

Foster employability and fight social exclusion through the development of lifelong learning (LLL) key-competences: reviewing twenty years of LLL policies

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Reviewing
twenty years
of LLL policies

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Abstract

Purpose – This study aims to provide an overview of the past two decades of lifelong learning (LLL) policies for enhancing employability and reduce social exclusion in young people of European countries through the development of the so-called LLL key-competences.

Design/methodology/approach – Built on a quasi-systematic review, this contribution explores traditional and new methods for promoting the LLL transition, and then employability, in young adults (e.g. apprenticeship, vocational training, e-learning, etc.).

Findings – It argues the need to identify all the possible approaches able to support policymakers, as they can differently impact key-competence development.

Originality/value – Finally, based on the consolidated EU policy experience, we propose a strategy of implementation of the LLL programmes that facilitates the institutions' decision processes for policy-making through the use of decisional support system.

Keywords Employability, Decision support system, Lifelong learning, Key-competences

Paper type Literature review

1. Introduction

1.1 Fostering employability through the development of lifelong learning key-competences

A wide range of aspects revolves around employability, a concept used by Hillage and Pollard (1998) to indicate those capabilities necessary to find and retain a job and obtain a new one when needed (Ceschi *et al.*, 2017). Indeed, several factors can impact on employability. First, the context interpreted as the current trends in the market labour but also some individual difference traits, which can have an impact on the individual employability since they have been for a long time assessed for predicting workers' success at the early stage of their career (Sartori *et al.*, 2016a; Sartori *et al.*, 2016b; Sartori *et al.*, 2017). On the other hand, about employability, great emphasis is usually assigned to the role of competences that can be acquired, developed and transferred in a



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constant manner throughout the all stages of life, namely, key-competences for LLL or just key-competences. Key-competences have been associated over the years with several definitions (Elbers, 1991; Mulder, 2007; McClelland, 1973), as affirmed by Velde (2001, p. 1):

[...] there is both a concern about the meaning of competence and how it is interpreted in the workplace, and the demand for competence in the workplace, for different kinds of worker key competence, for more opportunities to become competent, and for it to be sustained and nourished in a lifelong learning way.

Indeed, several attempts have been proposed over the years to define but also distinguish, competences for LLL. For instance, Sloane (2011) suggested distinguishing key-competences between hard and soft skills: while the former set relates to technical competences and it is highly dependent on task, the latter ones identify interpersonal competences that can be applied across different activities and developed across the lifespan. Similarly, Billett (2009) argued that LLL key-competences could be understood from two different points of views: the social and personal perspectives, and to evaluate the worker' success, both of these perspectives must be considered since these competences comprise a set of knowledge, abilities and attitudes that allow a person to be competent in the workplace, as well as in everyday life (Sartori *et al.*, 2018). In this sense, key-competences correspond to antecedents the concept of employability assets proposed by Hillage and Pollard (1998).

Lifelong learning key-competences are also recognized as factors of innovation, which are strongly linked with training and development processes oriented to foster employability (Sartori *et al.*, 2013). As affirmed by Sartori *et al.* (2018, p. 2) "these competences are a key concept within the perspective of both lifelong learning and change management", in which on the one hand, competence-based training paths have been investigated to facilitate the development of employability in specific environments, and on the other hand, they have actually considered the antecedents for building-up LLL processes which does not limit only to the work dimension (Velde, 2001). Indeed, the Recommendation 2006/962/EC of the European Council (European Parliament and Council of the European Union, 2006) on key-competences for LLL identifies eight of them that are considered crucial for individuals in a lifelong knowledge-based society, i.e. communicating in a mother tongue, communicating in a foreign language, mathematical, scientific and technological competence, digital competence, learning to learn, social and civic competences, sense of initiative and entrepreneurship; cultural awareness and expression. The aim of this taxonomy of key-competences is to create a frequent basis for European LLL policies and the exchange of good educational and vocational training practices around Europe. This is also considered a call for educational and vocational systems not only to facilitate employability but also to enhance LLL policies oriented to fight social exclusion, especially among the young population.

1.2 Not only employability, lifelong learning for tackling social exclusion

Lifelong learning is a process through which individuals acquire information, knowledge and competencies in a range of formal and informal settings, throughout life (Sartori and Tacconi, 2017). It may occur as part of schooling, education, training, personal development (Brookfield, 1986) or workplace-based learning (Billett, 2011), and applies to people working in organizations, vocational teachers and trainers included (Mulder *et al.*, 2007; Sartori *et al.*, 2015). Lifelong learning is considered to be an appropriate response to changes (Gibbs *et al.*, 2007) and a key lever for resilience, adaptation and development (Smidt and Surssock, 2011) of both individuals and organizations (Roland, 2010). It has been argued that it can represent the

means by which people go on acquiring such LLL key-competences (Garavan *et al.*, 2002), gain expertise (Jarvis, 2009), adapt to different job market conditions (International Labour Organization, 2000) and develop employability while growing up (Commission of the European Communities, 2007). Lifelong learning represents the cornerstone of the learning society described by Frank Coffield (2000, p. 5) “[...] in which all citizens acquire a high-quality general education, appropriate vocational training and a job [...] while continuing to participate in education and training throughout their lives”. That is, LLL is a theoretical and practical concept that refers to the fact that it is both possible and necessary for human beings to keep on getting information, knowledge and learn those LLL key-competences for professional purposes (Sartori *et al.*, 2018).

On the other hand, professional purposes are not the only outcome of LLL policies; the LLL perspective has also been conceptualized within a political framework, which focuses on the role and the function of knowledge and learning to enhance the cohesion of societies. European policies, in this sense, are intended to support LLL as a factor underlying the development of practical institutional actions aiming at fostering social participation (Lodigiani, 2008). As a result, in many European countries, LLL policies have been developed to improve the integration of young people at the risk of social and work exclusion (Bynner and Parsons, 2002). Lifelong learning policies can be defined, as well as a guide to actions taken by institutions to foster LLL in a manner consistent with local laws and social customs. Their purpose is to disseminate the relevance of LLL in the specific context where young adults live, contextualizing it in accordance with their developable competences and social barriers they face to be included in society.

1.3 Reach out to European young adults at risk of work and social exclusion; the challenge of lifelong learning policies

In light of the above considerations, at the individual level, LLL policies aim to enable young adults to identify and develop those key-competences necessary to find, retain and progress in employment: that is, to improve their employability. In the past two decades, the development of LLL policies resulted in a diversified market configuration for adult education throughout Europe, which is expected to increase further. The continuous acquisition of key-competences is perceived determinant for professional success and career for two main reasons. First, the expected growth of the adult education market has resulted in the need to develop a systematic analysis of education policies linking it to forecasts for the demand of work skills in the future. Secondly, referring to the Strategic objective 1 “Making lifelong learning and mobility a reality” of EU Council (2009/C 119/02), a significant issue related to LLL is the idea of social justice. Limited learning opportunities and the inequitable access to the training system provide a broader social exclusion of many groups of young people (Gorard and Rees, 2002). Success, in this context, is understood as those policies that show the improvement of learning outcomes, particularly those reaching out to young adults at risk of social exclusion and other vulnerable groups.

Following this framework, as well as the EU Council Resolution on a renewed European agenda for LLL adult learning (2011), new policies are going to be developed over the Horizon 2020 programme [1], with the aim to encourage higher education institutions to embrace adult learners as a means of displaying social responsibility and a greater openness towards the community at large. The overarching objective of these new policies is the improvement of the above key-competences related to adult education in general, and young adults and vulnerable groups in particular, focusing on the area of integration between LLL programmes and higher employability. In this context, previous successful policies, both traditional and innovative, that reached out to young adults at risk of work and social

exclusion, have been first identified with the present literature review. Next, we will focus on the outcomes and effects of such policies above briefly presented (i.e. strategic LLL key-competences development, employability, challenging social exclusion). While analyzing why, for which target group, and in which national and regional section these programmes could be successful, by using a new technological decision support system (DSS), will be finally discussed as a possible practical solution applied to the present review.

1.4 Methodology

This article aims to identify LLL policies approaches that can guide the choices of policymakers regarding policies for enhancing the employability in young people and reduce risks of social exclusion. The initial assumption (discussed in the first part of the article) is that the key-competences promote by LLL correspond to antecedents of the concept of employability and to improve LLL policies means enhancing the employability of young adults in Europe to fight phenomena of social exclusion.

