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Developing Tomorrow's
Cloud Education Leaders

DEVELOPING TOMORROW'S CLOUD EDUCATION LEADERS

IO1 Guidelines for Skills and Competences for Adaptive Education Cloud Leaders

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ENGLISH VERSION

1. Introduction

L-CLOUD is a two years project, co-funded with the support of the European Union – Key Strategic Partnership for School Education under the European Program Erasmus plus. L-CLOUD is the acronym that stands for Developing Tomorrow's Cloud Education Leaders.

The project has been co-funded by the Cypriot National Agency: Foundation for the Management of European Lifelong Learning Programmes (FMELLP) in 2018.
The project started in October 2018 and it will last 24 months.

Cloud computing is an innovative technology that uses internet to deliver a wide variety of IT services and it is experiencing an exponential growth. For instance, supporting products such as mobile device applications are multiplying including email, information storage, file sharing, collaborative tools, digital communications and other services. At the same time, school leaders expectations are changing, so that educational institutions must show a significant leadership to embrace the challenges of innovative collaborative tools and contents (e.g. 24/7 access to secure, reliable networks and the ability to create, deliver and share contents across institutions).
Cloud Computing adoption in education remains fragmented because while Cloud Computing offers many advantages, decision makers are largely unaware of the potential benefits for learning, teaching, administration and management. Therefore, training and support systems are needed to help them keep up to date with the rapidly changing Cloud Computing environment. Leadership is also needed for pedagogical change, otherwise educators will continue the paradox of using old teaching methods but with new tools.

This report entails the **Guidelines for Skills and Competences for Adaptive Education Cloud Leaders**. The aim of this report is to set the baseline for the construction of the Qualification Framework for Education Cloud Leaders based on Skills and Competence.
The methodology to develop the Guidelines is based on the researches about the definition of the main concepts, state of the art in selected European countries and best practices. Furthermore, the Guidelines are based on the main results of the School on the Cloud projects and the competence frameworks collected at national, European and International level by the project partners.

The report (IO1.A4) is made of 5 parts, not considering the current introduction:

1) Preparation: State of the Art and Definitions that comprise a **dynamic and adaptive glossary** regarding the main terminology and concepts of L-CLOUD project and the **state of the art of the teachers and their leader training regarding cloud computers, leadership and innovative teaching methodology**;

2) Chapter 1: **Current and innovative practices**, easy mentioned as best practices, filtered from the results of the **SoC Network project** and **new practices discovered by the project partners**. The best practices have been then prioritized by 6 criteria's: EFFECTIVENESS; EFFICIENCY; RELEVANCE; PARTNERSHIP; TRASFERABILITY POTENCIAL and ETHICAL SUSTAINABILITY.

3) Chapter 2: a summative collection of **competence frameworks** and articles with competence guidelines developed in partner countries, European and international level for preparing teachers and school leaders for ICT based future world (dynamic curriculum developed included).

4) **Guidelines for Skills and Competences for Adaptive Education Cloud Leaders**;

5) **Annexes** which comprise:

- Annex 1: Activity: State of the art of Adaptive Cloud Leaders in selected partner's country (Cyprus, Spain, Romania, Greece, Belgium and The Netherlands and Italy);
- Annex 2: Activity: Current and Innovative practice of Adaptive Educational Cloud Leaders at European and International level;
- Annex 3: Activity: Identify existing competence frameworks and articles with the main skills and competences for educational cloud leaders at national, European and International level;
- Annex 4: IO1 Methodology.

The guidelines for Skills and Competences for Adaptive Education Cloud Leaders are intended to provide a mapping overview on the Adaptive Education Cloud Leaders professional profile, experience and best practices at the best of partners knowledge in Europe and beyond. The main conclusions of the analysis will support the project partners in better shaping the **Qualification Framework for Education Cloud Leaders based on Skills and Competence.**

The main findings regarding outlines that Cloud Computing in education is very important for schools in Europe thanks to its innovative power. Even if the changes could be slow and implemented differently from one country to another the potential is quite high and worldwide recognized. In general, Cloud Computing in education has been used extensively to support the main administrative function of the educational systems, while its integration in learning and teaching is much more fragmented by schools or depends on the initiative of single teachers. Indeed, the potential benefits of being leaders in CLOUD COMPUTING is not just related to saving money at managerial level, but also transforming the way teachers teach and the way students learn.

