



## JRC TECHNICAL REPORTS

# Developing a European Framework for the Personal, Social & Learning to Learn Key Competence (LifEComp)

*Literature Review and  
Analysis of Frameworks*

Author: Francesca Caena

Editor: Yves Punie

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Contact information

Name: Yves Punie

Email: [yves.punie@ec.europa.eu](mailto:yves.punie@ec.europa.eu)

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## Preface

With the 2018 European Recommendation on Key Competences,<sup>1</sup> the Personal, Social and Learning to Learn Competence has been acknowledged as one of the eight Key Competences for Lifelong Learning by the European Union. This key competence integrates the Learning to Learn Key competence as described in the previous 2006 Recommendation<sup>2</sup>, with a wider scope on personal and social development.

It is a transversal key competence which is intertwined with other key competences (e.g. citizenship, digital, entrepreneurship, languages, STEM competences), functioning as a crucial enabler for their development. It spans relevant skills which should be acquired by all citizens, to ensure active participation in the society and the economy. Moreover, it takes into account the increasing importance of non-cognitive, soft skills in fast-changing global contexts - those distinctive human skills that cannot be easily taken over by Artificial Intelligence.

This report contributes to the projects Learning and Living in the Digital Age 1 and 2, launched by the Human Capital and Employment Unit at JRC Seville,<sup>3</sup> on behalf of DG Education and Culture. Both projects contain workpackages on the Personal, Social and Learning to Learn Competence, with the aim of contributing to the better understanding and development of this Key Competence in Europe.

The projects aim to develop a conceptual framework of reference for the Personal, Social and Learning to Learn Key Competence, with the following objectives:

- identifying the key components of the Personal, Social and Learning to Learn Key Competence, guided by desk research - with a lifelong perspective on this Competence, beyond formal education;
- developing the proposal of a conceptual framework, considering feasibility of linking learning to learn, personal and social development to the same reference model;
- finalising the framework model, broken down into areas, elements and clear descriptors, with the support of stakeholder consultations.

This report presents all relevant desk research which has underpinned and guided the development of the Personal, Social, Learning to Learn Key Competence framework. As such, it furthers an informed understanding of the main concepts for this Key Competence, and suggests the label *LifEComp* for the related framework.

The LifEComp framework on the Personal, Social and Learning to Learn Key Competence represents JRC Seville's latest endeavour in the development of competence frameworks. Recent work focused on digital competence frameworks for citizens (DigComp), educators (DigCompEdu), educational organisations (DigCompOrg), and consumers (DigCompConsumers). It also included a competence framework for entrepreneurship (EntreComp), and a framework for opening up higher education institutions (OpenEdu). Some of these frameworks are accompanied by self-reflection instruments, such as SELFIE, which focuses on digital capacity building of schools.

More information can be found on the JRC Science hub: <https://ec.europa.eu/jrc/en/research-topic/learning-and-skills>.

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<sup>1</sup> [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&rid=7](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7)

<sup>2</sup> <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0010:0018:en:PDF>

<sup>3</sup> JRC Seville is one of the six in-house research centres of the European Commission, to provide scientific support for the conception, development, implementation and monitoring of EU policies.

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## **Abstract**

This report presents all desk research (literature review and frameworks analysis) underpinning the development of the LifEComp framework, on the Personal, Social and Learning to Learn Key Competence (one of the eight Key Competences for Lifelong Learning in the 2018 Recommendation). The desk research provides the rationale for design and description of the LifEComp framework proposal. With a lifewide perspective, the framework aims to embrace different levels and areas of education and training, from early childhood to vocational, non-formal and adult education.

## Executive summary

The present report presents all desk research (literature review and analysis of frameworks) underpinning the development of the LifEComp framework, on the Personal, Social and Learning to Learn Key Competence.

This is one of the Key Competences for Lifelong Learning whose profile was changed and broadened in the latest 2018 Recommendation. It foregrounds cross-disciplinary competences, to boost resilience and the ability to deal with uncertainty and complexity, in fast-changing social and workplace contexts.

The Personal, Social and Learning to Learn competence can be broadly defined as the ability to reflect upon oneself, effectively manage time and information, work with others in a constructive way, remain resilient and manage one's own learning and career.

This report contains literature insights on the topics of learning to learn, social and personal development, together with the analysis of relevant international and national frameworks, curricula, assessment tools, projects and studies.

The literature review aims to give clear definitions and further a deeper understanding of concepts related to the Personal, Social and Learning to Learn Key Competence. It provides theoretical pillars underpinning the conceptualisation of framework areas and content, and gauges a wide range of knowledge domains, filtered by insights on future-oriented competences. The complementary analysis of existing frameworks furthers understanding of current policy and practice, and feeds detail into LifEComp framework content choices.

The integrated input from literature review and frameworks analysis provides the rationale for design and content of the LifEComp framework proposal (areas and elements). With a lifewide perspective, the framework aims to embrace different levels and areas of education and training, from early childhood to vocational, non-formal and adult education.

Both literature review and analysis of frameworks result from an incremental process of sifting, adjustment and integration, running parallel with framework development and stakeholder consultations. It has benefited from ongoing dialogue with colleagues, researchers, experts and stakeholders, who have provided precious suggestions and constructive feedback.

Building on insights from desk research and European documents (2018 Council Recommendation and related Staff Working Document), the label *LifEComp* is put forward for the Personal, Social and Learning to Learn Key Competence framework. It aims to underscore the crucial need for such transversal resources - often defined as life skills - in order to successfully navigate personal and social lives and careers.

The LifEComp framework proposal put forward in the present report is meant to undergo the third and last stakeholder consultation of the project, in the last week of November 2019. It will then be followed up by a separate publication containing the finalised version of the LifEComp framework, due at the beginning of 2020.

# 1 Introduction

## 1.1 Aims and objectives of the LifEComp framework project

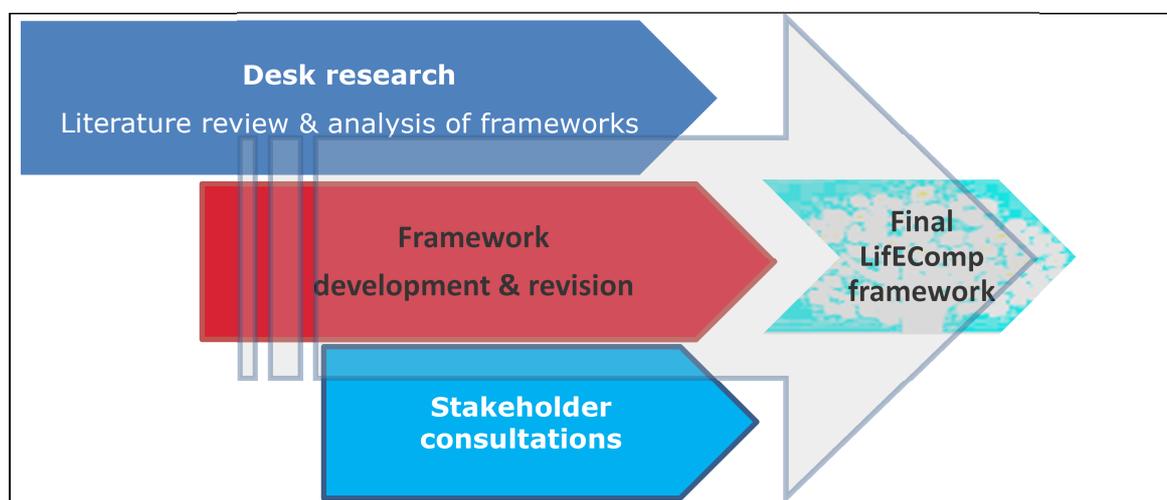
The framework development project for the European Key Competence ‘Learning to Learn linked to social and personal development’ (LifEComp) was launched by JRC under two Administrative Agreements with DG Education and Culture, with a view to contribute to the better understanding and development of this Key Competence in Europe. The project covers two years (2018-2019), and sets out to create consensus at a European level on the components of this Key Competence by developing a conceptual framework and supplying a common language and logic for this Key Competence, for all Member States and implementation contexts - with the support and feedback of stakeholder consultations.

## 1.2 Methodology

The LifEComp framework development journey can be outlined in the following stages, which are interrelated and partially overlapping (Figure 1):

1. Desk research, containing a review of concepts from the literature and a mapping of existing frameworks to support framework development, with an incremental process of updating and integration (September 2018-September 2019);
2. The process of framework design, conceptualisation and revision, through an ongoing process of reflection and updating, tied with the submission of framework drafts to stakeholder consultations (February 2019-November 2019);
3. Three rounds of stakeholder consultations (a Scoping Workshop in March 2019, to validate approach and collect feedback for framework drafting; a Consolidation Workshop in June 2019, to discuss the draft conceptual model; a Multi-stakeholder Consultation in November 2019, to validate the framework model, gain consensus and collect feedback on implementation);
4. Framework finalisation (end of 2019), with a clear presentation of framework structure, elements and descriptors; and subsequent framework publication (first months of 2020).

**Figure 1.** The LifEComp Framework development journey



The present report covers the first point above (desk research), providing the rationale for the conceptualisation of LifEComp framework design, structure, content and descriptors.

### **1.3 Structure of the report**

The report content is organised as follows. After the first introductory chapter, Chapter 2 explains the framework rationale in relation to European policy, and outlines priorities in conceptualising the framework.

Chapters 3 and 4 provide relevant literature insights and key concepts, explaining choices in framework design and content. Chapter 5 focuses on existing frameworks (competence frameworks, curricula, project outputs, initiatives and tools) that can offer specific input to shape the framework model. Chapters 3, 4 and 5 thus provide support from theory, practice and policy, to underpin the conceptual framework.

Annex I contains a table mapping the existing frameworks that were analysed because of potential relevance for LifEComp framework development. Annex II provides the glossary of relevant concepts used in the report. Annex III outlines the conceptual links between LifEComp (Personal, Social and Learning to Learn Competence) and other Key Competence frameworks developed by JRC (DigComp and EntreComp).

## **2 Understanding the Personal, Social, Learning to Learn Key Competence**

### **2.1 The starting point: European Policy**

#### **2.1.1 A newly minted Key Competence**

Taking stock of shifts in competence demands, the European Council Recommendation on Key Competences for LifeLong Learning foregrounds development of the learning to learn competence as a constantly improved basis for learning and social participation – together with personal and social development, ‘to improve health-conscious, future-oriented life management’ (European Council, 2018).

In the Recommendation definition, the ‘...personal, social and learning to learn competence is the ability to reflect upon oneself, effectively manage time and information, work with others in a constructive way, remain resilient and manage one's own learning and career. It includes the ability to cope with uncertainty and complexity, learn to learn, support one's physical and emotional well-being, to maintain physical and mental health, and to be able to ...empathize and manage conflict in an inclusive and supportive context (Ibidem, 21).’

The learning to learn dimension retains its key function for learning autonomy, metacognition, self-awareness and self-regulation. There is an added focus on health and well-being, as powerful boosters of learning and development (European Commission, 2018).

The newly minted profile of this European Key Competence shows links with citizenship and entrepreneurship key competences; indeed, the Recommendation refers to some aspects (critical thinking and problem solving, teamwork, communication and negotiation skills, analytical skills, and intercultural skills), which are shared with other key competences.

#### **2.1.2 Learning to Learn in EU Recommendations (2006 vs 2018)**

The present section aims to explain the rationale for the broader description of learning to learn tied with personal and social development in the 2018 Recommendation, comparing it with the narrower definition of learning to learn in the 2006 Recommendation.

Both the 2006 and the 2018 Recommendations link learning to learn with autonomy in managing one's own learning and competence development, cutting across a variety of definitions and research paradigms (cognitive psychology and socio-cultural constructivism).

Even though both Recommendations cover the same aspects of learning to learn, the 2018 one highlights self-reflection, as well as the link between learning to learn and career management – see the opening sentence: ‘...the ability to reflect upon oneself, manage time & information, learning & career’ (European Council, 2018). The 2006 Recommendation focused on ‘...the ability to pursue & persist in learning, organise one's own learning, including management of time & information’ (European Council, 2006).

The 2006 and 2018 definitions of Learning to Learn are set side by side in Table 1 below, first row (in gray). Table 1 lists definitions of Learning to Learn in both Recommendations (columns 1 and 2), and relevant research insights (column 3) which highlight staple features of learning to learn (Hautamäki et al., 2002; Moreno, 2006; Sorenson, 2006).

**Table 1.** On Learning to Learn: European Council Recommendations and research insights

<b>2006 Recommendation on Learning to Learn Key Competence</b> (European Council, 2006)	<b>2018 Recommendation on Personal, Social, Learning to Learn KC - on Learning to Learn</b> (European Council, 2018)	<b>Research insights on learning to learn</b> (Moreno, 2006; Hautamäki et al., 2002; Sorenson, 2006)
<i>Ability to pursue &amp; persist in learning, organise one's own learning, including management of time &amp; information.</i>	<i>Ability to reflect upon oneself, manage time &amp; information, learning &amp; career.</i>	
Awareness of one's own learning process and needs.  Knowing & understanding one's own preferred learning strategies, strengths & weaknesses in skills & qualifications.	Knowing one's preferred learning strategies and development needs.  Ability to identify one's capacities & focus.	Awareness about learning, thinking and action, plus learning how to learn (Moreno, 2006; Sorenson, 2006).
Motivation and confidence to pursue & succeed at learning throughout life.  Problem-solving attitude for learning and change.	Positive attitude to learning throughout life; motivate oneself.	Commitment to thinking and hope (Hautamäki et al., 2002).  Ability and willingness to adapt to new learning tasks (Hautamäki et al., 2002).
Persevere in learning, concentrate for extended periods, overcome obstacles to learn successfully.	Organise & persevere with one's learning.	Cognitive and affective self-regulation (Hautamäki et al., 2002).  Ability and willingness to adapt to new learning tasks (Hautamäki et al., 2002).
Ability to organise own learning, evaluate work.  Ability to dedicate time to learn autonomously & with self-discipline, work collaboratively, draw benefits from group diversity and share.	Ability to identify & set goals.  Ability to evaluate and share learning.  Ability to learn & work collaboratively & autonomously.	Second-order learning (metalearning) (Moreno, 2006; Sorenson, 2006).  Cognitive and affective self-regulation (Hautamäki et al., 2002).
Ability to gain, process and assimilate new knowledge and skills.  Effective management of one's learning, career and work.  Be able to search for the education and training opportunities and guidance and/or support available.	Manage one's own learning & career.  Knowing various ways to develop competences & search for education, training & career opportunities, guidance or support available.	Awareness about learning, thinking and action, plus learning how to learn (Moreno, 2006; Sorenson, 2006).  Ability and willingness to adapt to new learning tasks (Hautamäki et al., 2002).
Ability of seeking and making use of guidance: advice, information and support when appropriate.	Ability to seek support when appropriate.	Awareness about learning, thinking and action, plus learning how to learn (Moreno, 2006; Sorenson, 2006).  Ability and willingness to adapt to new learning tasks (Hautamäki et al., 2002).
Desire to apply prior learning and life experiences.  Curiosity to look for opportunities to learn & apply learning in variety of contexts.  Reflect critically on learning.	Desire to apply prior learning & experiences.  Curiosity to look for opportunities to learn & develop in variety of contexts.  Ability to critically reflect.	Ability and willingness to adapt to new learning tasks (Hautamäki et al., 2002).  Second-order learning (metalearning) (Moreno, 2006; Sorenson, 2006).

Both Recommendations definitions and research insights include affective, dispositional aspects (self-regulation, commitment, willingness, perseverance, confidence, curiosity related to learning) as well as cognitive aspects - learning awareness, ability to adapt to new learning, meta-learning (e.g. ability to plan, organise, collaborate, evaluate and reflect in relation to learning). They provide support for conceptualising the personal, social and learning to learn areas in the LifeComp framework as interrelated.

## 2.2 LifEComp: a transformative Key Competence

Transversal competences have become indispensable to successfully navigate lives, relations and careers - coping with societal changes, digital transformation, volatile global job markets, and rising radicalisation.

Focus on resilience, wellbeing and self-fulfilment is recommended by societal and demographic shifts in Europe (ageing population pyramid, social fragmentation, immigration), to promote social cohesion and inclusion (Cefai et al., 2018). Respect, tolerance and empathy are required for sustainable interactions with increasingly ageing, diverse populations (OECD, 2015).