The paper is built on a quasi-systematic review of the approaches to LLL policies present in the literature of the last twenty years, and the identified methodology is divided into three phases. Phase 1: longitudinal analysis using semantic search by keywords (e.g. lifelong learning policy; LLL policy; lifelong-learning policy [...]) present in the following DBs such as Scopus, PubMed, Embase and Psychinfo. The inclusion criteria included all the published articles about lifelong learning policies (years 1998–2018) involving original article written in English with qualitative and quantitative approaches, review literature and mixed-method study. The exclusion criteria included articles by unknown authors, review sections of books, and articles written in a language other than English. This result in 109 articles extracted. Phase 2: Mapping of the analysis results (Peersman, 1996) and selection of the most representative research on LLL policies in European countries based on the following analysis units:

- the orientation of LLL policies and related professional practices;
- criticism of the effects of LLL policies; and
- programmes for the implementation of LLL policies.

After such a review, 87 articles were selected for the assessment of the next phase. Phase 3: Elaboration of the summary map with a focus on the objectives and results of the research. Such a quality assessment was conducted by two reviewers, and it was mainly based on the relevancy and validity of studies. Articles were carefully examined and selected by one of the two authors. Finally, 50 articles were included, and the most important points were extracted and summarized in a table (Table 1). Based on a thematic content analysis, articles were discussed next in a narrative form in line with the research goal.

2. Literature review

2.1 Reviewing twenty years of lifelong learning policies in Europe

Despite the term, LLL has an extensive practice in contexts, and its meaning is often not very clear (Clain, 2016), each country has its own definition and, consequently, its own LLL policies. Although there are some definitions of LLL (TeAchnology, 2010; Evaluate IT, 2004; Tempus, 2002; Idahoe-Campus, 2009), we can consider LLL as training that:

[...] should take place at all stages of the life cycle (from the cradle to the grave) and, in more recent versions, that it should be life-wide; that is embedded in all life contexts from the school to the workplace, the home and the community (Laal, 2011, p. 471).

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Ferrari <i>et al.</i> (2018)	IT	This research study addresses how access to information and the development of digital skills mitigated aspects of social exclusion and triggered more active participation in the life of the community. The project team observed the process of digitalization as it affected administrators, teachers, parents, and students over four years Data in the form of structured observations, meeting and interview transcripts, and actual usage rates were collected, categorized, and eventually sorted into three main categories: administrative promotion of inclusion; school investment inequitable access to digital resources; and capacity-building among stakeholders	Analysis of the data supported the ideas that digital forms of participation are particularly valuable for people at risk of exclusion in communities; consistent with European Union [EU] policies, education and particularly its digital form is a valuable key to civic inclusion; and efforts at educational digitalization must be long-term and intentional to be sustainable	Inclusive citizenship; school digital district; digital inclusion; Inclusive education; capacity building; lifelong learning
Mystakidis <i>et al.</i> (2018)	GR, FI	The University of Patras has launched a project for the provision of short, accessible, certified distance life-long learning programmes. The main pillars of this project are Excellence, Specialized Personalized Training at cutting-edge subjects, Quality, Deep Learning and Innovation. The research study was conducted using an online questionnaire and aimed at estimating the level of participants satisfaction using interactive learning methods such as collaborative learning. The formative evaluation process was conducted by external assessors based on context, input, process, product approach. The evaluation instruments were	The results of the study suggest that the project led to the rapid provision of e-learning programmes that used successfully active learning methods to achieve high learner satisfaction and address training needs and skills gaps. Evaluation and data analysis from completed e-Learning courses revealed that the University of Patras' blended quality strategy had an overall positive effect	e-learning; distance education; blended learning; technology enhanced learning; life-long learning; deep learning

(continued)

Table 1.
The present quasi-systematic review is based on a search strategy performed for the period 1998 to 2018 (August)

Table 1.

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Abel <i>et al.</i> (2018)	SE	online questionnaires, structured and semi-structured observation The article considers the problem of how best to use prior experience to bootstrap ILL, where an agent faces a series of task instances drawn from some task distribution. First, it identifies the initial policy that optimizes expected performance over the distribution of tasks for increasingly complex classes of policy and task distributions. It empirically demonstrates the relative performance of each policy class' optimal element in a variety of simple task distributions. It then considers value-function initialization methods that preserve PAC guarantees while simultaneously minimizing the learning required in two learning algorithms, yielding MAXQINIT, a practical new method for value-function-based transfer	The experiments explore the performance of the jumpstart policies and showcase the practicality of MAXQINIT for accelerating algorithms in lifelong RL in simple domains. Empirical and theoretical results show that the practical and simple new method, MAXQINIT, can lower the sample complexity of lifelong learning via value-function-based transfer	Life-long learning; policy transfer; value transfer; life-long reinforcement learning
Galanis <i>et al.</i> (2017)	ES	This paper proposes a framework to gather, enhance, organize, evaluate and showcase a user's informal learning using a social approach to engage the learners to use the system by providing valuable recommendations, contacts and feedback	The paper summarizes several guidelines for validating and evaluating informal learning experiences and formalizing their outcomes. This especially, where technology has brought together different cultures and educational systems, managing to keep track of a learner's competences is a daunting task, and when trying to take into account, the competences acquired through informal means	Informal learning; non-formal learning; e-learning; e-learning; lifelong learning; social learning; validation; evaluation

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Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Pilkinton-Phiko and Savinitty (2017)	FI	Living in learning societies has brought an increased focus to LLL and educational policies that support it. One such policy is the recognition of prior learning (RPL). In Finnish higher education, the most popular procedure for RPL is a test. This raises the question of how well this assessment method serves its purpose	This analysis shows that the tasks in our RPL test of English differ considerably from those reported in our survey of RPL seekers. This mismatch indicates that we should either adopt an open, divergent assessment method, such as a portfolio or change our undergraduate English curricula for both engineering and industrial design to better align them with the working-life communication tasks identified in this study - if a closed, convergent assessment method (such as a test) is preferred	Life-long learning; educational policies; recognition of prior learning; RPL test
Pérez-Escoda, A., <i>et al.</i> (2016)	ES	This essay presents some of the results from a broader research project on the digital competences of primary school teachers and students in Castile and Leon (Spain). The main goal of the study is to evaluate digital competence levels drawing on an earlier study on the specific international assessment of digital literacy and digital skills	The comprehensive statistical analysis of the results reflects that both teachers and students lack digital skills. This means that teachers cannot make pedagogical use of them so that teacher-Training policies in this field should be reconsidered. In students, it reflects the danger of a digital gap that would not be brought about for reasons of use or access but from lack of training	Digital citizenship; digital competences; teachers; students; education; information and communication technologies
Irvine <i>et al.</i> (2016)	NL, AT	Sustainable river basin management depends on knowledge, skills and education. The DANCERS project set out to identify feasible options for achieving education for sustainable water management across the Danube river basin, and its integration with a broader education and economic development	The DANCERS project identified key short and medium-term needs for education and research to support the progressive adoption of sustainable development, and the necessary dialogue across the public and private sectors to align policies. These include the development of new education networks for masters and PhD programmes, including joint programmes; improved access to technical training and LLL.	Sustainable development; integrated river basin management; skill development; EU policy

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Hanemann (2015)	DE	This article discusses recent developments in conceptualizing literacy as a foundation of LLL. The authors of this paper seek to replicate and extend his pioneering work, using data from the National Child Development Study (NCDS), a large-scale survey containing information on all those born in Britain in one week in 1958. Follow-up data were collected at various points in childhood and adulthood, most recently when the cohort reached the age of 50, thus enabling insights into long-term developments	programmes for skills development; developing formalized and certified competency structures and associated accreditation of institutions The authors analyze well-being at age 50 as an outcome in structural equation models (SEM). Results suggested a three-dimensional analytical framework which considers literacy as a lifelong and life-wide learning process and as part of LLL systems. The research draws a number of conclusions for policy and practice of literacy as a foundation of LLL. These conclusions are a timely contribution to the ongoing post-2015 education debate	Literacy; lifelong learning; adult learning; post-2015 education agenda
Jenkins and Wiggins (2015)	UK	The study presented in this article adopts a life-course approach to participation in learning and the potential benefits of learning. The authors concentrate on adult education in mid-life, that is, between the ages of 33 and 50, as the measure of learning participation. The authors of this paper seek to replicate and extend his pioneering work, using data from the National Child Development Study (NCDS), a large-scale survey containing information on all those born in Britain in one week in 1958. Follow-up data were collected at various points in childhood and adulthood, most recently when the cohort reached the	The authors analyse well-being at age 50 as an outcome in. This approach helps to understand the pathways through which adult education has an impact on well-being. The estimated models show how adult education in mid-life has an influence on the type and quality of jobs which are accessible to individuals, and how this, in turn, can contribute to higher well-being at age 50	Adult education; well-being; qualifications; mid-life; SEM

