21](#)

³¹⁹ JOIN/2016/029 final

³²⁰ https://ec.europa.eu/culture/node_en

³²¹ https://ec.europa.eu/programmes/creative-europe/media_en

³²² <https://ec.europa.eu/programmes/creative-europe/>

³²³ https://ec.europa.eu/culture/policy/strategic-framework/european-coop_en

³²⁴ https://ec.europa.eu/culture/news/2014/0616-call-cities-regions_en

³²⁵ https://ec.europa.eu/culture/library_en

³²⁶ <http://ec.europa.eu/eurostat/web/culture/overview>

³²⁷ <http://bookshop.europa.eu/en/cultural-awareness-and-expression-handbook-pbNC0116125/>

3. Support policy development in cultural awareness and expression by developing appropriate modes of monitoring that ensure high quality.

In improving access to and participation in cultural experiences:

4. Make cultural experiences as accessible as possible to all people.
5. Stimulate cultural participation of all people, with specific attention to children, starting from an early age, and to people from underprivileged socio-economic backgrounds.
6. Raise awareness of the importance of cultural institutions and products through emphasising their connection to the challenges of society.
7. Give particular attention to lifelong, intergenerational and intercultural learning of cultural awareness and expression with the goal of stimulating social cohesion.

In education:

8. Integrate cultural awareness and expression into mainstream primary and secondary education, in a way that is of high quality, and appropriately assessed and monitored.
9. Develop Initial Teacher Education and Continuing Professional Development (CPD) for all educators (teachers, school leaders, early childhood education and care (ECEC) and vocational education and training (VET) professionals, higher education (HE) lecturers and support staff, and culture education professionals) in order to improve skills and understanding necessary for developing cultural awareness and expression in learners and their institutions.
10. Design, implement and evaluate programmes and instruments stimulating projects or institutions to build up sustainable cooperation with schools. Consider connecting this policy with the public funding of cultural institutions.
11. Take measures to raise the standards and maintain the high quality of arts education, in both formal and non-formal learning environments.