The 21st-century flatland - connected knowledge workers and citizens, global markets and blended cultural traditions - requires individuals that can marshal the power of technology to create knowledge and enhance human capacities (Griffin et al., 2012; Trilling & Fadel, 2009). Increasingly diverse global communities build up tensions between the needs to support one's own identity, and tolerance for the identities and values of others (Ibidem).

Learning to Learn can be crucial to keep up with evolving competence demands - due to the demographic challenges of an ageing society with a shrinking workforce. Rapid changes in employment patterns require non-cognitive skills to shape volatile careers (Brunello & Schlotter, 2011; Gutman & Schoon, 2013).

Research highlights the impact of socio-emotional competences on life and work trajectories, and the interdependence of emotional, social and academic learning in formal education (Thompson & Lagattuta, 2006). Intrinsic motivation and emotional involvement in learning are found to sustain deeper understanding and desire to learn further (Trilling & Fadel, 2009). Collaboration (face-to-face and virtual) has been shown to increase motivation to learning, innovation and socio-cultural competences (Johnson & Johnson, 2017).

The ability to learn, collaborate and solve problems in digital information environments has become crucial. Those that are unable to act as producers, distributors and consumers of information will be disadvantaged - hence the need to develop competences for new ways of working, living, learning and thinking (Griffin et al., 2012, 3-4). They include solving complex issues - sharing information to adapt and innovate, tackle new demands and use technology to create knowledge and enhance human capacity (Ibidem, 17; Vuorikari et al., 2016).

The human qualities and skills that Artificial Intelligence struggles to replicate include emotional competence, mentoring and coaching, ethical judgment, maintaining relationships, and dealing with contextual ambiguity (Gustein & Sviokla, 2018). Critical thinking and problem solving, adaptability, effective communication and managing complex social interactions are highlighted as crucial features of human intelligence for lifelong learning, education and work (Luckin and Issroff, 2018; OECD, 2018a).

The competences highlighted so far can be viewed as **next skills**, bound to be essential in 21st-century education and work - abilities and dispositions for successful, self-organised action to face complex problems and unknown future contexts (Trilling & Fadel, 2009; Ehlers & Kellermann, 2019).

These capacities have transformative potential - they can empower individuals to tackle the challenges and opportunities of an increasingly volatile, uncertain, complex and ambiguous world, with innovative solutions to shape the future (OECD, 2018b).

Such transformative elements characterise and explain the rationale for the LifEComp framework makeup.

## 2.3 Conceptualizing the framework model

### 2.3.1 An eclectic approach

On developing a new framework, there is the search for a suitable perspective - to create meaning out of research and theory insights. In this case, an eclectic approach was considered appropriate - choosing what seems to be most useful from several theories, to find common ground and build a consistent picture (Sydänmaanlakka, 2003).

An eclectic approach suits the hybrid nature of this key competence, and its lifelong perspective across contexts and life stages. The framework content can be connected to a wide range of knowledge areas, and deals with concepts and values that can have different connotations across professional, cultural and social communities.

The framework rationale is set by the essence of this Key Competence – which aims to empower individuals to meaningful living, learning, interacting and working in sustainable societies, for individual and collective wellbeing. This highlights self-knowledge and self-actualisation (that is, the agency of individuals) as powerful drivers. Insights from humanistic and positive psychology, social constructivism and metacognition support a broad focus on individual, collaborative, organisational learning and development.

Developing this Key Competence framework model has been guided by the awareness that many elements appear tied to other Key Competences. Framework content also appears heterogeneous; some elements represent pre-requisites for activating other competences, others can be classified as attitudes or competence sets. To tackle conceptual complexity, systems theory has guided the design of a framework structure, where framework elements can be labelled according to profile and function.

The selection of sources underpinning this report is also eclectic – theories and empirical research; competence frameworks, curricula and assessment tools developed by different subjects and organisations, with various approaches; input from project networks and stakeholder organisations.

### **2.3.2 Key terminology**

In alignment with previous Key Competence Frameworks (e.g. DigComp – see Ferrari, 2012), the term ‘competence framework’ is used in its wider meaning: ‘organised conceptualisation of competences’. As such, it is distinguished from a ‘qualification framework’ – understood as an instrument for the development and classification of qualifications at national or sectoral level, with a set of criteria (e.g. descriptors) applicable to specified levels of learning outcomes (CEDEFOP, 2008) – e.g. the EQF (European Qualification Framework) and NQFs (National Qualification Frameworks).

We understand a framework as an instrument to conceptualise and develop the LifEComp Key Competence areas and elements, as outlined in European documents. The LifEComp framework model is underpinned by a broad range of literature insights, as well as by the analysis of relevant frameworks (curricula, projects, studies and tools). This exercise has shaped the structure and content of this Key Competence, to find common ground in a multifaceted knowledge landscape.

We will abide by the term ‘competence’ as defined by the Recommendation on Key Competences for Lifelong Learning (European Council, 2006). The term ‘competence’ (equivalent to the US term ‘competency’) is here viewed as preferable to ‘literacy’. Although the term ‘literacy’ is now used in a broad metaphorical sense as ‘reading the world’ and applied to diverse knowledge areas (e.g. financial, health, information, media, scientific literacy), its main focus is (more narrowly) on reading/understanding (encoding/decoding) processes, and thus on knowledge and skills mastery in a specific domain (UNESCO, 2006).

### **3 Literature insights: the framework pillars**

#### **3.1 Choices**

The choice of relevant literature has been guided by the following priorities:

- build on and update previous background literature underpinning the 2006 Key Competences and other Key Competence Frameworks (for DigComp: Ala-Mutka, 2011; for the 2006 Learning to Learn Key Competence and its links to other Key Competences, Deakin Crick & Hoskins 2010; Hoskins & Friedriksson, 2008);
- find support for the approach to framework development as suggested by European documents - considering the Personal, Social and Learning to Learn areas as interdependent;
- Find support for the placement, breakdown and description of elements within main framework areas for this Key Competence;
- focus on core elements and relationships in the framework; and
- identify, map and analyse existing reference documents that can offer relevant, detailed input for the framework conceptual model.

The search for relevant literature relied on the description of the Personal, Social and Learning to Learn Competence in the 2018 Recommendation and related Staff Working Document to select key words. These were used for an iterated meta-search in online databases (ERIC, JSTOR, Web of Science, Scopus, Google Scholar) and grey literature. Relevant European policy documents (e.g. background studies and stakeholder consultations for the 2018 Recommendation of Key Competences for Lifelong learning), as well as input from other JRC Key Competence Frameworks (DigComp, EntreComp) were also taken into account.

Given the breadth of knowledge domains that can be relevant for LifEComp, the choices of relevant literature were effected considering the contents of the Key Competence (outlined in the 2018 Recommendation and related Staff Working Document) in relation to two umbrella labels found in the literature. The two labels are: *transversal competences* (including life/soft skills and socio-emotional competences) and *21st century competences* (including competences for 2030).

This chapter focuses on theoretical pillars for the conceptual model, with insights from the following:

- systems theory, to describe complexity in a layered framework structure;
- positive psychology and self-determination theory, for the conceptualisation of the personal area and the overarching role of agency;
- research on socio-emotional and intercultural competences, cooperative learning and leadership, for the conceptualisation of the social area;
- research on critical thinking, self-regulated learning, learning power and metacognition, for the conceptualisation of the learning to learn area.

The LifEComp Key Competence framework covers intrapersonal, interpersonal, cognitive and metacognitive aspects. Quite a number of them are common to all Key Competences. Interdependence with other competence frameworks is inevitable, with reciprocally supportive relationships.

Several key concepts in the framework (such as empathy, wellbeing and resilience) have become buzz words across knowledge and practice areas, to the point of becoming boundary objects – adaptable elements with different meanings across social contexts, but with enough common features to maintain a common, recognisable identity (Star & Griesemer, 1989; Wenger, 1998).

Clear definitions of such slippery concepts are crucial. They are explained in detail in this chapter, in relation to framework areas and elements; they are also summarised in Annex II (glossary), with a focus on those concepts with blurred boundaries across knowledge areas.

#### **3.2 Looking for common ground: future-oriented competences**

The description of the Personal, Social and Learning to Learn Key Competence in the Recommendation outlines future-oriented competences enabling to cope with complexity, uncertainty and change in global contexts.

Such competences have been the object of increasing attention in policy and research, resulting in a series of definitions: *life skills*, *soft skills*, *socio-emotional competences* and *non-cognitive skills*, *transversal competences*, *21st-century competences*, *competences for 2030*. The present chapter seeks common ground across definitions, mapping them first against the 2018 Council Recommendation, and then against main aspects flagged in the literature.

**Life skills** can be described as adaptive attitudes and behaviour to tackle life challenges (WHO, 1997). They span *personal skills* (personal awareness, agency and self-management); *interpersonal skills* (communication and negotiation, teamwork, empathy and advocacy); *cognitive, meta-cognitive and reflective skills* (processing information and knowledge, problem solving, critical thinking and responsible decision making) (UNICEF, 2010).<sup>4</sup>

**Soft skills** (usually contrasted with technical, job-specific 'hard' skills) are seen as broadly applicable qualities, habits and attitudes. Examples of soft skills listed by UNESCO cover many elements of the LifeComp Key Competence, mostly in the personal and social development areas outlined by the Recommendation: *self-esteem and self-management*, *motivation*, *sense of responsibility*, *flexibility* (personal development); *making decisions*, *empathy*, *leadership*, *sociability* (social development), and *time management* (learning to learn).<sup>5</sup>

**Socio-emotional competences** can be defined within three basic areas, mainly related to personal and social aspects: *achieving goals & building on personal strengths*; *working with others & maintaining healthy relationships*; and *managing emotions* (Cefai & Cavioni, 2014; OECD, 2015). **Non-cognitive skills** is another label for socio-emotional skills that is often found in the literature (OECD, 2015). It usually refers to personality characteristics and personal qualities, and distinguished from cognitive skills. A widely known description of personality traits is the 'Big Five' classification, taken as a key reference for the OECD study on socio-emotional skills (John & De Fruyt, 2015; OECD, 2015; Kankaraš, 2017).

**Transversal competences** described in UNESCO ERINet<sup>6</sup> and NEQMAP<sup>7</sup> focus on learners' holistic development and adapting to change (Care & Luo, 2016; UNESCO, 2015b). They foreground intrapersonal skills and add references to healthy lifestyles.

**21st-century competences** focus on higher-order thinking, problem solving, effective communication, self-directed and collaborative learning - required by a global, digital society. They can be clustered as *ways of thinking*, *ways of working*, *tools for working*, and *living in the world* (Binkley et al., 2012). Living in the world (personal area), ways of working (social area) and ways of thinking (learning to learn) are all linked to the fourth area (tools for working: information and ICT literacy, as parts of digital competence - see Ala-Mutka, 2011).

The most comprehensive perspective on future-oriented competences can be found in the OECD 2030 Learning Compass, which aims to promote dialogue and alignment across competence frameworks and curricula globally, with a prevailing focus on school education. Its focus is on enhanced quality of life and collective well-being - enabling learners to meet complex demands, navigate uncertainty across social and digital spaces, and engage with the natural world appreciating its fragility and value (OECD, 2019a).

**Competences for 2030** are viewed as *relational* (acting for a purpose, respecting others), *integrated* (for long-term vision, with multiple solutions to big problems) and *holistic* (helping develop as a whole person) (OECD, 2019a). In particular, three transformative competences empower learners as change agents for individual and societal well-being: *creating new value*, *reconciling tensions and dilemmas*, and *taking responsibility* (OECD, 2019b). Learning to learn and higher-order thinking, socio-emotional skills and creativity are viewed as key for *system thinking*: learning to think and act in an integrated way, considering interconnections between contradictory ideas (OECD, 2019a).

The OECD 2030 Learning Compass views competences as developed through learning cycles of *anticipation* (of consequences and perspectives), *action* and *reflection* (meaning making and deeper understanding of experience) (OECD, 2019c). They are drivers for agency and co-agency, at the core of education and lifelong learning (OECD, 2019d).

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<sup>4</sup> [https://www.unicef.org/lifeskills/index\\_7308.html](https://www.unicef.org/lifeskills/index_7308.html)

<sup>5</sup> <http://www.ibe.unesco.org/en/glossary-curriculum-terminology/s/soft-skills>

<sup>6</sup> Asia-Pacific Education Research Institutes Network.

<sup>7</sup> Regional platform established at UNESCO Bangkok in 2013, to improve quality of learning in the Asia-Pacific region through capacity development, research and knowledge sharing in the area of learning assessments.  
<http://www.unescobkk.org/education/quality-of-education/neqmap/>

**Table 2.** Comparing the 2018 Recommendation on Personal, Social Learning to learn KC (Personal area) with future-oriented competences

<b>Recommendation: Personal area<sup>8</sup></b>	<b>Life skills<sup>9</sup></b>	<b>Soft skills<sup>10</sup></b>	<b>Socioemotional, non-cognitive<sup>11</sup></b>	<b>Transversal<sup>12</sup></b>	<b>21<sup>st</sup>- century<sup>13</sup></b>	<b>OECD 2030<sup>14</sup></b>
Reflection Motivation Confidence Resilience	Self-awareness Self-management	Self- management Self-esteem Responsibility Integrity Motivation Flexibility	Self-esteem Confidence Optimism Conscientiousness Emotional stability	Self-discipline Responsibility Integrity Flexibility	Manage life	Self- awareness Self- regulation Resilience
Desire to apply prior learning Curiosity to learn	Agency		Autonomy Openness to experience		Manage career	
Cope with uncertainty & complexity Manage career Seek education, training, career opportunities			Autonomy Openness to experience		Manage life & career	
Physical, social, mental, emotional health & wellbeing			Emotional stability Conscientiousness	Appreciation of healthy lifestyle		Physical & mental health

Tables 2 and 3 show common ground across definitions of the seven future-oriented competences mentioned above, mapping them against the 2018 Recommendation (on the Personal, Social and Learning to Learn Key Competence). They highlight the need for the LifEComp framework at the European level, since none of the definitions explicitly covers all aspects mentioned in the 2018 Recommendation on the Personal, Social and Learning to Learn Key Competence.

<sup>8</sup> European Council Recommendation on Key Competences for LLL, 2018.

<sup>9</sup> [https://www.unicef.org/lifeskills/index\\_7308.html](https://www.unicef.org/lifeskills/index_7308.html).

<sup>10</sup> <http://www.ibe.unesco.org/en/glossary-curriculum-terminology/s/soft-skills>.

<sup>11</sup> OECD, 2015.

<sup>12</sup> UNESCO, 2015.

<sup>13</sup> ATC21S, 2012.

<sup>14</sup> OECD, 2019a.

**Table 3.** Comparing the 2018 Recommendation on Personal, Social Learning to learn KC (Social, Learning to Learn areas) with future-oriented competences

<b>2018 Recommendation: Social, L2L areas<sup>15</sup></b>	<b>Life skills<sup>16</sup></b>	<b>Soft skills<sup>17</sup></b>	<b>Socioemotional, non-cognitive<sup>18</sup></b>	<b>Transversal<sup>19</sup></b>	<b>21<sup>st</sup> century<sup>20</sup></b>	<b>OECD 2030<sup>21</sup></b>
Feel empathy Create confidence	Empathy	Empathy	Maintain healthy, caring relations Agreeableness Extraversion	Empathy		Core: Socio-emotional skills (empathy, trust)
Communicate Manage interactions Collaborate Negotiate Manage conflict Assertiveness Integrity	Communicate Teamwork Negotiate Advocacy	Sociability Leadership	Work with others Agreeableness Extraversion	Communicate Collaborate Resolve conflict	Communicate Collaborate	Core: Socio-emotional skills (collaboration)
Respect diversity Overcome prejudices			Respect Agreeableness	Intercultural attitudes	Personal & social responsibility	Transformative: Reconcile tensions & dilemmas
Manage time, learning, information  Set goals  Know own capacities, learning strategies, needs  Collaborative, autonomous learning  Focus, organise, evaluate, share learning  Persevere  Learning mindset	Process information & knowledge	Manage time	Achieve goals: perseverance, self-awareness, passion  Build on personal strengths  Conscientiousness	Independent learning Persevere	Metacognition	Transformative: responsibility  Anticipation, action, reflection cycle for competence development
Deal with complexity  Critically reflect, make decisions  Seek support  Problem-solving attitude	Problem solving  Critical thinking  Responsible decision-making	Making decisions		Reflective thinking  Decision making  Creativity	Problem solving  Critical thinking  Decision making  Innovation	Core: ethical thinking  Transformative: responsibility, create new value, reconcile tensions & dilemmas

<sup>15</sup> European Council Recommendation on Key Competences for LLL, 2018.