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Bomba and Zacharová (2014)	SK	age of 50, thus enabling insights into long-term developments The article deals with LLL of teachers in Slovakia and the use of blended learning as a means of increasing the teachers' qualification credit as employees. The mainline of this article is tracking the LLL of the Slovak teachers in the context of neoliberalism and its influence on education with some implications for teachers	Results show how social and economic changes in Slovakia after 1989 and after the Velvet Revolution had their impacts on education, on redefining the functions of school, on changing the nature of education, school computerization and total modernization but also on the decrease of teachers' social status and on changing the school funding and long-term underfunding of the Slovak educational system	Higher education; university; blended learning; lifelong learning; neoliberal governmentality; teacher; Slovak education; Slovakia
Fontara <i>et al.</i> (2014)	DE	The task is to learn a dialogue policy that deals with changing user goals, can act under uncertainty, and is easy to apply in practice. Unlike reinforcement learning-based systems, the proposed simulator-free approach avoids common problems such as reward tuning and state-space exploration. Researchers apply imitation learning to mimic an expert's behaviour based on a small number of Wizard-of-Oz experiments. A dynamic Bayesian Network is used to track hidden user goals	Results show that by using lifelong model updates, it is possible to apply the expert's policy correctly even if the user behaviour changes over time. However, the executed policies strongly depend on teacher demonstrations, depending on the complexity of the task sufficient teacher demonstrations have to be recorded to cover all situations one wants to consider	Dialog system; imitation learning; lifelong learning; cognitive robotics; bayesian network
Stenkiewicz and Trawinska-Konador (2014)	PT	The aim of the paper is the presentation of the development of the polish qualifications framework (PQF) and qualifications system as an example of the implementation of knowledge management in public policy in Poland. As a result of applying the knowledge management approach, the initial proposal of the PQF was enriched and	Results refer to the PQF in the European Qualifications Framework. The publication of the report allowed further sharing of knowledge with a broader spectrum of stakeholders. The subsequent phases of the process included an assessment of the information and knowledge needs to be needed to proceed with the modernization of	Qualifications framework; knowledge management in public policy; lifelong learning; human capital

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Table 1.

Table 1.

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
<i>Thelen et al.</i> (2012)	DE	enabled a proposal to be elaborated for the modernization and integration of the qualifications system in Poland that allows for integration and permeability between specific qualifications subsystems as a part of the reform of lifelong learning policy in Poland The study presents a platform named RELOAD based on so-called Microtrainings and the usage of a semantic net. Thereby, they are individual, self-directed and continuous learning processes	the qualifications system in Poland, to close the knowledge management cycle The article suggests that to cope with the demographic change and to face the shortage of skilled workers, the employability of ageing workers has to be secured through demographic-sensitive learning offers. Striking and alerting in this context is that the participation rate of low-skilled and ageing workers in further education lags behind other groups of learners, and nearly no learning offers to exist which are directly targeted to this group and their special learning needs The article suggests to do not focus too much about the actual courses followed by a student (which is extremely tricky when a student is sent abroad) but more on what he/she gets as a whole concerning knowledge, skills and competences, taking also account of soft or generic skills like internationalization, multiculturalism, team group work, foreign language. Another interesting aspect is the use of tools such as RPL which is very useful The paper explores the role and contribution of the Bulgarian library associations in the development of	E-learning; microtraining; semantic-based knowledge platform; demographic change; low skilled ageing workers
<i>Thiriet et al.</i> (2012)	FR	The present research develops the work achieved within the ELLEJEC project, relative to International Modules (IM) and International Curricula Networks (ICN), concepts proposed in the project and experimented practically, to facilitate the mobility of students and of citizens/workers		Lifelong learning; recognition; mobility Of students; harmonization; RPL; accreditation
<i>Yankova et al.</i> (2012)	BG	The main goal of this research is to systematize the achievements in the implementation of projects and initiatives of		Library association; LIS higher education; lifelong learning; state university of

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
		the Bulgarian library associations in an effort to be effective partners of LIS higher education (especially with the State University of Library Studies and Information Technology), in LLL of LIS professionals. The article investigates the impact of the library organizations' activities on the theoretical fields of library and information science and education and also on library practice. Research methods: retrospective and systematic analysis, desk research and critical analysis of the results	librarianship in the country, in establishing a modern vision for libraries and librarians and their involvement in the information, educational, scientific and cultural construction of the emerging knowledge society. It is focused on the priorities in the work of library associations in response to mobilizing science knowledge and policy for sustainable development	library studies and Information technology
		The paper presents a research study launched in 2008 that was part of the call for proposals "Training of competences that establish LLL in the non-formal and informal learning dimension". The survey aimed to examine the will of the adult population to learn after completing formal studies. The methodology of the research relies on methods of analysis and the devices of the empirical study, implement the pilot studies, analyze the results and the observations of the study, elaborate the development proposals and the recommendations concerning the support priorities	Results show how learning during adulthood is considered by: most respondents to be essential for the work, lifestyle and general human behaviour that drives people to solve new challenges in the natural and social context. The personal motivation of adult education can be determined by a multitude of factors. One of the most important resources for continuous learning is learning and the methodological culture of learning promotion	Informal – nonformal – formal learning; lifewide – lifelong learning; adult education
		This paper describes a study of learner perceptions of construction industry skills requirements in Estonia	Results suggest that at the policy level, a simple, elegant vision of integration and mutual dependence between learners, industry and higher education institutions is prescribed. When investigated in more	Lifelong learning; engineering education; learner models; construction industry; Estonia

(continued)

Table 1.

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Pacheco (2011)	PT	Drawing upon the concept of “sliding signifiers” as having a multiplicity of meanings in a given context according to its actors and contexts, this paper explores globalization which does not mean homogeneity and uniformity. The paper examines these meanings by discussing the diverse points of view based upon existing educational and training policies, within the framework of the world agencies. The paper includes, in the first section, an integrated approach of the concepts of curriculum, LLL and evaluation and, in the second section, the discussion of each of these concepts	<p>detail, however, the individuality of learners, the pace at which skill level requirements are changing in the industry and the accommodation of previous, legacy education systems among other challenges add complexity</p> <p>Results show how reflecting upon curriculum, LLL and evaluation as themes related to education and training policies imply the discussion of their meanings taking into account different ways of looking at them, especially in a field which is marked by a disciplinary view. This does not mean the general acceptance of uniformity and the rejection of diversity, particularly when curriculum, learning and evaluation are discussed taking a personal stance</p>	Educational policies; training policies; globalization; life-long learning; evaluation; curriculum
Farrow (2011)	UK	A taxonomy of ethical questions based on dominant positions in metaethical moral theory is proposed. The author explains how this taxonomy can be applied in a way that facilitates the understanding of ethical issues in mobile learning	<p>In this article, the author discusses some of the ethical issues related to the use of mobile technologies in education. He argues that the frameworks used by educators and technologists fail to grasp the nature, scope and impact of ethical issues in mobile learning. This approach is intended to enhance (rather than replace) reflection on ethical issues and support those involved with mobile learning by helping them to think about ethics in a systematic way</p>	Mobile learning; policy; education; metaethics; methodology