<sup>16</sup> [https://www.unicef.org/lifeskills/index\\_7308.html](https://www.unicef.org/lifeskills/index_7308.html)

<sup>17</sup> <http://www.ibe.unesco.org/en/glossary-curriculum-terminology/s/soft-skills>.

<sup>18</sup> OECD, 2015.

<sup>19</sup> UNESCO, 2015.

<sup>20</sup> ATC21S, 2012.

<sup>21</sup> OECD, 2019a.

### 3.3 Systems theory for framework structure

Systems theory can be useful to shape the complex, hybrid elements in LifEComp framework design. It suggests devising a layered framework structure, according to differences and relationships between components. This is advisable due to the interdependence of framework elements, and the relevance of some of them across the personal, social, learning to learn areas mentioned by the Recommendation.

A system is a group of parts that interact so that the system as a whole can do things the parts can't do on their own. A system can include people, organisations, technology, information, processes, services, and nature (Stillitto, 2015, 4, quoted by Deakin Crick et al., 2015). In the case of processes where many variables affect each other, system thinking can identify key interactions and the essence of concepts (Senge, 1990).

Systems theory and chaos theory see social ecosystems as living organisms in ongoing change, with complex reciprocal influences (Jørgensen & Müller, 1999). In particular, Koestler's organic vision sees complex systems elements as autonomous as well as interdependent. Each element fulfils specific functions, in self-organising layered systems (Koestler, 1967; Simon, 1969). This feature makes systems more resilient and responsive to change. These theories offer helpful insights to design a layered conceptual model for LifEComp, based on complex systems theory (Deakin Crick, 2014).

While taking stock of the standard competence breakdown into knowledge, skills and attitudes in European discourse, LifEComp framework design has been guided by the awareness of distinctive features in the Personal, Social and Learning to Learn competence - where attitudes (dispositions and orientations to actions) play a cross-cutting role.

A holistic perspective - understanding interdependence between elements of the framework as a complex ecosystem - can be more effective than breaking down each element into knowledge, skills and attitudes (Laszlo & Krippner, 1998). In fact, the Personal, Social and Learning to Learn competence spans elements with different profiles and makeup (some have a focus on attitudes or on skills, others represent competence sets); these heterogeneous elements can be related in a layered structure.

In LifEComp, it can be useful to distinguish between **core elements** (cross-cutting framework elements that are pre-requisites for developing other framework areas) and **compound competences** (complex sets of competences). This allows to clarify relationships between different framework elements, and suggest priorities in competence development support.

A similar approach can be found in the OECD 2030 Learning Compass working papers, where *core foundations* (cognitive, socio-emotional and physical/mental health skills) are defined as '...pre-conditions and a gateway to further learning' (OECD, 2018b). In the same document, *compound competences* are defined as 'newer competencies': broader, multi-dimensional sets of competencies that cut across knowledge domains and curricula, and help learners to make sense of and cope with global challenges (Ibidem).

### 3.4 The overarching role of agency

The LifEComp Key competence can empower individuals to develop and exercise **agency** - the will and capacity to initiate and control events, act and make a difference in relation to others and contexts (Bandura, 1982, 2008; Little et al., 2006; Moore et al., 2012).

To develop agency, learning dispositions and a growth mindset represent key drivers for personal improvement of character and behaviour (Deakin Crick et al., 2015; Dweck, 2013). This presupposes self-awareness and self-efficacy, as crucial for effective learning (Bandura, 1986, 1994; Schunk, 1987; Zimmerman et al., 1992).

The concept of agency is linked to **integrity**, as a guiding purpose for goal-oriented action. Integrity can be defined as 'consistency, honesty, and truthfulness with oneself and others'. Consistency can regard actions, values, methods, principles, expectations, and outcomes. It entails responsibility, reflection and self-regulation (of emotions, thoughts and actions). The role of integrity as critically important for common wellbeing is acknowledged across societies (Schlenker, 2008).

Having a sense of agency enables individuals to feel in control of life, steer thoughts and behaviour, and handle a wide range of tasks or situations. It leads people to frame a guiding purpose and identify actions to achieve a goal, and relies on self-awareness (OECD, 2019d). It empowers individuals to cope with uncertainty, complexity, and change - and exercise active citizenship (OECD, 2018b).

These perspectives support a view of agency as both a powerful driver for all LifEComp framework elements, and an aspirational outcome of LifEComp competence development. **Personal agency** is key in relation to growth mindset, resilience and wellbeing (OECD, 2019d). **Co-agency** relies on effective collaboration and communication, promoting social responsibility.

**Mindful agency** drives dispositions for effective learning and metacognition, resulting in reflection and meaningful learning. It includes self-awareness and self-efficacy to achieve a purpose and engage in learning, the ability to recognise and recover from negative feelings in learning, and the ability to effectively plan and manage the self in learning (Deakin Crick et al., 2015).

A similar perspective underpins the OECD 2030 Learning Compass rationale, where agency is defined as ‘...the capacity to set a goal, reflect and act responsibly to effect change’, to positively influence one’s life and the world (OECD, 2019d). Agency requires cognitive, social and emotional skills as boosters of autonomous learning, problem solving and decision making (Ibidem).

## 4 Working out framework content

### 4.1 Core elements

In order to conceptualise the LifEcomp framework, it can be useful to identify **core elements** as pre-requisites for developing all other elements, across framework areas. Research on self-determination theory, growth mindset, learning power, positive psychology and socio-emotional skills can help pinpoint such elements in the framework.

Self-determination theory highlights three fundamental human needs – *autonomy* (control over choices and actions, e.g. agency), *mastery* and *relatedness* (meaningful interpersonal relations) (Ryan & Deci, 2000). Intrinsic motivation resulting from pursuit of these fundamental needs represents a strong predictor of personal development, wellbeing and learning (Standage et al., 2005).

Motivation is reciprocally linked to a growth mindset, which implies openness and curiosity about learning experiences (Deakin Crick et al., 2015; Dweck, 2013; Hochanadel & Finamore, 2015). Both are tied to *self-efficacy* – a key driver for resilience and locus of control (perception of control over events) (Bandura, 2008). People with high self-efficacy are found to be more resilient in front of adversities, whereas low self-efficacy is more likely to result in giving up and failing objectives. The learning dispositions of *hope* (about finding routes to reach a goal) and *optimism* (positive attitudes to events) are also connected, to energize learning and change (Deakin Crick et al., 2015). This broad conceptualisation of a **growth mindset** can thus be flagged as a core element, required for developing other competences.

**Self-regulation** – the ability to understand, activate, monitor, control and adapt emotions, thoughts, attention, behaviour and cognitive strategies – stands out as another core element enabling the pursuit of meaningful goals (Moilanen, 2007).

Managing feelings and emotions plays a crucial role in personal development, disposing individuals to be open or closed to learning and change (Deakin Crick et al., 2015). The ability to delay gratification (undertaking a challenging task that requires postponing pleasure) represents another key aspect (Mujis et al., 2018). Self-regulation as intertwined with growth mindset includes *persistence* and *grit* in tackling challenges and achieve, sustaining motivation (Hochanadel & Finamore, 2015).

Two of the ‘Big Five’ personality traits (*emotional regulation* and *openness to experience*), included in the conceptual model of OECD’s socio-emotional skills study, are in tune with the conceptualisations of self-regulation and growth mindset outlined above (John & De Fruyt, 2015; OECD, 2015; Kankaraš, 2017).

**Empathy** can be viewed as a pre-requisite for deploying other socio-emotional competences, and building positive relationships (OECD, 2015, 2019a; Cefai & Cavioni, 2014). As such, it can help fulfil one of the three fundamental human needs mentioned above, *relatedness* – for enhanced wellbeing and resilience (Ryan & Deci, 2000; Seligman, 2011; Ryff, 2014).

Empathy can be found at the root of all pro-social behaviour, and turns out to be key for all interpersonal competences. It embraces three aspects: responding with appropriate emotions to others’ mental states (*emotional empathy*), understanding others’ mental states (*cognitive empathy*), and understanding and taking on others’ point of view (*perspective change*) (Hoffman, 2003).

As an enabler of effective interaction and collaboration, empathy represents a core foundation for intercultural competences and active citizenship; indeed, the UNESCO Working Group on Global Citizenship Education includes empathy among global citizenship competences (UNESCO/UN YAG & CUEB, 2017).

### 4.2 Personal development

Support from research insights on positive psychology, resilience, wellbeing, and socio-emotional skills helps outline key aspects for personal development in the LifEComp framework.

The concept of **adaptability** (adaptive competence) is flagged as key for personal and social development in volatile global contexts. It can be defined as adjustment of responses to external drivers and internal processes – and entails the following skills and attitudes:

- an orientation to finding solutions (with a link to problem solving);
- acceptance and understanding of change;

- willingness to adapt one's skills to the environment, anticipate, look for opportunities, continually reinvent oneself and learn (Folke et al., 2010).

This implies not only bouncing back from difficulties (dealing readily with trauma, unexpected hardships or stress sources), but also bouncing forward - responding positively to change and coming out the better.

*Cognitive flexibility* is a related concept - the human ability to adapt cognitive strategies to face new conditions in the environment (Cañas et al., 2003). It usually implies a process of learning and experience, the adaptation of cognitive operations in a complex problem space, and the occurrence of unexpected environmental changes after a person has been performing a task for some time.

In order to be flexible, a person needs to focus ongoing attention on changing conditions; adapting behaviour also requires one to restructure knowledge, and interpret new requirements in a situation - that is, learning from experience (Ibidem). It is suggested that people who represent a task from multiple perspectives can easily interpret situational changes and be more cognitively flexible, adapting behaviour (Spiro & Jehng, 1990).

Being cognitively flexible entails curbing the tendency to continue an initial course of action in situations requiring change, or to adhere to a decision that has been proven a mistake. People who are not cognitively flexible also tend to be fixed in perceiving functions of available objects, and focus on one single cause of a problem rather than on several possible variables (Cañas et al., 2006).

Adaptability and cognitive flexibility can be considered as parts of individual **resilience** - the ability to recover quickly from, or to deal readily with sudden, unexpected difficulties or hardships - trauma, tragedy, threats or significant sources of stress (related to family and relationships, health, work or finances). Resilience can have multiple meanings, and needs to be conceptualised in relation to culture, context and level of use - individual, organisational or societal (Fisher et al., 2016).

Individual resilience can be broadly understood as the capacity of a person to function effectively in the face of adversity, risk, stress and uncertainty - as a consequence of protective factors. It can be conceptualised as comprising persistence, tenacity, self-efficacy; emotional and cognitive control under pressure; and adaptability, i.e. the ability to bounce back (Bergström & Dekker, 2014; Masten, 2014). Hardiness and persistence, in particular, have been confirmed as underlying resilience factors across studies on resilience in entrepreneurs (a category where it is considered as a staple requirement) (Campbell-Sills & Stein, 2007).

Adaptability can be viewed as encompassing *career management skills*, to tackle volatile training and employment contexts, at any stage of development - making effective career decisions and successful transitions (ELGPN, 2015).

In turn, the definition of career management skills by the European Lifelong Guidance Policy Network supports conceptualisation of the personal, social and learning to learn areas of LifEComp as interrelated. The ELGPN definition, in fact, includes self-knowledge of capacities and interests, self-evaluation, engagement in learning, evaluating information on learning and work options; it relates career management skills to self-knowledge, social skills, and planning (Ibidem).

Adaptability appears to be tightly interwoven with *wellbeing* in order to support personal, social and learning resilience (Kaplan, 2005) - a key outcome of LifEComp competence development. **Wellbeing** can be defined as a state of contentment, with low levels of distress, overall good physical and mental health, and good quality of life. It entails the interdependence of emotional, psychological and social aspects (positive affectivity, absence of negative affectivity; autonomy, emotional regulation; empathy, good relationships) (WHO, 1997, 2004).

Health (*physical wellbeing*) is viewed as including physical capacities, social and personal resources (Ottawa Charter for Health Promotion, 1986). Health literacy (competences to access, understand, appraise and apply health information, for decisions on disease prevention, health care and promotion) can work as a key catalyst of resilience, equity and inclusion (Kickbusch et al., 2013; Sørensen et al., 2012). The complexity of health care systems requires lifelong learning (in literacy and digital competences) to update health-related knowledge and skills.

Seligman's model of *psychological wellbeing* (Positive emotions, Engagement, Relationships, Meaning, and Accomplishment) links the Greek concept of 'eudaimonia' - fulfilling potential and living a meaningful life - to resilience (wellbeing in adversity), self-awareness and self-efficacy to control life, and integrity (consistency of actions). The concept echoes Ryan & Deci's human needs for autonomy, relatedness and mastery (Seligman, 2011). Likewise, Ryff's evidence-based model links psychological wellbeing with mental and

physical health, personality and context, highlighting the role of a growth mindset (self-acceptance, autonomy, personal growth, purpose in life (Ryff, 2014).

Seligman's character strengths (qualities observable in behaviour, to maintain or increase well-being) can also be relevant for conceptualisation of LifEComp framework elements as interrelated: self-regulation, perseverance, curiosity, love of learning, perspective taking (core elements); social intelligence, teamwork, leadership, fairness (social development); critical thinking (learning to learn) (Peterson & Seligman, 2004; Seligman et al., 2004; Shryack et al., 2010).

Research on the 'Big Five' personality traits (agreeableness, conscientiousness, extraversion, emotional stability and openness to experience) offers further support for conceptualising LifEComp framework elements as interdependent. In fact, four of the 'Big Five' traits (emotional regulation, conscientiousness, extraversion and agreeableness) cut across LifEComp framework areas, and can be related to holistic wellbeing (physical, social, emotional, psychological), as described above (Kankaraš, 2017).

### 4.3 Social development

Shaping the content of the social development area of the LifEComp framework takes into account its close interdependence with personal development, as suggested by insights on cooperative learning, socio-emotional skills, intercultural competences and leadership.

**Collaboration** and teamwork are singled out as boosters of achievement, creativity and productivity in cooperative learning, higher-level reasoning and problem solving (Johnson & Johnson, 2017). Collaboration can also help build caring relationships and fight negative psychological states through bonding and mutual accomplishment – with a positive impact on wellbeing.

Positive interdependence (relying on each other's learning and efforts) and promotive interaction (encouraging and facilitating each other's contributions) are key aspects in cooperative learning. *Promotive interaction* boosts motivation and emotional management – resulting in enhanced self-regulation, growth mindset and wellbeing (Johnson & Johnson, 1989, 2005, 2009). It requires *explaining* how to solve problems, *discussing* the nature of concepts and strategies, *teaching* knowledge to others, and *clarifying* connections between present and past learning (Johnson & Johnson, 2017).

All these processes regard effective **communication**, that is:

- active listening;
- clear expression;
- non-verbal communication (e.g. tone of voice, eye contact, facial expressions, postures, silences);
- clarifying, summarising and giving feedback about the other's message;
- showing empathy and interest;
- developing trust (which in turn can be linked to integrity) (Donsbach, 2008).

Collaborative endeavours can strengthen communicative competences, with a reciprocal relationship. They are also in synergy with *critical thinking* and problem solving (Bialik & Fadel, 2015). Communication is also crucial for media literacy – with the potential to facilitate personalised learning, inclusion and teamwork (Ibidem).

Effective collaboration and communication in global environments require *intercultural awareness and understanding* – to respond appropriately and effectively to demands, challenges and opportunities presented by intercultural situations (Council of Europe, 2018a; Hecht & Shin, 2015). This requires respectful interaction with people who are perceived to have different cultural affiliations, beliefs, opinions or practices from oneself, enabling to build positive, constructive relationships (Council of Europe, 2018a).

*Negotiation* – e.g. patient listening, flexibility, articulating points of agreement, and maintaining the ability to think clearly under pressure – is paramount in any collaborative situation. Collaboration and teamwork also require participants to manage conflict, make decisions and take the lead if required. This entails dealing with conflicting ideas and power relationships, compromise and advocacy (Graham & Barter, 1999). According to Johnson and Johnson (2017), these competences need to be taught as purposefully as academic skills (Johnson & Johnson, 2017).

*Managing conflicts* (preventing, containing, transforming and solving conflicts) is essential for effective interaction in teams, communities and organisations (Elgozar et al., 2017). Stakeholders in a conflict need to

assess the situation, design suitable strategies, minimise dysfunctions and promote constructive dialogue – negotiating, mediating, problem solving, trust building, or advocating (Hansen, 2013; Mayer, 2000). Among principles for effective conflict management, Hansen (2013) mentions self-determination, collaboration, fairness, respect and embracing diversity.

*Assertiveness* can be precious to manage collaboration and conflict – and more widely, positive relationships. It enables individuals to confidently affirm their positions – expressing thoughts, feelings, desires and beliefs in direct and appropriate ways, while respecting those of others. As such, it has reciprocal ties with empathy and self-efficacy.

Individuals also need to be able to exercise leadership when required – to manage collaboration or conflict, maximise endeavours, advocate strategies in case of problems and conflicts, as well as coach, influence and inspire others (Johnson & Johnson, 2017).

Post-industrial societies are found to require *distributed leadership*, which entails awareness and management of emotions, in self and others – Goleman's concept of emotional intelligence (Boyatzis et al., 2002; Spillane, 2006). Leadership can be defined as a thinking and learning dialogue of individuals that come together to achieve common objectives and make change happen – acting as leaders or followers according to situations. When participants display competence, commitment and autonomy, they are ready to take the lead – empowering others to action (Sydänmaanlakka, 2003).

Leadership is based on relationships, thus effective communication is key – for listening, discussing and giving feedback (Ibidem). Distributed leadership asks individuals to take responsibility and influence each other, organisations and society.

Humanistic psychology views distributed leadership as underpinned by wellbeing and motivation at intrapersonal level, and empowerment of others (mentoring and coaching) at interpersonal level (Sydänmaanlakka, 2003). This perspective spans self-mastery (individual), social synergy (teamwork), organisational learning (institutions), and sustainable development (society) (Ibidem). *Self-mastery* is described as total wellbeing of body, mind, feelings and profession (Csikszentmihalyi, 1992). Good self-mastery can boost energy and internal resources – giving the drive to empower others (Sydänmaanlakka, 2002).

This supports the importance of core elements (self-regulation, growth mindset and empathy) in the LifEComp framework, and reinforces the interdependence of holistic wellbeing, self-fulfilment and positive social interaction.

#### **4.4 Learning to Learn**

Shaping relevant content for the Learning to Learn area of the framework is based on common ground across conceptualisations of learning to learn in policy and research (see Chapter 1.1). Insights from Hautamäki et al. (2002), Deakin Crick et al. (2004), Moreno (2006), Sorenson (2006), and Hoskins & Fredriksson (2008) offer relevant guidance.

The University of Helsinki's definition of learning to learn offers a psychological perspective, spanning cognitive and affective control processes. It underlines ability and willingness to adapt to new learning tasks – with commitment to thinking and hope, as well as cognitive-affective self-regulation (Hautamäki et al., 2002).

The ELLI/Effective Lifelong Learning Inventory (Deakin Crick et al., 2004) offers a socio-cultural perspective on *learning power* as 'a complex mix of dispositions, experiences, social relations, values, attitudes and beliefs' that shape engagement with learning (Deakin Crick et al., 2004).

Hoskins & Fredriksson (2008) conceptualise learning to learn as the wider, transferable key competence between different problem solving or learning tasks – since learning does not always involve problem solving. Dispositions for learning to learn and citizenship are interrelated, as empowering for motivation, autonomy and responsibility to control life (Ibidem). Finally, Moreno (2006) and Sorenson (2006) define learning to learn as *metalearning*, that is second-order learning – with a double focus on awareness about learning, thinking and action, and on learning how to learn.

All these views suggest the interdependence of elements across LifEComp framework areas in the conceptual model. The Learning to Learn area can be seen as central for personal and social development, with the key role of reflection and critical thinking for competence development and transfer (OECD, 2019b). The cross-cutting function of dispositions and attitudes that promote learning also needs to be acknowledged (e.g. in the core elements of *self-regulation* and *growth mindset*).

Learning to learn in the LifeComp framework is thus conceptualised as *second-order learning*, with a focus on *critical thinking* (collection, analysis, and evaluation of data; reflection processes for learning and problem solving) and *managing learning* (metacognition).

**Managing learning** processes (*metacognition*) entails *metacognitive knowledge* (of oneself as learner, of strategies, tasks and context) and *metacognitive regulation* (applying metacognitive knowledge to plan, monitor and evaluate learning) (Vanslambrouck et al., 2018; Pintrich & Zusho, 2007).

The concept of *self-regulated learning* spans both *metacognition* and *self-regulation* (managing feelings and behaviour) (Mujis et al., 2018). Self-regulated learning thus includes cognitive, metacognitive, affective and motivational aspects (Azevedo et al., 2013). As a process, it unfolds through adaptability, internal and context conditions, monitoring (feedback cycles and task perceptions), operations and products. *Internal conditions* include motivation, dispositions, domain knowledge, task knowledge, and knowledge of strategies (Winne & Hadwin, 2013).

*Intrinsic motivation* to learning stands out as key; as the self-driven commitment to seek new challenges and extend personal capacities, it has been found to catalyse interest, persistence and performance (Ryan & Deci, 2000).

Dispositions can also be crucial to support self-regulated learning and metacognition (Deakin Crick, 2014; Deakin Crick & Goldspink, 2014; Deakin Crick et al., 2015). In fact, the control of learning strategies can be affected by feelings of familiarity, difficulty, confidence and satisfaction, as well as by judgements on learning effort and time (*meta-cognitive experience* and *openness to learning*) (Deakin Crick et al, 2015; Fredriksson, 2001; Efklides, 2006).

*Awareness* of learning dispositions and *reflection* on learning also play a relevant role (Siegel, 2012). Awareness about when and how to engage in learning, and self-regulation of behaviour under threat or pressure, are seen as boosters of learning resilience (Deakin Crick & Salway, 2006; Deakin Crick et al., 2015). Collaboration and belonging to a learning-supportive group (*learning relationships*) also matter; learning relationships appear to be highly dependent on context (Iiskala & Lehtinen, 2004; Kirschner et al., 2018).

To sum up, managing feelings, managing metacognitive strategies and taking responsibility for learning stand out as central for metacognition. Deakin Crick et al. (2015) label them together as *mindful agency* (see 3.4).

**Critical thinking** appears tightly interwoven with metacognition and mindful agency, as a crucial skill to cope with uncertainty, complexity and change. It can be defined as the careful collection and analysis of information, or knowledge, with ongoing reconstruction of one's understanding of issues based on newly accumulated evidence.

Perspectives on critical thinking increasingly conceptualise it as both divergent thinking (generation of ideas) and analytical, convergent thinking (capacity to provide a single or a few useful ideas).<sup>22</sup> Divergent thinking would be needed to develop ideas, and convergent thinking would be used for choosing useful ones. Convergent thinking thus involves the evaluation, analysis, synthesis, and interpretation of something to provide a judgment. It provides critical thinking with the "why" and "how" of choosing one idea (Villalba, 2017).

In divergent thinking, the playful exploration of ideas, perspectives and pathways requires affective and cognitive resources to scaffold engagement with the unknown (Kim, 2006; Saracho, 2002). A critical thinker requires *self-regulation* of thought and judgment, and the *willingness* to assess and evaluate information (Villalba, 2017).

In critical thinking, there is the analysis and identification of central issues and assumptions. It means analysing how arguments and thoughts are constructed (point of view, purpose, questions at issue, information, interpretation and inference, concepts, assumptions and implications, and consequences), and if they are robust in their formulation (Paul & Elder, 2002).

These elements of thought are evaluated in order to provide a judgment - generally based on the application of logical thinking. Judgments can be assessed in terms of clarity, credibility, accuracy, precision, relevance, depth, breadth, and significance. Critical thinking is also associated with the identification of bias in ideas or statements. This view of critical thinking foregrounds convergent thinking, although it should be noted that wide agreement upon an operational definition of critical thinking is still to be reached (Villalba, 2017).

Critical thinking can also be viewed as a tool to make ideas attractive through persuasive arguments - providing clarity, credibility, accuracy, precision, relevance, depth, breadth, and significance (Ibidem, 2017).

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<sup>22</sup> <http://www.criticalthinking.org/pages/our-conception-of-critical-thinking/411>

Finally, critical thinking plays a central role in *problem solving* processes. Research on young people's use of digital social media foregrounds critical thinking and collaboration, tied to problem solving (Buckingham & Willett, 2006; Gee, 2007). Critical thinking can entail flipping back and forth between analytical and creative thinking: analysing information, exploring innovative options through divergent thinking, and switching back to convergent analysis and selection of options.

In complex, open-ended problems, individuals can act after the problem (react and devise new solution paths), or act beforehand (understand the situation and shape opportunities) (Puccio et al., 2012). Critical thinking can further problem identification from an early stage (judgement and interpretation of a phenomenon), in order to work towards a solution (Runco, 1994).

The 2012 and 2015 OECD PISA surveys mirror a similar view of problem solving, linked to critical thinking, metacognition and adaptability. In the 2012 survey, problem solving is conceptualised as the capacity to engage in cognitive processing, understand and resolve problem situations where a solution is not immediately obvious. Problem solving is broken down into recognising a problem situation, identifying aspects to be solved, planning, carrying out a solution, monitoring and evaluating progress (OECD, 2013). This requires creativity and willingness to engage with complex situations, realising one's potential. The 2015 survey foregrounds collaboration, conceptualising problem solving as the ability to engage in a process where two or more agents attempt to solve a problem, by pooling understanding, knowledge, skills and efforts to come to a solution (OECD, 2016).

## 5 Mapping relevant frameworks

### 5.1 Selecting

This chapter gives an overview of relevant frameworks feeding into the LifEComp framework model. The term framework is understood as an organised conceptualisation of competences, related to at least one of the areas described in the 2018 Recommendation (personal, social and learning to learn). The analysis of frameworks provides an understanding of approaches in current policy and practice; it also supports design and content of the framework, in synergy with literature insights.

Literature insights in chapters 3 and 4 suggested criteria for selection and analysis of frameworks, aiming at variety of approaches for competence description, and breadth of knowledge domains.

Relevant frameworks were identified with the following guidelines:

- European documents on the revision of Key Competences (Staff Working Document for the 2018 Recommendation; background studies and reports linked to consultations, feeding into the Recommendation);
- suggestions by colleagues (at JRC, DG EAC, DG EMPL and CEDEFOP) and experts (professional, research and policy networks; discussions in LifEComp Expert workshops);
- documents related to the development of other JRC Competence Frameworks (DigComp, DigCompEdu and EntreComp);
- frameworks of international organizations, concerned with future-oriented competences discussed in chapter 3.2 (e.g. ATC21S, Council of Europe, OECD, UNESCO, WEF);
- project reports or assessment tools by organisations or networks, mentioning at least one of the areas defined by the Recommendation (personal, social and learning to learn);
- European school curricula and national frameworks - in case of documents in national language other than English, French, German, Spanish or Italian, e-translations were obtained;
- search in Google Scholar and academic databases, with keywords fed by the literature review (21<sup>st</sup> century skills, transversal skills, soft skills, life skills, socio-emotional skills; learning to learn, self-management, interpersonal and intercultural competences).

Then, frameworks were selected for analysis with the following criteria:

- **relevance** for at least one of the main areas of the LifEComp framework model (personal, social and learning to learn);
- **detailed description of learning outcomes** for relevant competences (possibly, references to proficiency levels and assessment);
- fair distribution of **target groups** (e.g. school pupils, adults, disadvantaged social groups...);
- fair distribution of **education and training sectors** (different school education levels, tertiary education, VET, non-formal and adult learning);
- **plurality of perspectives** (e.g. national ministries and education/training agencies; policy and practice partnerships and networks; non-profit, business and education organizations);
- **plurality of initiative types** (eg. school curricula, National Qualification Frameworks, projects and studies, assessment tools, competence frameworks).

In the case of national competence frameworks and curricula (school curricula and National Qualification Frameworks), the second criterion (references to *detailed descriptions of learning outcomes, proficiency levels, assessment*) has guided selection of some frameworks rather than others. In fact, although references to key competences and personal, social, learning to learn aspects can be found in frameworks and curricula of all European countries, they are often outlined as educational aims and objectives, and limited to general curriculum guidelines.

Altogether, the search and selection processes spanned 37 existing frameworks and initiatives: 9 frameworks at international level; 15 frameworks, curricula or tools at national level; and 13 international projects or initiatives. Out of all frameworks analysed, 5 were discarded due to inadequate or unavailable detail on competence descriptors. See Annex I for detailed information on 32 frameworks.

## 5.2 Analysing

Analysed frameworks fall into three groups:

1. **International competence frameworks** (by Cambridge University Press, Council of Europe, European Health Literacy Consortium, OECD, SALTO, UNESCO, World Economic Forum);
2. **National frameworks**, including non-formal and virtual learning (CASEL US, P21, SOONER NL) and national curricula for different ISCED levels (EE, FI, FR, IE, PL, RO, SK, UKNie, UKSc);
3. **International projects** for different education and training levels - including non-formal/informal, youth/adult learning (e.g. ATC21S, NESET II, Y-PEER; European projects ATS2020, COLAB, HOPES, Life Skills for Europe, Learning to be, NEMESIS, PRESTO, RESCUR).

The mapping of each framework provides the following information, in Annex I:

- **Institution**, provider, author(s) of the framework (NGO, local, national, international; network, partnership, government organisation);
- **Name** of framework/initiative;
- **Date** of implementation/publication/finalisation;
- **Target group** (group/s the framework/initiative is intended for; ISCED level; formal, non-formal, informal, adult education);
- **Framework description**: profile, objectives, context, competence areas and key descriptions, links/references;
- **Levels** of competence/progression levels (Yes/No);
- **Assessment** of competences: guidelines/tools provided (Yes/No).

The full analysis of all 32 frameworks is provided in Annex I. A summary of key input feeding into the LifEComp framework is given in the following sections (Tables 4a, 4b and 5).

First, the overview in tables 4a and 4b focuses on 30 frameworks out of 32, which were found useful to guide LifEComp development choices. Then, Table 5 narrows focus on 25 frameworks, which provided detailed input for the LifEComp content proposal.

## 5.3 Overview of relevant frameworks for LifEComp

Tables 4a and 4b present an overview of relevant existing frameworks for LifEComp makeup. The tables aim to further understanding of the state of play in current policy and practice, and support LifEComp design. For full details on the frameworks, see Annex I.

The overview in Tables 4a and 4b includes 30 frameworks altogether, which were found relevant to steer the development of LifEComp. They are listed as follows:

- 1) international competence frameworks and 2) national frameworks, projects, tools and curricula (Table 4a);
- 3) international projects (Table 4b).

The overview indicates a substantial number of perspectives to guide framework design choices, with a fairly balanced coverage of framework areas in LifEComp (personal, social and learning to learn). Providing insights on priorities of existing policy and practice, it allows comparison with LifEComp framework content.

Therefore, it strengthens the rationale for LifEComp framework structure and content, helping identify the nine framework elements in the LifEComp framework proposal, supported by the literature review (self-regulation, growth mindset and empathy; adaptability and wellbeing; communication and collaboration; managing learning and critical thinking).

As for priorities and focus in analysed frameworks, several mention curiosity, persistence and grit, self-awareness and self-efficacy (linked to **self-regulation**), and motivation (linked to **growth mindset**): WEF, UNESCO Intercultural Competences Framework, CASEL; national curricula (FR, UKNie); European projects HOPES, Learning to Be and Life Skills for Europe. Few frameworks explicitly span **empathy** (FR, UKSc curricula; CASEL; European projects Learning to Be and Life Skills for Europe). UNESCO, OECD and Council of Europe frameworks view empathy as required for intercultural competences and global competences.