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Aurora-Nicoleta <i>et al.</i> (2010)	RO	The purpose of the article is to present the main objectives and actions taken by the Romanian Institute of Education Sciences as national support services for e-Twinning in collaboration with the Center for Innovation in Education. At the same time, the authors mention the most important campaigns/projects developed within the programme in pre-university institutions in Romania	Results emphasize the benefits of co-working in such projects using the tools of the eTwinning platform. Approximately, 70,000 schools from 32 states are part of the system and they are involved in over 5,000 ongoing projects. Some of the approximately 850 projects carried out so far enjoyed international recognition, schools in Romania were among the finalists/winners or receiving either annual eTwinning prizes or European Quality Certifications from the Central Support Services of e-Twinning in Brussels	Etwinning; information technologies; lifelong learning
Hanson <i>et al.</i> (2010)	SE	The objective is to present the foundation for and the goals with a LLL-project. Nine universities in EU will collaborate around four themes to increase the attractiveness of Engineering Education. The areas are: The attractiveness of being an engineer Formal hinders Attracting students to studies in science and technology/engineering education Student retention Result: from the TREE – Teaching and Research in Engineering in Europe Socrates Thematic Network project, the TechBARO in Finland and the Technology Delegation project in Sweden has given inspiration in setting up the foundation for ATTRACT project together with other international initiatives	This paper discusses some aspects of the attractiveness of engineering and technology studies to be monitored by ATTRACT project the Enhance the Attractiveness of Studies in Science and Technology, ATTRACT, the project is within the EU a LLL Programme. The strength of the project is that it will be able to go in-depth into the practices of the partner universities	Engineering education; student recruitment; student retention; attractiveness of engineering studies
Poulová and Šimonová (2010)	CZ	Teams were established dealing with the process of e-learning implementation in the tertiary education, at the beginning being	In 2009 a research “Evaluation of the modern technologies contributing towards forming and development university	e-learning activities; e-learning implementation; tertiary education

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Table 1.

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Widmark and SE Koroma (2009)		<p>very informal, joining enthusiasts, and their activities were hardly supported. Pioneering e-learning activities in this period were usually financed from various, mostly European projects. Despite the starting troubles the awareness of possibilities provided by e-learning was spreading slowly but steadily. Nowadays there exist university departments specialized in e-learning and its implementation into the process of instruction. There was also established a system for funding e-learning activities, so it does not depend on the random effort of single employees any more</p> <p>The purpose of the steps for skills was to improve the internal quality of health and social care. This was to be achieved by developing the skills of the staff working close to older people. This learning project for LLL has been developed in the last ten years at the Teacher Education unit of the University of Stockholm. The same design but with different contents was used to increase the competence of different target groups; field teachers, policemen, medical staff, principals, etc</p>	<p>students' competences" focusing on e-learning implementation at Czech universities started, being supported by the Czech Science Foundation. There are 26 public universities accredited in the Czech Republic. Annual reports of these universities were the main source of information for this research. These trends have step by step resulted in both quantitative increase in ICT implementation and related activities in tertiary education and in a substantial shift in the quality of formal and informal view on e-Learning</p> <p>Results rely on the learning project for the course "Steps for Skills" which was a government, a multi-year national initiative to support the long-term quality of municipalities and development of skills in health and social care for older people. Researchers designed courses to carry out the learning activities on three levels: an individual level; an interactive level; a practical activity level. The three levels for learning have markedly contributed to an analysis of the geriatric care's activity and to development and renewal</p> <p>Discussion argued that it is necessary to follow the epithet "emotional literacy," very closely as a process of education for the production of discourses on emotion, rather than the discovery or recognition of certain</p>	<p>Learning design; lifelong learning; blended learning; collaborative learning; communication; learning dialogue</p>
Burman (2009)	UK	<p>The article's author cautions against subscription to emerging cultural discourses promoting the validity and expression of emotions distinguishing between a feminist agenda and</p>	<p>Life-long learning; emotional literacy paradigm; feminist research; educational research; educational development</p>	

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Wheeler and Yeats (2009)	UK	<p>appropriations of a pseudo-feminist discourse that now permeate neo-liberal governmentality. First, the article analyses the assumptions underlying the “emotional literacy” paradigm, before, secondly, addressing some specifically educational developments related to the shift towards “life span” and “LLL” within university assessment strategies in the form of “personal development profiles”</p> <p>To investigate implementation of e-portfolios, an explanatory case study on their use was carried out, initially focusing on three groups of students engaged in work-based learning and professional practice. The three groups had e-Portfolios embedded and assessed at different levels. Group 1 did not have the e-Portfolio embedded into their curriculum nor was the e-Portfolio assessed. Group 2 had the e-Portfolio embedded into the curriculum and formatively assessed. Group 3 also had the e-Portfolio embedded into the curriculum and were summatively assessed</p>	<p>inner, individual feelings. Rather than being passionate about emotions, the task is to analyze the patterns of writing about emotions in circulation. The article ends with some more general political connections that underline the broader political programmes served by the “emotional” turn</p> <p>Results show how the use of e-portfolios also promotes inclusivity in learning as it provides students with the opportunity to articulate their aspirations and take the first steps along the pathway of LLL. However, ensuring the uptake of opportunities within their learning is more complex than the students simply having access to the software. Results also suggest that the use of e-Portfolios needs to be integral to curriculum design in modules rather than used as an additional tool. In addition to this more user engagement was found in Group 2 where the e-Portfolio was formatively assessed only</p>	<p>Lifelong learning; e-portfolio; e-learning; curriculum design; summative assessment; Formative assessment</p>
Greener (2009)	UK	<p>This paper will explore the concepts and behaviours implied in the role-modelling of effective e-learning in the classroom, drawing on data from teachers and learners involved in using VLEs and other Web resources in face-to-face sessions. A study of Higher Education teachers in the UK</p>	<p>Discussion focuses on online and mixed learning which become familiar aspects of the university landscape; pedagogical discussions receive higher priority and ideas on how students can be enabled to learn the appropriate skills for employability and LLL, as well as the</p>	<p>Role modelling; social learning theory; teaching methods; conceptions of teaching</p>

(continued)

Table 1.

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Naumanen and Tukiainen (2010)	FI	This paper presents principles taken from literature on old age education based on cognitive ageing (compensating and supporting the deficiencies and strengths) not forgetting the impact of empowerment by current ICTs in the life of elderly people. The experience gained from directing a computer club for the elderly is demonstrated, based on a WWW-questionnaire , as well as observations made during years 2007–2008 in Preksämäki, Finland	thought of higher-order, attract attention. Teachers who are open to new ways of thinking about their subject, and welcome these self-directed student behaviours, are more likely to integrate new technologies into their teaching and their expertise with technology it will be a factor in how this integration works Results show how LLL, as an individual activity that spans over one's life is not a reality yet. Especially the elderly, those over 65 years, are in danger of lagging; the solid trust in one's activity and learning skills is required; besides, many aged today, lack the learning culture (Tikkanen, 2003). Moreover, results show that the continuing education programme for the elderly is strongly facilitated by peer-support which is experienced during informal club-based activities, as well as having a jointly planned content, which is tailored to their needs, motivation and ability Discussion presents how the shortage of highly qualified engineers in our knowledge-based economy requires the collaborative and coordinated action of academic institutions, professional societies, industry players, and education policymakers. In particular, LLL of engineers is considered as one of the most important presumptions for future growth and social welfare	Lifelong learning; elderly people; cognitive learning; ICT and elderly; computer clubs
Vardiambasis <i>et al.</i> (2007)	GR	This paper aims to identify the needs for LLL of Greek engineers, based on recent survey data publicly available by the Technical Chamber of Greece. This approach, as well as the experience gained from other actions carried out by TEIoC (i.e. the establishment of a unit for lifelong learning, the organization of summer schools in hot areas of engineering, workshops offered to the academic	Engineering education; consumer electronics; knowledge engineering; educational institutions; electrical products industry; continuing education; design engineering; power engineering and energy; Educational technology; collaboration	(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Dondi and Moretti (2007)	IT	<p>instructors), present to be efficient strategies for LLL education</p> <p>This paper presents a methodological proposal elaborated in the framework of two European projects dealing with game-based learning, both of which have focused on “quality” aspects to create suitable tools that support European educators, practitioners and lifelong learners in selecting and assessing learning games for use in teaching and learning processes</p>	<p>Results from both the projects Unit-Game (Game-Based Learning for Universities and LLL) and Sig-Glue (Special Interest Group for Game-Based Learning in Universities and LLL) are discussed. Both have involved organizations from different European countries, backgrounds and expertise, and as a result of this work, a ‘classification of games by learning purposes’ and an ‘evaluation framework for assessing games’ have been designed and placed at the disposal of European educators, practitioners and lifelong learners</p> <p>The paper summarizes findings from the SOCRATES Grundvig 1 project AduEdu –“Qualifications of Adult Educator in Knowledge Society”</p> <p>The novelty of this model is its description of the activity of adult educator on five levels: national, regional, institutional, interpersonal and individual</p>	<p>Foreign countries; learning processes; lifelong learning; instructional materials; educational games; instructional material evaluation; media selection</p>
Linkaityte et al. (2006)	LT	<p>The authors of this article aim to develop the theoretical conditions for modelling the activities of adult educators in the LLL. The document is based on theoretical literature and European and national policy documents on adult education and LLL, including observations derived from the personal experience of AduEdu partners from eight European countries. The roles and functions of adult educators are explored and a model is proposed for the design of the activity system for adult educators</p>	<p>The novelty of this model is its description of the activity of adult educator on five levels: national, regional, institutional, interpersonal and individual</p>	<p>Adult education; framework of qualifications; lifelong learning</p>
Kavrakos (2006)	GR	<p>This paper aims at understanding a methodological frame of certification for professional qualifications acquired via informal learning. A operational research</p>	<p>Discussion presents how RDAs are some of the most proper organizations to provide certified training programmes using new technologies customized for each employee</p>	<p>Certification; qualifications; unemployment; government; business; Continuing professional development;</p>

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
<i>Lesssen et al.</i> (2006)	PT	(OR) based model was made as a tool for Regional Development Agencies (RDAs) that consists of tests, evaluations and tutoring. The candidate evaluation takes into account the formal qualifications required by legislation includes the skills and the relevant professional experience but also relates to qualifications from his attendance of professional training seminars This paper aims to investigate the interaction between the sustainability of the European social model and the European Union's revised Lisbon Strategy and its focus on jobs and growth. The success of this strategy – following its five-year mid-term review in 2005 – depends on attempts to renew European competitiveness through, for example, innovation and LLL, and well-designed reforms of the European social model	or businessman or an unemployed citizen and their local needs. RDAs have the advantage to combine funds from the European Union, the national or the local government and demand a very small amount from the individual persons that come to be served	collaboration; vocational training; testing; legislation
<i>Kourtoumi</i> (2006)	GR	The first section of the paper discusses the concepts supporting digital collections by networking and integrating collections of digitized archival resources to create new services and infrastructures. The second part of the paper analyses from the educational perspective of LLL important social benefits, both quantitatively and qualitatively, of developing new	Findings show how the sustainability of the European social model depends on the success of the overall strategy for growth and jobs, in which innovation and LLL are key. The concrete solutions to achieve a successful combination of those factors in each member state need to be found by the countries themselves. That is why the preparation and implementation of Europe-wide National Reform Programmes for growth and jobs open an opportunity to drive competitiveness which should not be missed Results show how archives have a key role to play in underpinning learning in its broadest sense, both as a formal activity within an institution and informally within the community. This is becoming especially important in an increasingly KM-based environment where communities can look to archives for support and guidance in accessing content information	Competitive strategy; European union; European union information; social structure; lifelong learning; innovation Life-long learning; social policy; digital collections; archival resources

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Anastasiades (2005)	GR	infrastructures for accessing and using archival resources This paper intends to introduce the idea and content of educational digital divide, concerning the key actions of European Union policies on the confrontation of this social phenomenon	The paper shows how education and technology have become interrelated as concepts, now that the Internet, the educational multimedia and an array of asynchronous applications have inundated the educational environment. The educational process in the European Union is presented as the most important tool in the context of transformation towards the Information Society. Its role is to ensure the citizen all the necessary means to manage in a completely different social and technological environment	Web-based education; educational digital divide; European union policies; life-long learning
Whyley and Westwood (2005)	UK	This paper examines the steps taken towards realizing Wolverhampton Local Education Authority's (LEA) vision for a 21st century "Learning City" – placing all learners at the heart of the system. An outline is provided of the LEA's journey – aiming at personalized learning, from vision to reality for a city of 40,000+ learners	This paper reflects on the progress made by the City of Wolverhampton in trying to bring together all of the key elements currently recognized as being needed to enable 21st learning. It describes how one UK City has moved from a vision for e-learning to reality in the space of four years. The paper also looks beyond current developments to respond to the needs of learners as they engage in this technology-rich environment	E-learning; learners; technology; personalized learning
Sonyel (2004)	CY	This qualitative study unravels teachers' perception of involvement in LLL through literature review. It also attempts to foster and encourage LLL through professionalism and as the twenty-first century is approaching, learning throughout	The findings suggest that lifelong learning is significant as the nature of teaching demands teachers to be engaged in continuing career-long professional development and additionally, they are the schools' greatest asset to deliver knowledge.	Educational institutions; government; rhythm; education; educational programmes; instruments; economic forecasting; ethics; books; professional activities

(continued)

Table 1.

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Mihnev and Nikolov (2004)	BG	The document conceptualizes the experiences of the Center of Information Society Technologies, Sofia University, Bulgaria, in satisfying the learning and training needs of non-university publics who fall into situations that can be defined as determined by LLL	The findings of this study also indicate that lifelong learning is significant for educators and can be summed up under three main headings as: to develop themselves as professionals; learning throughout life will be essential for adapting to the evolving requirements of the labour market and for better mastery of the changing time-frames and rhythms; and the view of lifelong learning can be attached to individual and social development In developing this conceptualization the authors use research results and political agendas in two distinct areas: LLL and higher education systems. As a result of three streams of thought and practice, they outline an “interface” model of an interdisciplinary university structure, which aims to explicitly satisfy LLL market demands	Higher education; learning demands; learning delivery; lifelong learning; management; organization; service provider
Rosvik (2003)	NO	This paper presents a case study of a Norwegian primary school as an example of the approach used to introduce ICT policy in Norway. This paper presents a programme of a lower primary school (6 to 10 year-olds), which has taken up the challenge of focusing on learning to learn, including the use of ICT	After an overview of Norwegian school system and national goals for ICT in education, the paper describes the challenges teachers and schools face when implementing curricula designed to fulfil different national expectations, ranging from specific skills and pieces of knowledge to more general goals such as preparing students for the future society. The most important actor in the Norwegian classroom is the student while the teacher creates stimulating learning environments.	Elementary education; conditions for learning; organizing for learning; collaboration

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Breiter (2003)	DE	This paper tries to develop a concept of a regional education network that includes pre-school, K-12 and further education, public libraries and community centres, as well as other educational institutions. Taking the path of the digital divide as a social and educational divide and focusing on the school as one major player in the regional network, the innovation process and the actors involved in it are highlighted and explored. Using action research in a project between schools, local community, private partners and the university, the concept of the regional network is illustrated	Learning to learn and LLL are considered the main tasks of schools Results show that the so-called 'digital divide' seems to be a major social obstacle for the Information Society. Most experts agree that citizens will need competencies that go beyond the basic cultural skills. The idea of LLL illustrates a major problem of educational institutions: they work separately, they only process the results of the preceding phase and there is a lack of interconnection	Digital divide; equity; lifelong learning/ education; partnership
Hylen (2001)	SE	The paper will deal with the two most important challenges facing education today: the increasing globalization and permeation of ICT of our society. To meet these two challenges 18 Ministries of Education in Europe joined forces in 1997 to create a common internet platform, called the European Schoolnet. Two scenarios will be outlined: the diminishing school – a reduction of the schools and the role of the teacher and a growth in homeschooling; the expanding school – where the need for LLL puts the school in the centre of the development and changes the role of the	The objectives were to find synergies between national initiatives, to promote the use of ICT in education and to facilitate co-operation between schools in Europe. Now the time has come to ask not only what ICT can do for schools but also what ICT does to schools? How does the influence of ICT on society change the role of the school and the teacher? To help to transform the second scenario into reality, the European Schoolnet must in the coming year focus its attention on four areas: collaboration, communities, content and commerce	Communications; innovation; networks; policy

(continued)

Table 1.