Quite a number of national curricula include health and **wellbeing**, as a stand-alone subject or curriculum area (UKSc), and within specific subjects as civics education, science, or physical education (UKSc, UKNie). The

Finnish curriculum foregrounds health and wellbeing education both as stand-alone and transversal. Detailed references to health and wellbeing are present in the EU Health Literacy Framework, OECD Global Competency Framework, P21 framework, and Life Skills for Europe project. Quite a number of frameworks and national curricula span *career management*, which can be related to **adaptability** (ATC21S; UKSc, EE, FI curricula).

Most frameworks and national curricula include **communication** and **collaboration** as key elements; many of them also include references to intercultural awareness and understanding.

References to learning to learn are generally present in most frameworks, spanning metacognition (**managing learning**) together with transversal aspects such as **critical thinking** and problem solving. Also international frameworks on global, democratic citizenship and intercultural competences (UNESCO, OECD, Council of Europe) acknowledge the relevance of autonomous learning and reflection. More specifically, the SOONER online questionnaire tool measures four dimensions of *self-regulated learning* in MOOCs users.

The present overview of frameworks integrates literature insights, in order to support the layered structure of LifEComp framework (core elements and compound competences). It also underscores the need for the LifEComp framework, which conceptualises personal and social development as integrated with learning to learn, in a lifewide perspective. In fact, only the OECD 2030 Learning Compass and the Scottish curriculum show a similar breadth of focus; however, both are focused on school education.

**Table 4a.** Overview of 19 international/national frameworks of relevance for LifEComp framework proposal

International/ National Frameworks	LifEComp framework								
	Self-regulation	Growth mindset	Empathy	Adaptability	Well-being	Communication	Collaboration	Managing learning	Critical thinking
Cambridge Life Competencies									
COE Democratic Citizenship									
EU Health Literacy									
OECD Global Competence									
OECD 2030									
SALTO Youth workers									
UNESCO Intercultural									
UNESCO Global Citizenship									
WEF New Vision Education									
CASEL US Socio-emotional learning									
P21 US									
SOONER NL									
EE curriculum									
FI curriculum									
FR curriculum									
IE curriculum									
SK Standards									
UKNie curriculum									
UKSc curriculum									

**Table 4b.** Overview of 11 international projects of relevance for LifEComp framework proposal

Internation. Projects	LifEComp Framework								
	Self-regulation	Growth mindset	Empathy	Adaptability	Well-being	Communication	Collaboration	Managing learning	Critical thinking
ATC21									
ATS2020									
COLAB									
HOPEs									
Learning to Be									
Life Skills for EU									
NEMESIS									
NESET II									
PRESTO									
RESCUR									
Y-PEER US									

#### 5.4 Feeding into the LifEComp framework model

Narrowing focus, Table 5 maps the frameworks that provide specific input, feeding into LifEComp framework content. It lists 25 frameworks, which integrate literature insights to identify and define LifEComp elements (see Chapters 3 and 4). The table places literature and frameworks side by side, to have an overall view of how the framework proposal was built up.

Most **international frameworks** underpin framework structure and makeup, helping identify elements for each framework area (e.g. Council of Europe, OECD 2030, WEF New Vision for Education, Cambridge Life Competencies Framework, SALTO Framework for Youth Workers).

The SALTO Framework supports LifEComp conceptualisation of core elements as pre-requisites for competences development, with a focus on attitudes and dispositions. It also offers detailed input on communication, collaboration and intercultural understanding.

The WEF framework sustains conceptualisation of core resources in LifEComp - stressing the importance of malleable character qualities, in line with positive psychology. It also foregrounds the role of social and learning to learn elements (collaboration, communication, critical thinking and problem solving).

The Cambridge Framework gives substantial input for LifEComp framework structure and content – in particular on social and learning to learn elements. It also offers clear examples of descriptors for progression levels and development stages.

The OECD 2030 Framework provides clear, useful input for conceptualisations of several framework constructs, supporting the role of agency and co-agency as aspirational outcomes of LifEComp development.

Both the Council of Europe Framework and the UNESCO Intercultural Framework contribute input about intercultural awareness and understanding, underlining the transversal importance of critical thinking, reflection and continuous learning for effective interactions. The Council of Europe framework also offers precious guidance for wording of descriptors.

The Health Literacy Framework provides specific input for the wellbeing competence, foregrounding the ability to retrieve and understand health information in complex digital health environments.

**National frameworks and tools** help support LifEComp makeup, and provide specific input in some framework areas. The CASEL framework on socio-emotional learning gives key insights for the personal and social areas as intertwined. The P21 framework stresses the relevance of 21st-century transversal competences - problem solving, communication, collaboration and adaptability. The Y-PEER Toolkit on peer teaching in informal and non-formal contexts helps identify personal and social competences to support learning to learn and coaching.

**National curricula** give input on detailed learning outcomes and competences descriptions, to describe several elements in the LifEComp framework – in particular in the personal area. Insights on wellbeing come from the Estonian, Finnish, Irish, Scottish and Slovakian curricula. The Irish Wellbeing guidelines give indicators and statements of learning for each school level; they describe wellbeing as transversal, spanning self-regulation, communication and collaboration. A wider focus on self-regulation is present in all five curricula, and in the curriculum of Northern Ireland as well.

Input on career management competences (shaping conceptualisation of adaptability in LifEComp) is provided by the Estonian, Finnish and Scottish curricula, as well as by the curriculum of Northern Ireland: on career planning and lifelong learning (EE); on working life competence, including teamwork (FI); on education for employability and career management, in core area Learning for Life and Work (UKNie); and on planning for choices and changes (UKSc).

The Finnish framework views thinking and learning to learn competences as intertwined (Transversal competence T1 – Thinking and learning to learn), supporting conceptualisation of the learning to learn area in LifEComp. The French curriculum highlights the links between empathy, self-regulation and collaboration in citizenship education - a transversal domain of the *socle commun*, the common core of competences.

As for **international projects**, ATC21S helps map relevant 21<sup>st</sup>-century competences across LifEComp framework areas, with insights about collaborative problem solving embedded in digital environments. Also European project ATS2020 supports LifEComp descriptions of collaboration, communication, self regulation and metacognition, linking them to digital competences.

The Life Skills for Europe project describes cross-cutting aspects ('capabilities') for personal empowerment, relationships and citizenship that cut across LifEComp areas, with a focus on adult and disadvantaged learners, and useful criteria for progression levels and self-assessment.

European projects Learning to Be, HOPEs, COLAB, RESCUR and NESET II provide content on core elements and the social area in LifEComp (empathy, self-regulation, collaboration). In particular, HOPEs offers input on character development and how to support wellbeing in education, as regards LifEComp core elements; RESCUR outlines transversal competences for resilience (and wellbeing) starting with early education. COLAB sustains the description of collaboration in LifEComp; NESET II and Learning to Be focus on learning and assessment for socio-emotional and health competences.

**Table 5.** Insights (literature & frameworks analysis) feeding into LifeComp framework proposal (structure & content)

LifeComp framework		Literature insights	Frameworks analysis
<b>CORE ELEMENTS</b>	<b>Self-regulation</b>	Deakin Crick et al., 2015. Hoffman, 2003. OECD, 2018a (Construct Analysis: self-awareness, self-regulation). Moilanen, 2007. Mujis et al., 2018. Ryan & Deci, 2000. Ryff, 2014. Seligman, 2004, 2011. Shryack et al., 2010. Vansteenkiste & Ryan, 2013.	SALTO Framework Youth Workers, 2016. CASEL US, 2017. P21 US, 2015. FI, FR curricula. HOPEs, 2018. Learning to be, 2018. Life Skills for Europe, 2018. NESET II, 2015.
	<b>Growth mindset</b>	Bandura, 1986, 1994, 2008. Deakin Crick et al., 2004, 2015. Ryan & Deci, 2000. Dweck, 2013. Efklides, 2006. Hohanadel & Finamore, 2015. Mujis et al., 2018. OECD, 2018a (Construct Analysis: curiosity, motivation, open mindset, growth mindset, self-efficacy). Ryff, 2014. Seligman, 2011.	SALTO Framework for Youth Workers, 2016. WEF framework, 2015. CASEL US, 2017. HOPEs, 2018. Learning to be, 2018. NESET II, 2015.
	<b>Empathy</b>	Hoffman, 2003. OECD, 2018a (Construct Analysis: empathy, compassion). Seligman, 2011. Ryff, 2014.	Cambridge Framework Life Competencies, 2019. SALTO Framework Youth Workers, 2016. CASEL US, 2017. FR, IE, UKSc curricula. HOPEs, 2018. Learning to be, 2018. Life Skills for Europe, 2018.
<b>PERSONAL</b>	<b>Adaptability</b>	Bandura, 2008. Csikszentmihalyi, 1992. Deakin Crick et al., 2015. Kaplan, 2005. OECD, 2018a (Construct analysis: adaptability, adjustment, agility, cognitive flexibility, pro-activeness, risk management). Ryff, 2014. Seligman, 2011.	CASEL US, 2017. P21 US, 2015. EE, FI, UKNie, UKSc curricula. ATC21S, 2009. Life Skills for Europe, 2018. RESCUR, 2015.
	<b>Wellbeing</b>	Kickbusch et al., 2013. Ryff, 2014; Seligman, 2011. Sørensen et al., 2012.	Health Literacy Framework, 2013. CASEL US, 2017. P21 US, 2015. EE, FI, IE, SK, UKNie, UKSc curricula. HOPEs, 2018. Life Skills for Europe, 2018. Y-PEER, 2005.
<b>SOCIAL</b>	<b>Communication</b>	Donsbach, 2008. Graham & Barter, 1999. Johnson & Johnson, 2017.	Cambridge Framework Life Competencies, 2019. CoE Framework Democratic Citizenship, 2018a, 2018b. SALTO Framework Youth Workers, 2016. UNESCO Intercultural Competences Framework, 2013. CASEL US, 2017. P21 US, 2015. ATC21S, 2009. ATS2020, 2018. Learning to be, 2018. Life Skills for Europe, 2018.
	<b>Collaboration</b>	Boyatzis et al., 2002. CoE framework Democratic Citizenship, 2018a, 2018b. Elgobar et al., 2017. Graham & Barter, 1999. Hansen, 2013. Johnson & Johnson, 2017. Mayer, 2000. OECD, 2018a (Construct analysis: collaboration and trust). Seligman, 2004, 2011; Shryack et al., 2010. Spillane, 2006. Sydänmaanlakka, 2002, 2003. UNESCO, 2013.	Cambridge Framework Life Competencies, 2019. SALTO Framework Youth Workers, 2016. CASEL US, 2017. P21 US, 2015. ATC21S, 2009. ATS2020, 2018. COLAB, 2018. HOPEs, 2018. Learning to be, 2018. Life Skills for Europe, 2018. NESET II, 2015. Y-PEER, 2005.
<b>LEARNING TO LEARN</b>	<b>Managing learning</b>	Azevedo et al., 2012. Deakin Crick et al., 2015. Mujis et al., 2018. Hautamäki et al., 2002. Iiskala & Lehtinen, 2004. Moreno, 2006. OECD 2018a (Construct Analysis: self-control, metalearning). Pintrich & Zusho, 2007. Sorenson, 2006. Vanslambrouck et al., 2018. Winne & Hadwin, 2013. Zimmerman, 2002.	Cambridge Framework Life Competencies, 2019. ATS2020, 2018. Life Skills for Europe, 2018. PRESTO, 2010. SOONER, 2017.
	<b>Critical thinking</b>	Deakin Crick et al., 2015. OECD, 2018a (Construct Analysis: critical thinking, problem solving). Puccio et al., 2012.	Cambridge Framework Life Competencies, 2019. P21, 2015. CASEL US, 2017. FI, UKNie curricula. ATC21S, 2009. ATS2020, 2018.

## 6 Conclusions and next steps

This report has reviewed a wide range of relevant concepts to describe and understand the Personal, Social and Learning to Learn competence (LifEComp), suggested by literature insights as well as existing frameworks and initiatives - outlining key needs and requirements for this Key Competence, drawn from research, practice and policy.

Given the breadth of knowledge domains related to this Key Competence, both literature review and frameworks analysis have been developed with an incremental process, which draws a picture in motion - open to ongoing dialogue with research, policy and practice communities.

This report aims to inform and underpin a conceptual model for the Personal, Social and Learning to Learn Competence (LifEComp). Its main objective is to highlight the areas and elements that should be considered when developing this Key Competence. It suggests suitable structure and content for the framework, taking into account its interdisciplinary, heterogeneous content (related to intrapersonal, interpersonal, cognitive and metacognitive aspects).

The main conclusions of this report can be summarised as follows, and aim to support design and content of the LifEComp framework.

- Ensuring development of the Personal, Social and Learning to Learn competence is crucial. It has the potential for boosting inclusion and resilience to uncertainty and change, through socio-emotional skills that are often found to be as important as cognitive and meta-cognitive skills for academic attainment, career, health and wellbeing.
- An all-encompassing definition of this Key Competence, widely applicable and agreed across contexts, is a challenging task – due to cultural variables that affect competence understandings, of the personal and social areas in particular. With an approach fit for this Key Competence, the present report deploys insights from literature and frameworks analysis to find common ground, outlining main framework areas and elements – with room for adaptation to the needs of different target groups.
- Areas and elements in the LifEComp competence framework should be viewed as interdependent. Elements in the personal and social areas appear tightly intertwined, and reciprocally bound to learning to learn as a key enabler for meaningful lives and careers. Understanding relationships between framework elements is therefore crucial. This recommends designing a framework structure, which can explain some framework elements as pre-requisites for, or dependent on others.
- Framework elements for this Key Competence have heterogeneous profiles. Some represent core aspects, and foreground attitudes and dispositions that cut across framework areas; others represent complex, compound sets of competences. This heterogeneity calls for a layered framework design – focused on diversity of profile and function in framework elements (core elements or compound competences), rather than on a competence breakdown into knowledge, skills and attitudes.
- The role of attitudes and dispositions to action is central for the overall development of this Key Competence. They play a pivotal role as boosters of learning, development and reflection (for instance, curiosity about learning, persistence, self-awareness, respect for others).
- Common ground emerging from literature insights and frameworks analysis allows to outline the present proposal for the LifEComp competence framework. It includes cross-cutting *core elements* (self-regulation, growth mindset, empathy), which support *compound competences* for personal development (adaptability and wellbeing), social development (communication and collaboration), and learning to learn (critical thinking and managing learning ) (Table 6).
- The LifEComp framework proposal presented in this report will receive further feedback and validation from the last stakeholder consultation in November – to progress towards the finalised framework version, due to be available in a separate publication at the beginning of 2020.