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Jenkins <i>et al.</i> (2001)	UK	<p>teacher to become a guide to learning in schools and companies</p> <p>This article takes into consideration the long-term effect of a degree in graduate lives. Following a degree programme that has used active learning methods within a modular course for over 20 years, researchers provide a prototype to evaluate lifelong learning generated by modern teaching methods</p>	<p>While agreeing with other researchers that there are common benefits from a degree, they also conclude that there is a huge variation in the long-term effects of a course on a relatively homogeneous group of students. The variation derives from four main sources: background of individual students; different reconstructions of the same academic experience; the different personal circumstances during college; and the effects of individual careers after graduation (which in turn leads to further individual reconstructions)</p> <p>Twenty interviews with key SME training informants reveal that a simple transfer of material is unlikely to prove adequate; the peculiarities of the SME learning environment represent a major challenge to the design and delivery of effective multimedia management training for this sector. The proposed benefits of multimedia courseware for SME training are the removal of existing training barriers: time, cover, purchasing power, socializing multimedia, ICT skills, negative attitudes, Generic versus Bespoke Training</p>	<p>Life-long learning; degree; graduate lives; active learning methods; modern teaching methods</p>
Carr (1999)	UK	<p>The paper discusses a solution for developing multimedia management courseware in the higher and further education sectors, which can then be transferred to SMEs to meet their training needs</p>	<p>Courseware delivery; life-long learning; multimedia management courseware; small and medium-sized enterprises</p>	

(continued)

Authors – Year	Country	Aim – Method	Discussion – Results	Keywords
Rinne (1998)	FI	This article presents sociologically and historically oriented reconceptualizations of the changing relationship between labour and learning in the reflexive modern era. It claims that the whole modern division of labour does not merely reveal the nature by which we define morality but also it is a crucial condition for the whole solidarity of humankind	The article comes to the conclusion that the first modern period, and the Keynesian welfare state policy with its homogenous workforce and policies of full employment, has come to its historical end. The author sees that education has always been seen as a major component in the great Enlightenment project, which has been connected and incorporated by the national state. LLL, on the contrary, has been less incorporated, less an early modern, but more a marginal and informal position, waving the flag for both individuals and groups from below	Labour society; learning society; life-long learning; educational system

Table 1.

The idea of LLL first appeared in the 1970s, to promote social equality. At first, within a humanistic tradition, the first LLL policies were advocated as a model for developing a better society and quality of life that would allow people to adapt better to changes. Shifting from an idealistic to a pragmatic perspective, starting from the 1980s a climate featured by young unemployment, declining productivity and increasing public deficits, raised in Europe (Rubenson, 2006). In such times, LLL policies became a solution for those dissatisfied with their employment to enhance employability levels. Towards the end of the 1990s, a new set of transitions and adjustment challenges for society, industry and individuals happened. Increased exclusion of large segments of the population, especially of young adults, exacerbated socio-economic divisions and seen as a threat to Europe cohesion as such. Moreover, while there was an understanding that adult education in itself does not serve to create jobs, LLL was addressed to promote those life learning key-competences for adapting to new social and economic life. Such a policy evolution is linked to the research stream developed to evaluate the social impact of such policies and resumed in the review presented in Table 1.

In the review-table is possible to observe the above historical evolution of the LLL policies oriented to different outcomes (i.e. employability, social exclusion, development of strategic competencies). This progress is in line with a different target of the population. While that at the end 1990s LLL were thought as a way for helping older people to be updated with the last digital revolution (i.e. the spread of internet and of personal computers), nowadays LLL policies focus more on the young adult situation: namely, they are more oriented to avoid social exclusion by developing strategic LLL competencies instead of just technological skills. This change in LLL policies over time also affects the several methodologies used for delivering such policies. Indeed, lifelong learning policies are comprised between traditional and new methods programmes, very diverse and fragmented. Probably the most established LLL way of job inclusion among the EU member states is represented by apprenticeship and vocational practices, which will be next introduced together with other new learning methods-based communication technology (ICT) as a mean to educate participants, such as the Massive Open Online Courses (MOOCs).

Beyond conceptual and methodological differences, it is possible to observe a convergence point among the different LLL programmes: avoiding social exclusion through participation in the job market by enhancing self-employability. On the other hand, such institutional action has also been developed to face current criticisms regarding the supply of adult education in many European countries defined as inadequate because it often fails to include the most vulnerable groups such as the young, the unemployed, the low skilled (Jarvis, 2004). Recent criticisms on LLL policies' effects will be discussed after the following section on methods and LLL programmes.

Besides social exclusion, it should also be acknowledged the links set during the Sixth International Conference on Adult Education (CONFINTEA; 2017) between LLL and the 2030 Agenda for Sustainable Development by United Nations (Robinson, 2017). The conference affirmed the essential role of LLL in supporting the future transformation of the world, especially with regards to population health, environmental sustainability and economic resilience.

2.2 Traditional and new methods for delivering lifelong learning and job market inclusion in European young adults

In the following sections, we present different LLL programmes (i.e. apprenticeship systems, vocational training or vocational community colleges, active labour market programmes, ICT training and MOOCs) related to LLL policies development. Starting from the more

traditional and established programme, we will introduce next how computers and the internet have harnessed best to improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings.

2.2.1 Apprenticeship systems and vocational practices. In the review table, it is interesting to address the various ways in which EU member states deal with the transition from school to employment in their own country. Traditionally, there are three different ways in which the labour market integration of young peoples is organized in: apprenticeship systems (i.e. young people enter a company and attend vocational school-based training simultaneously), school/college-based vocational education, higher education (i.e. young people learn skills in an institutional setting) and learning-by-doing (i.e. young people enter the workplace and learn the necessary skills while working). In most countries, all three pathways are used depending on different occupations; however, the relevance of the different channels varies. For example, in Germany, despite many worries that the dual system no longer provides the safe transition to employment it once did (Busemeyer and Trampusch, 2013), still more than 60% of a school-leavers' cohort enter an apprenticeship (BMBF, 2013); while in the UK, the higher education initial participation rate of 18 and 19-year old in learning was 23% (Department for Education, 2014). Mediterranean and Latin states remain relatively centralized and comprehensive, with continuing domination of a fairly traditional educational paradigm. The Nordic countries moved partially and cautiously toward the apprenticeship system. However, they still stand apart in their regional affinities for local public control combined with structural and curricula integration and universalism. The Nordic states also tend to have extensive participation in adult continuing developing the established European LLL key-competences and have, arguably, gone further than most in realizing the goals of LLL (Öhrn and Weiner, 2017). As well, the vocational education and training system is seen as a priority by the European Union to promote the development of the member states. This priority has also been reaffirmed by the Maastricht Communiqué of 14 December 2004, which indicated the need for greater European cooperation in the field of Vocational Education and Training (VET), identifying the commitments that each EU member state would take actions that need to be done in this regard (Oliver, 2010).

In addition to these established pathways, many national governments installed active labour market programmes. Originally, these programmes were meant to be temporary and should address mass youth unemployment in the 1980s or after the transition of Eastern European countries (Sharland *et al.*, 2013). However, they seemed to have become established systems to address mainly disadvantaged people. Ideally, programmes address the individual needs of young people by getting skills to find employment (e.g. Careers' Services, finding an appropriate occupation, identification of necessary qualification needs, CV writing, job interview training), aid to gain the necessary qualifications and skills to enter a profession (e.g. school-based apprenticeships or other vocational training) or subsidized employment: i.e. young people enter temporary employment to gain work experiences and manage to build up networks, which should improve their chances in the unsubsidized labour market.

2.2.2 Innovation and new technologies for enduring learning. As a recognized part of training procedures, the Information and Communication Technology (ICT) in the learning and training field has made progress over time. This is noticeable in the last studies present in the review table suggesting that the integration of ICT in training has positive effects on learning results (Bates, 2001; Diochon and Cameron, 2001; Jochems *et al.*, 2013; Leask and Pachler, 2013). The way in which learning can result from the combination of education and training with the use of ICT is principally known as e-learning but also as computer-based

training (CBT) and web-based training and, eventually, as MOOC, (Ismail, 2001; Šumak *et al.*, 2011). MOOC have been considered as a possible solution for many emerging states for promoting a low cost but effective teaching system (Kaplan and Haenlein, 2016). For example, learn LLL key-competences such as word processing, programming, image editing, financial spreadsheets and web development do not necessarily require the presence of traditional education.

The reason why there are a variety of technologies, methodologies, frameworks and architecture systems available, is because the impact of learning aspects change, based on different user types, the subject of learning, and e-learning interaction necessary. The importance of multimedia learning aspects, for example, is related to the ability of users in dealing with these new instruments, which are in turn related to some user differences, as argued within the framework of the technology acceptance model theory (Davis *et al.*, 1989). Current technology acceptance research evaluates causal effect sizes between unskilled and experienced users (Šumak *et al.*, 2011). The acceptance of e-learning, studies commonly, consider young adults as typical users, where researchers usually find high acceptance of e-learning technology about this young generation compare to the previous ones. As well, from another point of view, the successful implementation and introduction of e-learning technologies require adaptability among teachers, professors and trainers who use these technologies for providing learning materials to users (Šumak *et al.*, 2011). Usually, such people need training too, to develop those LLL competences for benefiting, providing and spreading a better e-learning service.

E-learning technologies are mainly used in educational institutions, but as well in organizations to offer advanced ways of providing education to their users. The use of these technologies in the organizational field is quite recent. E-learning, as well as distance education systems, and MOOC have been considered by organizations as a possible solution for promoting a low cost, but effective training system, face learning challenges. But it is not only a question of costs; education programmes aim to address the worst contemporary problems: unemployment, skills mismatches and lack of labour mobility without borders inside or outside organizations, companies and institutions. Considering the Work programme 2014–2015 of Horizon 2020, in fact, the ICT is crucial to boosting the modernization of education and training for the developing the so-called LLL competences. The challenge is to reinvent the education ecosystem and re-empower teachers in the digital age. Partnerships and collaboration between public and private stakeholders – including innovative entrepreneurs – more open and innovative practices for richer and more engaging and motivating learning and teaching experiences will be key to facilitate the transformation of the education and training.

3. Discussion

As seen, in the last decade, a new model of LLL policy was developed to facilitate a more advanced understanding of processes of social inclusion. The approach recognizes the multi-dimensional nature of vulnerability and the ways in which young people draw on different resources to secure employment. To make effective these transitions, young people have to draw on a variety of resources including educational qualifications, vocational training and skills, as well as general knowledge. Aspects of a personal agency such as initiative and motivation are also crucial, and it is essential to acknowledge processes of rationalization as a factor that provides a mediating link between such personal resources and above outcomes. In many cases, young people are able to compensate for deficits in specific resources (education, for example). However, when a resource deficit is combined with weak policy agency, there is likely to be a dramatic increase in the chances of “negative” outcomes.

In these circumstances, those who were unable to rely on previous formal education were most vulnerable to social exclusion. In light of this, the development of LLL competences becomes the first step to take for any educational policymaker. In the next section, we will analyze the expected outcomes of such LLL policies and a discussion concerning recent criticisms on such programmes follows.

3.1 Employability and strategic lifelong learning key-competences development as significant outcomes of lifelong policies in Europe

With the economic crisis, the decreasing of job positions for younger, and the concurrent high rates of youth jobless, young people are remaining in education and training for a longer time and they get a stable occupation later in life. On the other side, a growing number of them find new ways of combining part-time work with education and training paths, sometimes through long periods. In most of the European countries, there has been a trend to shorter job periods, job jumping, the prevalence of part-time and short-term jobs and self-employed work (Mackenbach *et al.*, 2008). The psychological result of being a young adult without a work identity and continuously in training can generate situations of distress and negative mental states such as anxiety, depression, isolation, disaffection, disengagement, and, eventually, social exclusion (Quintano *et al.*, 2018; OECD, 2016). Lifelong learning policies are, in a way, responding to the demands of such a context. They look for providing a greater variety of flexible learning possibilities, including different settings of learning, by replying to the challenges of modern life and to the diverseness of individual needs. Personalized training careers involve individuals able to take responsibility for building their personal learning pathways to increase their strategic LLL key-competences and next employability. Nevertheless, this also means that organizations and communities must be sensitive to people's needs. For this reason, in many instances, LLL policies are recommended as a way of promoting social coherence (although not much attention is paid to how this can be reached).

Analysis of policies across Europe ranges all the way from demand-led of voluntary partnership in the UK (i.e. the network model) to the more formalized social partnership models of the northern continental and Nordic states, to the more static models common in more of the southern European states (Green, 2002). The common trend in legislation and governance in Europe has been away from direct government administrative control over educational processes and towards greater devolution of operational control to other levels. Given that, the growing uncertainty of employment has prompted new models for employment practices, eventually leading to new patterns and status of careers (Mills *et al.*, 2006).

Lifelong learning policies represent a driver to foster expertise among multiple organizations and jobs, potentially enabling creativity and performance (Maurer, 2001). Such a consideration appears of particular importance given that nowadays fewer individuals follow stable or expected career patterns within one organization, whereas a greater and growing number of career experiences are likely to develop across, rather than inside of, company boundaries (O'Mahony and Bechky, 2006). Such a mobile labour force may well need to rely on LLL policies interventions aiming at fostering higher employability. In line with literature from the career realm, it is underlined the role of the individual in continually managing career-related changes, entailing willingness and adaptability (Pulakos *et al.*, 2006) and defined career identity to give direction to one's career pathway. Such a LLL skill can be well-defined in terms of employability, which refers to the full range of individual capabilities to gain and maintain an employment and to obtain a new one if required (Hillage and Pollard, 1998). Employability has been

conceptualized from multiple perspectives and theoretical proposals, which encompass a focus on the individual, the organization, or the society as a whole. Such a construct, therefore, represents a concept underlying the development of LLL policies aiming to enable young adults to identify and develop the key-competences necessary to find, retain and progress in employment.

3.2 Lifelong learning policies collateral effect: challenging young people social exclusion issues in contemporary Europe

Young people at risk of social exclusion can also hold multiple disadvantages (e.g. disabilities, lack of school qualification, belonging to a minority ethnic group), all of which decrease further their chances of finding, retaining, and progressing in employment. Other young people come from a family background where previous generations were excluded from the labour market, and thus, lack an understanding of the needs to acquire or retain key-competences. These conditions can create vulnerable groups of people with few chances to be involved in LLL programmes. However, even without these kinds of disadvantages, the number of young people not in education, employment or training (NEET) within Europe remains high. It is remarkable that the number of young people not in employment but attending formal education varies across different European countries.

The differences stem from the educational systems, but other factors such as the length of compulsory schooling and access to tertiary education also play a role. On average, 37% of all young people within European member states are in formal education; however, this varies across the individual member states. After leaving formal education, they are either unemployed, inactive, passive job seekers, discouraged to enter the labour market or deliberately to avoid it. In 2009, when the financial crisis worsened by leaving few available jobs, in the EU, nearly 17% of the population 18–24 years of age were classified as NEET, varying from 6% in The Netherlands to 26% in Spain.

As seen earlier, LLL is expected to contribute to overcome the economic and social crisis and meet the Europe 2020 targets on employment, poverty reduction, education, sustainability and innovation. Especially for young adults, suitable LLL skills and qualifications are necessary to gain access to employment. In recent decades, there have been structural shifts which created mismatches between labour supply and demand (e.g. shift towards the service industries, shift towards non-manual labour) and those without the skills to adapt to these changes are more likely to become long-term unemployed or to work in low-paid unstable work (Forrier and Sels, 2003). Recent research shows that in a European comparison, there is a less vertical mismatch if the school-to-work transition is more highly stratified (Levels *et al.*, 2014).

Lifelong learning, in this context, allows young people to build up a lifelong habit to adapt to changes in the workplace. As the Education, Youth, Culture and Sport Council meeting recalls that the last economic crisis accentuated the importance of the education to work transition: ensuring that young people leave education and training with the best possible support to obtain their first job is critical. Young people who face unemployment or a slow transition may experience long-term adverse effects in terms of future labour market success, earnings or family formation. This may, in turn, jeopardize public and private investment in their education and training, which results in a loss for the society as a whole. This is particularly true in the context of demographic challenges, which put added pressure on Europe's increasing scarcity of young people to integrate quickly and effectively into the labour market. As a consequence, several EU benchmarks set for the 2020 focus on the transition from education and training into the labour market for facilitating policy exchanges under the Education and Training 2020 (ET2020) framework on measures to

enhance the employability of graduates (Council of the European Union, 2012). Moreover, for young adults, it is also relevant to remaining trainable by understanding the need to develop key-competences according to changes in the workplace. Nowadays every workplace presents rapid changes in tasks and in the structure, and it requires employees with the ability to adapt to these changes, to be positively engaged in LLL programmes.