**Table 6.** Proposed structure and content of the LifEComp framework

<b>COMPOUND COMPETENCES</b>	<b>PERSONAL</b>	<b>SOCIAL</b>	<b>LEARNING TO LEARN</b>
	Wellbeing	Collaboration	Managing learning
	Adaptability	Communication	Critical thinking
<b>CORE ELEMENTS</b>	Self regulation	Empathy	Growth mindset

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## Annexes

### Annex I. Analysis of frameworks, curricula, projects and tools

**Table 7.** Analysis of relevant existing frameworks for LifEComp framework development

International frameworks (I)						
Organization Country	Name	Date	Target group	Description – Competences - Links	Levels Y/N, NA	Assessment Y/N, NA
Cambridge University Press	<i>Cambridge international Framework Life Competencies</i>	2019	All	<p><b>Framework on transversal 21<sup>st</sup>-century competencies</b>, to provide reference for English language programmes and curricula. Breadth of view, depth of detail and development stages (from ISCED 0 to workplace).</p> <p><b>Six main areas of competencies</b> (supported by three foundation elements: emotional development, digital literacy, discipline knowledge): <i>creative thinking, critical thinking, learning to learn, communication, collaboration, social responsibilities.</i></p> <p><a href="http://languageresearch.cambridge.org/cflc">http://languageresearch.cambridge.org/cflc</a></p>	Y	Examples of can-do statements for ISCED levels, as assessment guidance
Council of Europe	<i>Reference Framework Competences Democratic Culture</i>	2018	All	<p><b>Framework for citizenship education</b> (learning <i>through</i> democracy, for democracy, <i>about</i> democracy). Competence descriptors as tools for curriculum planning, teaching and learning, assessment.</p> <p><b>Competences broken down into KSAV</b> (knowledge, skills, attitudes, values):  <b>Values:</b> <i>dignity, cultural diversity, democracy.</i>  <b>Attitudes:</b> <i>respect, openness, civic mindedness, responsibility, self-efficacy, tolerance of ambiguity.</i>  <b>Skills:</b> <i>autonomous learning skills, analytical &amp; critical thinking skills, listening &amp; observing, empathy, adaptability, communication &amp; plurilingual skills, cooperation, conflict resolution.</i>  <b>Knowledge</b> and <i>critical understanding of communication, self, the world.</i></p> <p><a href="https://rm.coe.int/prems-008318-qbr-2508-reference-framework-of-competences-vol-1-8573-co/16807bc66c">https://rm.coe.int/prems-008318-qbr-2508-reference-framework-of-competences-vol-1-8573-co/16807bc66c</a>  <a href="https://rm.coe.int/prems-008418-qbr-2508-reference-framework-of-competences-vol-2-8573-co/16807bc66d">https://rm.coe.int/prems-008418-qbr-2508-reference-framework-of-competences-vol-2-8573-co/16807bc66d</a></p>	Y 3 levels	Y
European Health Literacy Consortium	<i>Health Literacy Framework</i>	2013	All	<p><b>Framework for wide relational concept of health literacy.</b> Conceptual model based on literature review and content analysis of existing conceptual frameworks. Considers personal, social and environmental determinants.</p> <p><b>5 competencies related to 3 health aspects:</b> <i>access, understand, appraise and apply health-related information on health care, disease prevention, health promotion settings.</i></p> <p><a href="http://www.euro.who.int/_data/assets/pdf_file/0008/190655/e96854.pdf">http://www.euro.who.int/_data/assets/pdf_file/0008/190655/e96854.pdf</a>  <a href="https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-12-80">https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-12-80</a></p>	Y 4 levels	Y European Health Measurement Instrument
OECD	<i>Global Competency Framework</i>	2018	ISCED 1-3	<p><b>Framework of global competence</b> for inclusion, employability, responsible media use.</p> <p><b>4 competence dimensions:</b> <i>awareness of global issues; appreciation of diversity; respectful interaction; responsible action.</i></p> <p><b>Competences broken down as KSAV:</b>  <b>Knowledge</b> of intercultural issues, socio-economic interdependence, environmental sustainability.  <b>Cognitive &amp; socio-emotional skills:</b> <i>reasoning with information, intercultural communication, perspective taking, conflict resolution, adaptability.</i>  <b>Attitudes:</b> <i>openness, respect, global mindedness.</i>  <b>Values:</b> <i>human dignity &amp; diversity.</i></p> <p><a href="https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf">https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf</a></p>	Y	Y Cognitive test (KS) Questionnaire (KSAV)
OECD	<i>OECD Learning Framework 2030</i>	2018 2019	ISCED 1-2-3	<p><b>Framework for future of education systems</b>, co-designed with policymakers and a wide variety of stakeholders.</p> <p><b>Transformative competencies</b> (<i>creating new value, reconciling tensions and dilemmas, taking responsibility</i>) developed through AAR cycles of continuous improvement (anticipation, action, reflection).</p> <p><b>Constructs related to transformative competencies:</b> <i>adaptability, collaboration, conflict resolution, creativity, critical thinking, curiosity, empathy, goal orientation, growth mindset, motivation, open mindset, problem solving, responsibility, reflective thinking and monitoring, respect, risk management, self-awareness, self-efficacy.</i></p> <p><a href="http://www.oecd.org/education/2030/learning-framework-2030.htm">http://www.oecd.org/education/2030/learning-framework-2030.htm</a></p>	Phase 2 starting in 2019 (implementation in school education)	

International frameworks (II)						
Organization Country	Name	Date	Target group	Description – Competences - Links	Levels Y/N, NA	Assessment Y/N, NA
SALTO YOUTH Training & Cooperation	Competence Framework Youth Workers	2016	NFIL	<p><b>European Competence Framework</b> with reference standards for training youth workers involved in international work &amp; learning mobility. Attitudes viewed as pre-requisites and foundations for competence development.</p> <p><b>Eight competences</b> (attitudes, knowledge, skills, behaviours): <i>Facilitating individual &amp; group learning; Designing programmes; Organising &amp; managing resources; Collaborating; Communicating meaningfully; Intercultural competence; Networking and advocating; Developing evaluative practices to assess and implement change.</i></p> <p><a href="https://www.salto-youth.net/rc/training-and-cooperation/tc-rc-nanetworkcs/youthworkers-competence-model/">https://www.salto-youth.net/rc/training-and-cooperation/tc-rc-nanetworkcs/youthworkers-competence-model/</a></p>	N/A	N/A
UNESCO	Intercultural Competences Framework	2013	All	<p><b>Framework with conceptual vocabulary on intercultural competences and citizenship</b>, and visualization of interrelationships. Support for intercultural and human rights education.</p> <p><b>Intercultural competences:</b>  <b>learning to know</b> (continuous learning about other cultures), <b>learning to do</b> (interacting with cultural others), and <b>learning to be</b> (reflecting on one's social self in global world).  Minimal requirements: <i>respect, self-awareness, seeing from other perspectives, listening, adaptation, relationship building, cultural humility.</i></p> <p><a href="http://unesdoc.unesco.org/images/0021/002197/219768e.pdf">http://unesdoc.unesco.org/images/0021/002197/219768e.pdf</a></p>	N	N
UNESCO	Global Citizenship Education Framework	2015	All	<p><b>Framework giving pedagogical guidance on global citizenship education.</b> Curriculum topic areas with specific objectives along school levels. Three core conceptual dimensions: <b>cognitive</b> (<i>knowledge, understanding, critical thinking about global, regional, national, local issues &amp; interdependency of countries/ populations</i>), <b>socio-emotional</b> (<i>sense of belonging to common humanity, shared values &amp; responsibilities, empathy, solidarity, respect for diversity</i>), <b>behavioural</b> (<i>act effectively and responsibly at local, national and global levels for more peaceful, sustainable world; motivation and willingness to take action</i>).</p> <p><b>Key learning outcomes (learner attributes):</b>  <i>informed and critically literate; socially connected and respectful of diversity; ethically responsible and engaged.</i></p> <p><a href="https://unesdoc.unesco.org/ark:/48223/pf0000232993">https://unesdoc.unesco.org/ark:/48223/pf0000232993</a></p>	Y	N
World Economic Forum	New Vision for Education	2015	ISCED 1-3	<p><b>Framework for development/assessment of 21<sup>st</sup> century skills</b> based on meta-research analysis. 'Close loop model' in education, tapping potential of digital technologies &amp; IBL. Study on 100 countries highlights difficulty of developing comparable indicators for several competencies and character qualities, for cultural factors.</p> <p><b>Sixteen 21<sup>st</sup> century skills arranged as:</b>  <b>Foundational literacies:</b> <i>literacy &amp; numeracy; science, ICT, financial, cultural &amp; civic literacy.</i>  <b>Competencies:</b> <i>Critical thinking/problem solving, Creativity, Communication, Collaboration.</i>  <b>Character qualities:</b> <i>Curiosity, Initiative, Persistence &amp; grit, Adaptability, Leadership, Social and cultural awareness.</i></p> <p><a href="http://www3.weforum.org/docs/WEFUSA_NewVisionforEducation_Report2015.pdf">http://www3.weforum.org/docs/WEFUSA_NewVisionforEducation_Report2015.pdf</a></p>	NA	

National competence frameworks, curricula & education standards, assessment tools (I)						
Organization country	Name	Date	Target group	Description – Competences - Links	Levels Y/N, NA	Assessment Y/N, NA
Collaborative Academic, Social & Emotional Learning US	<b>CASEL Framework Systemic Social Emotional Learning</b>	2017	ISCED 0-1-2-3-4	<p><b>Framework for SEL (Social and Emotional Learning) competences</b>, as reference for school curricula, instruction, partnerships. CASEL organization founded by Goleman in 1994, to implement evidence-based social &amp; emotional learning in US education.</p> <p><b>SEL competences:</b> <i>Self-awareness, Self-management, Responsible decision-making, Social awareness, Relationship skills.</i></p> <p><a href="https://casel.org/what-is-sel/">https://casel.org/what-is-sel/</a></p>	NA	Y SEARS self-report scales
EE Ministry Education & Research	<b>National curricula basic &amp; upper secondary school</b>	2014	ISCED 1-2-3	<p><b>National Curricula for first, second, third stage of basic education &amp; upper education.</b> General competences underpinned by EU Key Competences, developed across subjects and in extracurricular activities. Cross-curricular topics integrate general, subject competences and optional subjects (3 relevant optional subjects for LifEComp: <i>lifelong learning &amp; career planning, health and safety, cultural identity</i>).</p> <p><b>General competences:</b> <i>Social and citizenship; self-management; learning to learn; communication, entrepreneurship, digital, STEM.</i></p> <p><b>Career Education</b> (optional subject; competences examples stage study 3): <i>self-analysis, know about education and work options; planning and decision making.</i></p> <p><a href="https://www.hm.ee/en/national-curricula-2014">https://www.hm.ee/en/national-curricula-2014</a></p>	Y Broad levels for each school stage	Y
FI National Board of Education	<b>National core curriculum basic education</b>	2016 2017 2019	ISCED 1-2-3	<p><b>National regulation guiding local curricula of basic education</b> (guidelines, objectives, contents, assessment, implementation, guidance). Curriculum goals: <i>support individual &amp; social wellbeing, develop learning to learn skills, responsible decision making, self-regulation, active agency, respect for diversity, collaboration, critical thinking, creativity.</i></p> <p><b>Transversal competences</b> developed through subjects, cross-curricular activities, multidisciplinary modules (<b>health education</b> as transversal competence T3 as well as stand-alone subject):</p> <p>T1 <b>Thinking &amp; learning to learn</b> (<i>critical thinking, problem solving, self-regulated learning</i>); T2 <b>Cultural competence, interaction, self-expression</b>; T3 <b>Taking care of oneself &amp; managing daily life</b> (<i>health &amp; wellbeing of self &amp; others, emotional skills &amp; self-regulation, responsibility, relationships</i>); T4 <b>Multiliteracy</b>; T5 <b>ICT competence</b>; T6 <b>working life competence &amp; entrepreneurship</b> (include <i>teamwork, career choices</i>); T7 <b>participation, involvement &amp; building sustainable future</b> (<i>decision making, negotiation, conflict resolution, agency</i>).</p> <p><a href="https://www.ellibs.com/fi/book/9789521362590/national-core-curriculum-for-basic-education-2014">https://www.ellibs.com/fi/book/9789521362590/national-core-curriculum-for-basic-education-2014</a></p>	Objectives T1-T7 & detailed objectives health education along school levels	Y
FR Ministry Education, University & Research	<b>National Curriculum Primary &amp; Lower Secondary Education</b>	2015	ISCED 1-2	<p><b>Official Law for curricula in compulsory education.</b> Main competences as learning outcomes (cross-curricular &amp; subject perspective); <i>socle commun</i> with 5 core competences.</p> <p><b>2 relevant transversal domains of 'socle commun': learning methods and tools, citizenship education.</b></p> <p><b>Sensitivity to self &amp; others (in citizenship education):</b> <i>Identify, express and share emotions and feelings. Assess and be capable of listening and empathy. Self-knowledge and respect for others. Work on rules of communication. Take care of themselves and others. Accept &amp; respect for differences, mutual knowledge, tolerance. Learning to cooperate, rules of cooperation.</i></p> <p><a href="http://cache.media.education.gouv.fr/file/MEN_SPE_11/35/1/BO_SPE_11_26-11-2015_504351.pdf">http://cache.media.education.gouv.fr/file/MEN_SPE_11/35/1/BO_SPE_11_26-11-2015_504351.pdf</a></p>	NA	Y
IE National Council x Curriculum & Assessment	<b>Framework Junior Cycle Wellbeing guidelines</b>	2015 2017	ISCED 2 (1-3)	<p><b>IE policy framework 2014-20 links sustainable development education to active, healthy, physical &amp; mental wellbeing.</b> <i>Staying well</i> is key skill pursued within/across subjects (other key skills: <i>self-management, creativity, managing information &amp; thinking, communicating, working with others, literacy &amp; numeracy</i>). Learning <b>about &amp; for</b> wellbeing for imaginative, connected, empathetic team players - confident, persistent, &amp; positive about themselves. Wellbeing focus in PE (Physical Ed.), CSPE (Citizenship), SPHE (Social, Personal &amp; Health Education). SPHE in Primary School and ECEC curricula.</p> <p><b>Wellbeing Indicators:</b> <i>Active, Responsible, Connected, Resilient, Respected, Aware. Statements of Learning on wellbeing (junior cycle): awareness of personal values and understanding of moral decision-making (SOL 5); valuing active citizenship rights &amp; responsibilities (SOL 7); competences for sustainable living (SOL 10); safeguard &amp; promote personal &amp; others' wellbeing (SOL 11); physical activity motivation &amp; action (SOL 12); understanding importance of food and diet for healthy lifestyle (SOL 13).</i></p> <p><a href="https://www.curriculumonline.ie/Junior-cycle/Short-Courses/SPHE">https://www.curriculumonline.ie/Junior-cycle/Short-Courses/SPHE</a></p>	Learning outcomes linked to 6 wellbeing indicators along school levels	Y

National competence frameworks, curricula & education standards, assessment tools (II)						
Organization country	Name	Date	Target group	Description – Competences - Links	Levels Y/N, NA	Assessment Y/N, NA
Open University Netherlands & Utrecht University	SOONER project <i>Self-regulated online learning questionnaire</i>	2017	NF OE	OL questionnaire on self-regulated learning (36 items on 4 dimensions, with descriptions of knowledge, skills, attitudes). Adaptation of existing self-regulated learning questionnaires to MOOCs; validated through Exploratory & Confirmatory Factor Analysis. Research grant by Dutch National Initiative for Education Research, Netherlands Organisation for Scientific Research & Dutch Ministry of Education (SOONER project on open online education in Netherlands).	N	Y
				4 self-regulated learning dimensions: <i>metacognitive skills, time management, environmental structuring, persistence.</i>		
				Janssen, R.S., van Leeuwen, A., Janssen, J., Kester, L., & Katz, M. (2017). 'Validation of the self-regulated online learning questionnaire', <i>Journal of Computing in Higher Education</i> , 29, 6-27. <a href="https://doi.org/10.1007/s12528-016-9125-x">https://doi.org/10.1007/s12528-016-9125-x</a>		
P21 Partnership for Learning US	P21 Framework 21 <sup>st</sup> Century Learning	2015	ISCED 0-1-2-3	Framework on 21 <sup>st</sup> century skills, knowledge, expertise, literacies.	NA	NA
				21 <sup>st</sup> century interdisciplinary themes: Learning & innovation skills ( <i>Creativity and innovation, Critical thinking and problem solving, Communication and collaboration</i> ). Life & career skills ( <i>flexibility &amp; adaptability, initiative &amp; self-direction, Social &amp; cross-cultural skills, Productivity &amp; accountability, Leadership &amp; responsibility</i> ). Information, media, technology skills; Global awareness; Health literacy.		
				<a href="http://www.p21.org/">http://www.p21.org/</a>		
PL Ministry National Education & Education Research Institute	National Qualification Framework	2015	ISCED 1-8	PQF (Polish Qualification Framework) with two stages of level descriptors (universal and educational). Descriptors broken down into <b>knowledge</b> (understanding facts, objects, phenomena, concepts, theories; general knowledge + expertise in learning/occupation field); <b>skills</b> (e.g. performing tasks of varying complexity, learning and communication); <b>social competences</b> .	Y Eight levels: general Ed., HE, VET	NA
				Examples of level descriptors from level 6: <b>Skills:</b> <i>use knowledge for complex problem solving in not fully predictable conditions; autonomously manage lifelong learning.</i> <b>Social competences:</b> <i>independent decision making; critical evaluation and responsibility about own and team actions; maintaining proper relations in professional community.</i> Descriptors across levels allow to grasp rationale of progression across eight levels: increasing degrees of complexity, variability & predictability of conditions; decreasing levels of supervision/instructions.		
				<a href="http://kwalifikacjaenafje.edu.pl/">http://kwalifikacjaenafje.edu.pl/</a>		
RO Ministry of National Education	National Curriculum ECEC & schools	2015	ISCED 0-1-2-3	Curriculum reformed with systemic perspective, balancing subject and interdisciplinary approaches. Curriculum underpinned by interconnected 8 EU KCs, with description of expected learning outcomes for different school cycles.	Y 3 levels along school cycles	Y
				Five transversal vectors for pupil development for description of achievement levels of KCs: <i>cognitive and socio-emotional development, internalisation of rules and values (including appreciation of diversity), self-awareness and reflection, autonomy in learning, creativity.</i> Can-do descriptors of expected learning outcomes in each of three progression levels along school cycles, for all 8 KCs.		
				<a href="http://www.ise.ro/wp-content/uploads/2015/12/Document-politici-curriculum_final_23decembrie.pdf">http://www.ise.ro/wp-content/uploads/2015/12/Document-politici-curriculum_final_23decembrie.pdf</a>		
SK National Institute of Education	Education Standards	2013 2015	ISCED 0-1-2-3	Education standards developed from Education Acts, related to curricula for general education and VET. Performance and content standards expected at key stages along education levels. Cross-cutting themes to be implemented within and across subjects (personal and social development, environmental education, media education, multicultural education, training, life and health protection).	Y Standards given for different subjects, school levels, types	NA
				Examples of cross-cutting themes, upper secondary education standards (gymnasium): <b>Personal and social development</b> ( <i>teamwork skills; respect for diversity of cultures and views; healthy lifestyles; responsible decisions about relationships</i> ). <b>Protecting life and health</b> ( <i>understanding physical and mental stress; identify and act in case of health hazards</i> ).		
				Examples of subject-specific standards, primary education: <b>Physical education, health and wellbeing</b> (performance standard: <i>identify signs of healthy lifestyles; differentiate sound and unhealthy food; explain relevance of physical activity to human health</i> ).		
				<a href="http://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/">http://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/</a>		