3.3 All that glitters is not gold: risks connected to lifelong learning programmes and new challenges

Considering the situations seen above, the presence of several policies, programmes, institutions and guidelines related to LLL constitutes an important background for an analysis of existing LLL policies across European countries. On the other hand, the risk of an uncontrolled promotion of LLL policies exists. For instance, it is important to consider LLL as a universal right; however, it must be contextualized on the basis of the real needs of the stakeholder. Among others, the greatest risk is to create a logic of competition that encourages the continuing education of people already trained or with a stable job, excluding those who are not entered in any career or training programme.

Moreover, another challenge to be faced is represented by the uneven distribution of the costs for LLL between enterprises, individuals and families (OECD, 2001). Both the underrepresentation of vulnerable groups and the uneven distribution of funding show the persistent weakness and ineffectiveness of some adult education policies. However, the role of LLL is still vital to overcome the economic and social crisis and to meet the Europe 2020 targets by fostering higher. Indeed with the last decade, the focus on young people was reinforced with the adoption of the first European LLL political strategy. Quality education and training, successful labour market integration and increased mobility were identified as key to unleashing young people's potential and achieving the ongoing Europe 2020 objectives. To reach such goals, EU LLL programmes, policies and strategies were implemented as follows:

- The Youth Guarantee Scheme, which has been implemented at European or national level to ensure that all young people aged under 25 get good-quality employment offers, continuing education or an apprenticeship or traineeship within four months of leaving school or becoming unemployed. It is included in the Youth Employment Package.
- The EU Youth Strategy for 2010–2018, which aims to provide more and equal opportunities for young people in education and in the labour market, and to promote active citizenship and social inclusion for all young people.
- Youth on the Move, a framework of policy priorities for action at national and EU level to reduce youth unemployment by facilitating the transition from school to work and reducing labour market segmentation. Here, the role of public employment services is vital, as they promote the Youth Guarantee scheme to ensure that all young people are in a job, in education or in activation, creating a European Vacancy Monitor and supporting young entrepreneurs.
- The agenda for new skills and jobs (COM:2010; 682): a European contribution towards full employment, aimed at enhancing the performance of education and training systems and seeking to equip young people with the relevant skills and competences for labour market needs. Which aims to improve employability and employment opportunities for young people.
- The “Youth employment initiative” (2013), which reinforces and accelerates the measures outlined in the “Youth employment initiative”. It supports particularly young people not in education, employment or training in regions with a youth unemployment rate above 25%.

It is expected that appropriate investment in LLL will contribute to the overcoming the economic and social crisis and meet the Europe 2020 targets on employment, poverty reduction, and innovation. However, since then almost fifty policies have been developed over the last twenty years, recognize successful LLL programmes, both traditional and innovative, already reach out to young adults at risk of work and social exclusion, might help for developing new and better programs. In the next section, we analyze the practical implications concerning the present review and ways for managing such data.

4. Practical implications

Analyzing why, for which particular target group, and in which national and regional section, LLL programmes can be identified as successful could lead to better policy-making implantation. A practical proposal could be related to the development of a computational model that analyses, simplifies and connects data from all EU policy documents to allow easier access to information and to support policymaker in the different phases of the policy cycle. In this way, the policymaker would have the opportunity to explore the consequences of the introduction of new policies in advance of its effective application following a “what if [. . .]” approach. The investigation should consider quantitative and qualitative analyses to investigate policies both at the European and at the national level and in particular LLL policies, considering diversity issues as gender, culture, language, educational attainment, LLL competences developed, labour status, costs of previous LLL projects, etc. This would be an opportunity to generate new scientific knowledge, to create cooperation amongst different European countries and to collect data to compare and analyse adult education across Europe.

Since that most Educational and Training systems are now LLL competencies-centered, to guide the analysis of EU policies, the European taxonomy of Skills, Competences, Qualifications and Occupations (ESCO) can establish a framework capable of transcending sector and national specificities. Developed by the European Commission, the CEDEFOP (European Centre for the Development of Vocational Training), and a group of stakeholders, this taxonomy focused to the creation of a common language between education and training, and the labour market. ESCO is structured in three main hierarchical pillars: occupation (i.e. a grouping of jobs involving similar tasks, and which require a similar skillset); skill and competence; qualification (i.e. the formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards). These pillars are interrelated to each other.

In June of 2002, the European Commission identifies fifteen qualitative indicators of LLL grouped in four main areas:

- (1) skills, competencies, and attitudes (Area A);
- (2) access and participation (Area B);
- (3) resources for Lifelong Learning (Area C); and
- (4) strategies and system development (Area D).

In light of this LLL policy analysis, the assessment and feasibility of the policy-making could be supported by intelligent DSS based on this common language. DSS is a computer technology solution that can be used to support complex decision making and problem-solving.

Over the past three decades, DSS has taken on both a narrower or broader definition, while other systems have emerged to assist specific types of decision-makers faced with specific kinds of policy-making problems (Shim *et al.*, 2002). As a computer-based system the DSS, simplifying the language, knowledge, and problem processing systems, could: and

- spell out the multiple indicators, taxonomies, and analyses conducted;
- connect all variables aimed to highlight the theoretical policy-effects associations.

In the end, the model could show the effects of the overall system under the application of a certain policy. In this way, to obtain the desired achievements, the policymaker would have the opportunity to explore the consequences of the introduction of new LLL policies in advance, as well as its effective application, testing different scenarios.

5. Limitations

This study has some limitations, such as the presence of researches with different approaches in the vast area of lifelong learning. Indeed, lifelong learning policies could be applied to very specific fields, such as computer science or medical professions, to extreme generic jobs. Moreover, approaches of such studies present methodological differences among them, which make comparisons hard to establish. Many of these studies are based on descriptive and narrative experiences related to EU projects developed, whereas just a limited portion of them regard quantitative studies. Finally, some of European countries, such as Slovenia, do not present any study in relation to the experience of LLL policies in the past ten years.

6. Conclusion

The aim of this contribution was to deal with and then report about, the education policies aimed at increasing employability applied across Europe, through a comparative review of adult education and LLL. Such a recognition allows unearthing successful programmes applied by countries that tackled the unemployment raising of the past years more efficiently than others, confining the damages arose by social exclusion and inequality. This promises a potential for a stronger strategic focus, greater synergies and sharing best practices, simplification of the structure with fewer actions, as well as changes that are in line with the proposed recommendations for a provision of more inclusive and accessible opportunities. Perhaps most significantly, the new education and training programmes bring about a positive change to the legal framework of the programme, committing the Commission and Member States to ensure particular efforts to facilitate the participation of people with difficulties for educational, social, gender, physical, psychological, geographical, economic and cultural reasons (Kapoor *et al.*, 2017). This is a significant step in the process and represents a unique opportunity to implement LLL for all.

On the other hand, this contribution aimed at proposing a tool to support policy-making, which can be constituted by an intelligent DSS that would facilitate the institutions' decision processes and its policy-making. In particular, a DSS can show which education policy is needed, preventing future labour crisis and the formation of more NEET individuals. The creation of such an intelligent DSS could have implications on the whole of the European community, especially for policymakers as a guideline in the process of decision making for identifying appropriate measures for supporting young people and adults, taking into account diversity issues that represent risks of social exclusion and deepening the analysis of several labour market policies to capitalize on existing knowledge.

Note

1. Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80bn of funding available over seven years (2014 to 2020) – in addition to the private investment that this money will attract. Horizon 2020 is the financial instrument implementing the Innovation Union,

a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Seen as a means to drive economic growth and create jobs, Horizon 2020 has the political backing of Europe's leaders and the Members of the European Parliament. They agreed that research is an investment in our future and so put it at the heart of the EU's blueprint for smart, sustainable and inclusive growth and jobs.

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