National competence frameworks, curricula & education standards, assessment tools (III)						
Organization country	Name	Date	Target group	Description – Competences - Links	Levels Y/N, NA	Assessment Y/N, NA
UKNie Council Curriculum Examination & Assessment	<i>National Curriculum Learning for Life and Work</i>	2007	ISCED 1- 2-3	<p><b>Research-based curriculum, on capabilities for life &amp; work. Core curriculum area Learning for Life and Work (LLW)</b>, with cross-referenced subject requirements across Learning areas &amp; levels. LLW supports other curriculum areas (Thinking Skills and Personal Capabilities).</p> <p><b>Learning for Life and Work (LLW) key curriculum strands (Key stages 3/4): global citizenship, employability, personal development</b> (core curriculum element till age 14). Concerned with life skills (inter- and intra-personal skills, responsibility &amp; integrity, respect, resilience).</p> <p><b>Global Citizenship:</b> <i>critical &amp; creative thinking skills, for responsible decision-making &amp; respect for diversity.</i></p> <p><b>Education for Employability</b> across all education levels: <i>career management, enterprise &amp; entrepreneurship, working in global market.</i></p> <p><b>Example of Personal Development competences</b> (Key stage 3 - age 11-14): <b>Self-Awareness</b> x physical &amp; emotional/mental health (resilience, setting targets, self-assess, improve learning); <b>Personal Health</b> (<i>safety, substance misuse, life stages, exercise, hygiene, diet</i>); <b>Relationships</b> x mental/emotional health (e.g. <i>coping strategies, conflict management</i>).</p> <p>Detailed learning outcomes include <b>transversal</b> aspects of <i>critical thinking, creativity, initiative, work with others, self-management, effective communication.</i></p> <p><a href="http://ccea.org.uk/curriculum/key_stage_3/areas_learning/learning_life_and_work">http://ccea.org.uk/curriculum/key_stage_3/areas_learning/learning_life_and_work</a>  <a href="http://ccea.org.uk/sites/default/files/docs/curriculum/area_of_learning/learning_life_work/statutory_statements.pdf">http://ccea.org.uk/sites/default/files/docs/curriculum/area_of_learning/learning_life_work/statutory_statements.pdf</a></p>	Y Minimum levels at end curriculum cycles	Y
UKSc Education Scotland	<i>Curriculum for Excellence</i>	2011	ISCED 0-1-2-3	<p><b>Comprehensive curriculum reform supported by OECD report.</b> Focus on <i>skills for learning, skills for life and skills for work, health and wellbeing.</i> Detailed descriptions of experiences and outcomes embody competences for each curriculum area, across levels.</p> <p><b>Four capacities as objectives:</b> <i>Successful learners</i> (motivation, creative thinking, learn independently and in group, evaluate, transfer learning); <i>Confident individuals</i> (relate to others and self manage, pursue healthy lifestyle, be self-aware); <i>Responsible citizens</i> (respect for others, make informed decisions); <i>Effective contributors</i> (resilience, effective communication, teamwork, critical thinking, problem solving).</p> <p><b>Examples of competences:</b>  <b>Health &amp; wellbeing</b> (specific curriculum area, but responsibility of all educators): <i>mental &amp; emotional wellbeing; social wellbeing; physical wellbeing; food and health.</i>  <b>Planning for choices and changes:</b> <i>identify achievements &amp; areas for improvement; make realistic, informed life &amp; learning choices; set realistic goals &amp; plan further transitions.</i></p> <p><a href="https://www2.gov.scot/resource/doc/226155/0061245.pdf">https://www2.gov.scot/resource/doc/226155/0061245.pdf</a></p>	Y Outcomes along school years	Y

International/ European projects (I)						
Organization country	Name	Date	Target group	Description – Competences - Links	Levels Y/N/NA	Assessment Y/N/NA
ATC21S Partnership AU, FI, PT, SG, UK, US	ATC21S Assessment & Teaching 21 <sup>st</sup> Century Skills Framework	2009	ISCED 1-3	<p><b>Framework on 21<sup>st</sup> century measurable skills</b> (knowledge, skills, attitudes, values and ethics - KSAVE), based on review of 12 frameworks.</p> <p>Developed through partnership project for to <b>digital assessment practices and teaching 21<sup>st</sup> century skills</b>. Large-scale, technology-assisted assessment data on collaborative problem solving &amp; learning through digital networks.</p> <p><b>Competence clusters</b></p> <p><b>Ways of Thinking:</b> 1. Creativity and innovation 2. Critical thinking, problem solving, decision making 3. Learning to learn, meta-cognition.</p> <p><b>Ways of Working:</b> 4. Communication 5. Collaboration (teamwork).</p> <p><b>Tools for Working:</b> 6. Information literacy 7. ICT literacy.</p> <p><b>Living in the World:</b> 8. Local and global citizenship 9. Life and career 10. Personal and social responsibility (cultural awareness and competence).</p> <p><b>Collaborative problem solving</b> skills assessed in cross-country study: <i>recognise perspective of others; participate by contributing knowledge, experience, expertise constructively; recognise need for contributions and how to manage them; identify structure and procedure in problem solving; build and develop collaborative knowledge and understanding.</i></p> <p><a href="https://resources.ats2020.eu/resource-details/LITR/ATC21s">https://resources.ats2020.eu/resource-details/LITR/ATC21s</a></p>	Y Validated levels collaborat. problem solving & learning through digital networks	Y
ATS 2020 Partnership BEfl, CY, HR, EE, EL, FI, IE, LT, SI	ATS2020 Assessment Transversal Skills	2016 2018	ISCED 1-2	<p><b>European policy experimentation project</b> developing framework &amp; innovative training, teaching &amp; assessment tools (e-Portfolios) <b>for transversal skills</b>.</p> <p><b>Transversal skills &amp; competences,:</b> <i>Information literacy, Collaboration and Communication, Creativity and Innovation, Autonomous Learning (making up Digital Literacy).</i></p> <p><b>Example of description of autonomous learning competence:</b> <i>Identify needs for learning based on prior knowledge. Define goals and strategy to achieve them. Plan and manage activities to implement strategy. Evaluate process and results, provide evidence for achievement. Reflect &amp; explore alternative approaches (metacognition of learning cycle).</i></p> <p><a href="http://www.ats2020.eu/">http://www.ats2020.eu/</a></p>	Y	Y
COMENIUS LLLP Partnership IT, RO	PRESTO Peer Related Education Supporting Tools	2008 2010	ISCED 2-3	<p><b>European project underpinned by 2006 EU L2L KC and assessment frameworks on L2L; peer education to promote learning to learn competences in adolescents.</b></p> <p>Materials/tools for implementing peer education in secondary schools (Peer education &amp; Learning to Learn guides with activities and learning objectives).</p> <p><b>Focus on life skills development in schools</b> (learning to learn, empathy, social competences and personal development) through peer education.</p> <p><b>Learning to Learn competence description:</b> <i>affective (motivation, self-knowledge &amp; efficacy, goal setting, persistence &amp; coping with failure and stress), cognitive (understanding, planning &amp; organizing learning, time management, learning environment control, study skills of mapping, memorising, taking notes, summarising, critical thinking), metacognitive (problem solving, monitoring &amp; assessing learning, metacognitive accuracy &amp; confidence).</i></p> <p><a href="http://vejledning.net/Sider/Projekter/PRESTO/Peer%20Education_guide_2010_versi_on_engelsk.pdf">http://vejledning.net/Sider/Projekter/PRESTO/Peer%20Education_guide_2010_versi_on_engelsk.pdf</a></p>	N	Y
COMENIUS partnership EL, HR, IT, MT, PT, SE	RESCUR Resilience curriculum	2012 2015	ISCED 0-1	<p><b>European project developing resilience curriculum for early years and primary education.</b> Addressing needs of vulnerable pupils (Roma, disabled, immigrant/refugee) with whole school approach. Provides teaching approach, activities and tools (storytelling, mindfulness). Formative assessment checklists and portfolios. Focus on developing teachers' resilience as well.</p> <p><b>Six curricular themes with increasing complexity:</b> <i>communication skills; healthy relationships; a growth mindset; self-determination; building on strengths; turning challenges into opportunities.</i></p> <p><b>Example of formative assessment descriptors, growth mindset:</b> <i>Positive and optimistic thinking (challenging negative thoughts, bright side thinking); positive emotions (using hope, humour, happiness to promote growth &amp; wellbeing).</i></p> <p><b>Description of teacher resilience competences (emotional, motivational, social, professional):</b> <i>awareness and understanding of emotions, strengths and weaknesses; emotional regulation; self efficacy; problem solving and decision making; social awareness and skills; perspective taking; ability to build healthy relationships and relate effectively and collaboratively with others.</i></p> <p><a href="https://www.rescur.eu/about-the-project/">https://www.rescur.eu/about-the-project/</a></p>	Y	Y

International/ European projects (II)						
Organization country	Name	Date	Target group	Description – Competences - Links	Levels Y/N, NA	Assessment Y/N, NA
EU H2020 partnership DE, EL, ES, FR, NL, PT, UK	<b>NEMESIS</b> <i>Novel Educational Model Enabling Social Innovation Skills</i>	2018-	ISCED 1-3	European project on developing educational model for social innovation in primary and secondary schools. Outlines framework of social innovation competences for students.	NA	NA
				Competences broken down as <b>values</b> (fairness, equality, respect, integrity, persistency, generosity, trust, altruism, mutuality, social sensitivity) underpinning three areas: <b>opportunities for social value creation</b> ( <i>responsible &amp; critical thinking; self-efficacy; empathy</i> ), <b>collaborations &amp; relationships building</b> ( <i>embracing diversity, communication skills, collective planning and democratic decision making, creative thinking &amp; problem solving</i> ), <b>innovative action</b> ( <i>value creation, collective efficacy, digital skills, resource mobilisation, reflective learning, social resilience</i> ). <a href="https://nemesis-edu.eu/about/">https://nemesis-edu.eu/about/</a>		
Erasmus+ KA3 partnership ES, FI, IT, LT, LV, PT, SI	<b>Learning to be Assessing social, emotional, health skills in education</b>	2017 2020	ISCED 1-3 NF	European project adopting CASEL framework of social emotional skills. Aims to develop assessment methods and tools for development of social, emotional and health competences in general education: a MODEL for social, emotional, health competence assessment; a practical assessment/self-assessment TOOLKIT; an institutional self-assessment INSTRUMENT for schools.	NA Assessment tools to be developed	Y
				<b>Socio-emotional skills:</b> <i>Self-awareness; Self-management; Social awareness; Relationship skills; Responsible decision making.</i> <a href="https://learningtobe.net/">https://learningtobe.net/</a>		
ERASMUS+ KA2 Partnership AE - DAEA, DafniKek EL, EAEA, LWI, SIAE	<b>LSE</b> <i>Life Skills for Europe</i>	2016 2018	NF	European project upscaling life skills approach, targeting adult education (people from disadvantaged background or resistant to intercultural exchange). Training on basic & digital skills, problem solving, critical thinking, social interaction, support on access to health and social services, family competences, intercultural dialogue, active citizenship. Life Skills Framework defines <b>eight key types of capabilities</b> to be active participant in life and work for different purposes and contexts - in relation to <i>personal empowerment, relationships with others, and active citizenship</i> . Two capability aspects ( <i>difficulty of level &amp; familiarity of context</i> ) allow flexible starting points and recognition of learners' progression.	Y Two-dimension matrix: <i>Level, Familiarity</i>	Y
				<b>Competences:</b> <b>Personal &amp; interpersonal</b> ( <i>self-management, self-esteem, empathy; make decisions &amp; solve problems; communicate, manage conflict, collaborate</i> ), <b>Literacy &amp; language, Numeracy, Financial, Digital &amp; Media literacy, Health, Civic, Environmental.</b> <a href="https://eaea.org/project/life-skills-for-europe-lse/">https://eaea.org/project/life-skills-for-europe-lse/</a>		
Erasmus+ KA2 partnership ICEP, CY, EL, IE, MT, PT	<b>HOPEs</b> <i>Happiness, Optimism, Positivity, Ethos in Schools</i>	2016 2018	ISCED 4 ISCED 1	European project to improve primary teachers' pedagogic competences by learner-centered approaches on character development and wellbeing (Positive Psychology and Character Education). Training package for primary school teachers based on five pillars: positive emotions, character strengths and values, positive purpose, positive coping, positive relationships. Aimed to promote self-awareness, psychological resilience, happiness and pro-active behaviours in pupils, and boost teachers' wellbeing, resilience and job satisfaction.	N	N
				<b>Explicit learning objectives and teacher competence outcomes (KSA):</b> <i>emotional self-awareness and regulation; empathy; self-efficacy linked to wellbeing, responsibility and positive relations; respect for others and diversity; agency and sense of purpose; resilience strategies; positive thinking strategies; coping with change; mindfulness strategies for life enjoyment; value positive relationships; communicate and exchange feedback; collaborate.</i> <a href="http://www.hopestraining.eu/">http://www.hopestraining.eu/</a>		
European SchoolNet AT, BEFI, EE, IE, PL, PT	<b>COLAB</b> <i>Integrating Collaborative Learning in Policy &amp; Practice</i>	2015 2018	ISCED 0-1-2-3-4	European project on collaborative learning in education ecosystem, involving variety of stakeholders x capacity building & implementation (policy, school culture, teacher training, classroom practice & assessment). Provision of MOOC course x teachers, guidelines for assessing collaborative learning, tools for assessing individual and group performance in collaborative school activities.	Y Rubrics with quality descriptors & 4-level scores with criteria	Y
				<b>Collaborative competences:</b> <b>Individual and group collaboration</b> ( <i>focus on tasks, mutual help, responsibility, reliability, performance of different team roles</i> ). <b>Engagement in teamwork</b> ( <i>promptness, commitment, responsibility, accountability, communication, assessment</i> ). <b>Social relations in teamwork</b> ( <i>respect, humility, altruism, tolerance, social sensitivity</i> ). <a href="http://colab.eun.org/">http://colab.eun.org/</a>		

International/ European projects (III)						
Organization country	Name	Date	Target group	Description – Competences - Links	Levels Y/N, NA	Assessment Y/N, NA
NESET II European network	<b>Framework Social Dimension Education</b>	2015	ISCED 0-1-2-3	<p><b>Framework for integration of social and emotional education (SEE) in EU curricula, drawing on SEL</b> (social &amp; emotional learning); positive psychology, resilience and mindfulness; literature on citizenship, inclusion, health promotion, self-determination. Based on meta-analytic reviews of school-based SEE programmes. Competences draw upon EU/non-EU cultural traditions (eg. AU, US).</p> <p><b>Four categories of competences:</b>  <b>Self-awareness:</b> <i>recognize personal emotions &amp; strengths, self-efficacy, autonomy &amp; agency, self-advocacy, optimism, sense of purpose.</i>  <b>Self-management:</b> <i>emotional regulation, goal setting, problem solving, resilience &amp; persistence, metacognitive skills (critical &amp; creative thinking, motivation, self-regulated learning).</i>  <b>Social awareness:</b> <i>perspective taking, empathy, appreciation of cultural &amp; social diversity, prosocial attitudes &amp; behaviour (respect &amp; responsibility for others &amp; environment, honesty).</i>  <b>Social management:</b> <i>positive relationships, verbal/non-verbal communication, cooperation &amp; collaboration, leadership (motivating others, teamwork, negotiation), conflict resolution, responsible decision making, dealing with peer pressure and negative relationships, seek &amp; give support.</i></p> <p><a href="https://nesetweb.eu/wp-content/uploads/2019/06/NESET_AR1_20182-1.pdf">https://nesetweb.eu/wp-content/uploads/2019/06/NESET_AR1_20182-1.pdf</a></p>	Y Learning standards: stages & levels	Y
YouthNet US Youth Peer Education network (Y-PEER)	<b>Youth Peer Education Toolkit &amp; Training of Trainers Manual</b>	2005	F/NF, Youth	<p><b>Training guide, curriculum and tools for youth peer educators on skills-based health education.</b> Underpinned by theories of reflective action, social experiential learning, participatory education, to promote health behaviour change and youth agency. Empowering effect of training youth as peer trainers on health education, for development of transversal competences (interpersonal/personal, focus on health and wellbeing). Suitable for flexible adaptation across formal/non-formal contexts, linked to local communities. UN Population Fund support.</p> <p><b>3 sets of skills for trainers/ peer educators: interpersonal</b> (<i>listening skills, energy, planning and management, practical &amp; theoretical competences</i>), <b>teamwork</b> (<i>cooperation, respect, time management, communication</i>), <b>managing participants</b> (<i>giving feedback, motivating, creating suitable learning environment, dealing with issues</i>).</p> <p><a href="http://www.youthpeer.org">www.youthpeer.org</a>  <a href="https://www.fhi360.org/sites/default/files/media/documents/Youth%20Peer%20Education%20Toolkit%20-%20The%20Training%20of%20Trainers%20Manual.pdf">https://www.fhi360.org/sites/default/files/media/documents/Youth%20Peer%20Education%20Toolkit%20-%20The%20Training%20of%20Trainers%20Manual.pdf</a></p>	Y Skills levels: weak, good, excellent	Y

## Annex II. Glossary

*The following glossary provides definitions of relevant concepts, taken from relevant literature or reliable online sources/dictionaries (eg. APA/American Psychological Association Dictionary, Merriam-Webster Dictionary).*

**Adaptive competence:** the ability to be flexible and respond positively to a rapidly evolving environment, coming out the better for it (bouncing forward).

**Advocacy:** the ability of speaking out for something, drawing attention to an issue, a cause or a policy - with commitment to a value or purpose.

**Agency:** the ability to frame a guiding purpose and identify actions to achieve a goal.

**Assertiveness:** the ability to express thoughts, feelings, desires and beliefs in direct, honest and appropriate ways, while respecting those of others.

**Big Five:** classification of 5 broad personality traits found to be present in individuals across cultures (agreeableness, conscientiousness, emotional stability, extraversion, openness to experience).

**Capability:** a feature, ability or process that can be developed or improved. It can be a collaborative process through which individual competences and abilities can be applied and exploited.

**Career management skills:** skills enabling individuals to make effective career decisions and work transitions. They include self-knowledge of capacities and interests, self-evaluation, engagement in learning, and evaluating information on learning/work options.

**Citizenship:** active participation in civil society, community and/or political life, characterised by mutual respect and in accordance with human rights and democracy.

**Coaching:** a collaborative helping relationship between a coach and coachee, focused on working towards agreed goals to enhance performance, foster ongoing self-directed learning, increase satisfaction and personal growth.

**Cognitive flexibility:** the cognitive ability to adapt behaviours in response to changes in the environment.

**Collaboration:** a relational system in which two or more stakeholders pool together resources, ideas and actions to meet common goals that neither could meet individually – with shared commitment and ownership.

**Collaborative problem solving:** the ability to effectively engage in a process whereby two or more agents endeavour to resolve a problem by sharing understanding, efforts, knowledge and skills.

**Communication:** the act or process of using words, sounds, signs, or behaviours to express or exchange information, thoughts, ideas, feelings to someone else.

**Compound competence:** a complex, multi-dimensional set of competences that need to be mobilised together.

**Conflict management:** deliberate action to deal with conflictive situations, either to prevent conflicts, escalate (bring them into the open) or de-escalate (cool them down).

**Convergent thinking:** a cognitive process in which a person attempts to find a single answer to a problem, narrowing down multiple ideas into a single solution through analysis.

**Cooperation:** the act or process of mutual support and assistance for meeting goals specific to an individual stakeholder.

**Cooperative learning:** an educational approach which aims to organise classroom activities into academic and social learning experiences, developing interpersonal and teamwork skills, and promoting personal development.

**Creativity:** the cognitive potential and ability to produce work that is both novel and appropriate (small-c creativity, which can be learnt and developed).

**Critical thinking:** skilful analysis and assessment of information, beliefs or knowledge, with ongoing reconstruction and improvement of one's thinking. It can bridge convergent (analytical) and divergent (creative) thinking.

**Digital Competence:** the confident, safe and critical use of, and engagement with the full range of digital technologies for all aspects of life.

**Dispositions:** attitudes and beliefs that represent orientations guiding action.

**Distributed leadership:** a shared, collaborative process where participants in a group/team/organisation take the lead in interactions and activities according to circumstances, to influence the motivation, knowledge, affect, or practices of other participants.

**Divergent thinking:** a cognitive process used to generate creative ideas by exploring many possible solutions.

**Emotional intelligence:** the ability to recognize, understand and manage one's own emotions, as well as understand and influence those of others.

**Empathy:** the ability to understand, vicariously experience and respond to another person's feelings, emotions and thoughts (emotional, cognitive and perspective taking).

**Empowerment:** process of giving and/or gaining more confidence to think and act, enabling increased control over life or situations.

**Entrepreneurship:** acting upon opportunities and ideas and transforming them into financial, cultural, or social value for others.

**Focus:** thinking skill that enables to concentrate attention and maintain efforts on a task until completion.

**Grit:** passion and perseverance in pursuing goals.

**Growth mindset:** openness and curiosity to new learning experiences, supported by belief in one's potential to improve with dedication and work.

**Innovation:** the process of translating an idea or invention into a new process, product or service that creates value for individuals, organisations or society, answering to a need and/or promoting effective change.

**Integrity:** consistency, honesty, and truthfulness with oneself and others, as guiding purposes for goal-oriented action.

**Intercultural competence:** knowledge, skills, attitudes, values and critical awareness for effective response to intercultural situations – understanding, respecting, appropriately responding to people with different cultural affiliations, beliefs, opinions, practices from oneself.

**Learning outcomes:** statements that describe the competences, knowledge or skills students should acquire by the end of a particular level, course, or program.

**Learning power:** a complex mix of dispositions, experiences, social relations, values, attitudes and beliefs that shape engagement with learning.

**Life skills:** psychosocial abilities for adaptive positive behaviour, which enable individuals to deal effectively with the demands and challenges of everyday life.

**Literacy:** knowledge and skills mastery in a specific domain, with a focus on reading/understanding, encoding/decoding processes (e.g. health literacy, financial literacy).

**Mastery:** full possession and display of effectiveness in a domain, skill, technique or competence.

**Mentoring:** long-term support and guidance (formal or informal), with the transfer of skills, knowledge and attitudes in a specific field, from experienced individual to inexperienced learner.

**Metacognition:** a component of self-regulated learning, including the awareness of personal learning strengths, weaknesses and strategies, and the ability to manage learning - purposefully monitor, direct and review one's learning.

**Motivation:** self-driven willingness and commitment to extending personal capacities, learning and engaging in new endeavours and challenges (*intrinsic motivation*).

**Negotiation:** an ability, method and process by which people settle differences, reaching compromise or agreement while avoiding argument and dispute.

**Non-cognitive skills:** another label for socio-emotional competences. It usually refers to personality characteristics and personal qualities, and distinguished from cognitive skills.

**Persistence/Perseverance:** steadiness in pursuing a course of action, a purpose, or a state, especially in spite of obstacles and difficulties.

**Problem solving:** the ability to engage in cognitive processing to understand and resolve problem situations where a method of solution is not immediately obvious.

**Qualification Framework:** an instrument for the development and classification of qualifications at national or sectoral level, with a set of criteria (e.g. descriptors) applicable to specified levels of learning outcomes.

**Resilience:** the ability to deal readily with sudden, unexpected difficulties and hardships, and recover quickly (bouncing back).

**Respect:** appreciation and value of the beliefs, opinions, lifestyles and practices of others, as equal human beings.

**Self-awareness:** knowledge and awareness of oneself - of personal strengths and limitations.

**Self-efficacy:** confidence in one's abilities to effectively perform and carry out a given task.

**Self regulation:** the ability to understand, activate, monitor, control and adapt emotions, thoughts, attention, behaviour and cognitive strategies.

**Self-regulated learning:** interaction of motivational, cognitive and metacognitive processes for understanding, directing, monitoring and reviewing one's learning.

**Socio-emotional competences:** the knowledge, skills and attitudes to understand self and others, express and regulate emotions, develop and maintain relationships, set and achieve goals, manage strengths and difficulties, and make responsible decisions.

**Soft skills:** a set of personal qualities, traits, habits and attitudes, seen as transferable and broadly applicable - usually contrasted with hard skills (viewed as technical, specific skills for an occupation).

**Systems theory:** theory that views complex social systems as characterized by ongoing change and reciprocal influences.

**System thinking:** learning to think and act in an integrated way, considering interconnections between contradictory ideas.

**Transversal competences:** skills, values and attitudes required for learners' holistic development and adapting to change.

**21<sup>st</sup>-century competences:** competences (ways of thinking and living in the world; ways and tools for working) required by a global, post-industrial digital society.

**Wellbeing:** a state of contentment, with low levels of distress, overall good physical and mental health, and good quality of life.

### **Annex III. Links with other Key Competence Frameworks**

The Personal, Social and Learning to Learn Competence is one of the eight Key Competences for Lifelong Learning described in the 2018 Recommendation. The others are Literacy, Multilingual competence, Mathematical competence and competence in science, technology and engineering, Digital competence, Citizenship, Entrepreneurship, Cultural awareness and expression.

As specified in the 2018 Recommendation, many of the key competences overlap and are interlocked. The Recommendation views aspects such as *critical thinking and problem solving, teamwork, communication and negotiation, analytical skills, creativity, and intercultural skills* as embedded throughout the key competences. As outlined in the previous chapters, these aspects are all included as relevant components of the LifEComp framework.

LifEComp (on the Personal, Social and Learning to Learn Competence) represents the latest Key Competence Framework being developed by JRC Seville, with a focus on individuals - after DigComp (Digital Competence) and EntreComp (Entrepreneurship). We here outline relevant links between the three frameworks, which should be viewed as reciprocally supportive.

#### ***LifEComp and DigComp***

The European Digital Competence Framework for citizens (DigComp) defines digital competence as the 'confident, safe and critical use of, and engagement with the full range of digital technologies for all aspects of life' (Vuorikari et al., 2016; Carretero Gomez et al., 2017).

The DigComp framework views digital competence as requiring protection of health and wellbeing, socio-emotional literacy, and self-regulated learning for ongoing personal development. It needs the support of intercultural, critical, responsible and autonomous, reflective attitudes (Ala-Mutka, 2011).

This overall description of DigComp shows links with LifEComp that span personal and social development (e.g. self-regulation, empathy, wellbeing) as well as learning to learn (managing learning).

Considering specific content of the DigComp 2.1 framework (Carretero et al., 2017), there are three competence areas that are directly connected to LifEComp framework content:

- DigComp Area 1. Information and Data Literacy (links with LifEComp element *Critical thinking*);
- DigComp Area 2. Communication & collaboration (links with LifEComp elements *Communication and Collaboration*);
- DigComp Area 5. Problem solving (links with LifEComp element *Critical thinking*).

The focus of the DigComp framework is on deploying digital technologies to manage and develop personal life and career, social interaction and self-directed learning. Overall, LifEComp elements can be enhanced by digital technologies, and in doing so, DigComp competences can be given full play.

The competences in LifEComp and DigComp can thus be viewed as bound in a reciprocal relationship, where each can play the role of crucial enabler for the other, according to situation and context. For instance, the conceptualisation of wellbeing in LifEComp flags the importance of digital competence and lifelong learning for the understanding and use of digital health services.

#### ***LifEComp and EntreComp***

The European Entrepreneurship Key Competence framework (EntreComp) defines entrepreneurship as acting upon opportunities and ideas and transforming them into financial, cultural, or social value for others (Bacigalupo et al., 2016). As such, it is viewed as transversal to any aspect of life, entailing a broad set of knowledge, skills and attitudes (Bacigalupo & O' Keefe, 2018).

Several elements in EntreComp display direct links with LifEComp:

- 1.1. Spotting opportunities (links with LifEComp element *Critical thinking*);
- 2.1. Self-awareness and self-efficacy and 2.2. Motivation and perseverance (links with LifEComp elements *Self-regulation* and *Growth mindset*);
- 2.5. Mobilising others (links with LifEComp elements *Communication* and *Collaboration*);
- 3.2. Planning and management (links with LifEComp element *Managing Learning*);
- 3.3. Coping with uncertainty, ambiguity and risk (links with LifEComp element *Adaptability*);

- 3.4. Working with others (links with LifEComp element *Collaboration*);
- 3.5. Learning through experience (links with LifEComp element *Managing learning*).

**Table 8.** Links between JRC Key Competence Frameworks (LifEComp, DigComp, EntreComp)

LifEComp	DigComp	EntreComp
Self-regulation		2.2. Motivation and perseverance
Growth mindset		2.1. Self-awareness & self-efficacy
Empathy		
Adaptability		3.3. Coping with uncertainty, ambiguity and risk
Wellbeing	4.3. Protecting health & well-being	
Communication	2.1. Interacting through digital technologies	2.5. Mobilising others
Collaboration	2.2., Sharing through digital technologies 2.4. Collaborating through digital technologies 2.5. Netiquette	3.4. Working with others
Managing learning		3.2. Planning and management 3.5. Learning through experience
Critical thinking	1.1. Browsing, searching & filtering data, information & digital content 1.2. Evaluating data, information & digital content 5.1. Solving technical problems 5.2. Identifying needs & technological responses 5.4. Identifying digital competence gaps	1.1. Spotting opportunities

Since LifEComp and EntreComp have a common focus on personal empowerment, the two frameworks should be viewed as interconnected in a reciprocally supportive relationship. It should be noted that LifEComp has a broader focus on the personal development, self-fulfilment and holistic wellbeing of individuals, reflective lifelong learning and responsible social participation – which can be viewed as powerful boosters of entrepreneurial action.

Table 8 gives an overview of links across the Key Competence frameworks – showing common ground across all three, in the social area elements of Communication and Collaboration.

To sum up, LifEComp elements about the Personal, Social and Learning to Learn competence can provide support to both DigComp and EntreComp development. As regards DigComp, LifEComp offers a broader perspective on critical thinking, communication and collaboration that can represent a useful basis for understanding digital competence development. As for EntreComp, LifEComp gives a broader focus on learning to learn, personal development, wellbeing and resilience as interconnected, with the potential to further enhance entrepreneurship competence.

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