The partners involved into the development of the report are:

1. EACG-European Association of Career Guidance as project coordinator (CYPRUS);
2. UB – Universitat de Barcelona (SPAIN);
3. Colegiul National Pedagogic "Mircea Scarlat" (ROMANIA);
4. DOUKA EKPAIDEFTIRIA AE - PALLADION LYKEION EKFPAIDEUTHRIA DOUKA (GREECE);
5. EUROGEO VZW- EUROPEAN ASSOCIATION OF GEOGRAPHERS (BELGIUM);
6. DLEARN - European Digital Learning Network (ITALY).

2. Preparation: State of the Art and Definitions

This Chapter reviews and analyses the existing guidelines and competence structures/systems, reviews leadership concepts and approaches - defines goals and preferred outcomes and will set the state of the art of the **concept of Adaptive Education Cloud Leaders** in Europe.

2.1 L-CLOUD dynamic and adaptive Glossary

The **L-CLOUD DYNAMIC and ADAPTIVE GLOSSARY** is a fundamental tool designed by the project partners to store the main concepts and definition in relation to the project. Main concepts and definitions are stored in alphabetic order and will serve as baseline for the overall project.

The L-CLOUD Dynamic and Adaptive Glossary is available at the current Google Doc link:

https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit

Who is an Adaptive Educational Cloud Leader?

Adaptive Educational Cloud Leaders are experts with the aim to improve the quality of education and the education system itself. The adaptability of the leaders embraces the ability to influence and enthuse the others through personal advocacy, vision and drive, and to access resources to build a solid platform for change adapting the cloud technologies to teach, learn and manage the school system.

2.2 State of the art in selected partner countries about the Adaptive Educational Cloud Leaders

2.2.1 Introduction

The state of the art in selected countries wants to provide the general overview in terms of device, technique and scientific field at the best of partners knowledge in relation to Educational Cloud Leaders (2018/2019). Indeed, the project partners focus on the research of the common methodologies in their country of origin in relation to teachers, educational staff and headmaster. Also addressed is the curriculum in university programmes at national and regional level regarding teacher's preparation about the project topic. The researches have been focused on leadership concepts and approaches, goals and outcomes; as well as Cloud computing technologies and their use into the educational system.

Indeed, the aim is to understand how the different systems work and set guidance which take into consideration all the partners-counties involved into this research. In general it must be considered that there is no **common definition and strategy** among all the countries related to leadership and adaptive cloud leaders in Europe.

Selected countries are Cyprus, Spain, Romania, Greece, Italy, Belgium and The Netherlands.

2.2.2. Main findings about Cloud Computing

Each member state representing the consortium presents a **national strategy** for the implementation of **digital strategies**.

- In Italy and in Greece, there is no a direct link among teacher's competences related to cloud computing. In fact, in both countries initial education for teachers does not include explicitly Cloud Computing as a subject.

- **Cloud computing** in Italy is mentioned into the national digital plan to mainly support the school management (and administrative) system. While in Cyprus the focus of teacher's career is on digital literacy including cloud computing, and less on the management side (EU project - 2022), showing a completely different approach to the subject.

- All countries mention CPD, Continual Professional Development opportunities for teachers related to cloud computing (Spain, the Netherlands, Italy etc.) for using ICT to facilitate the learning process, to support the educational administration system and to create a new learning environment to facilitate the teaching profession;

- In Cyprus the use of ICT is a political priority, students on "Teacher" studies need to pass the exam of Educational technology, Information technology Support for Natural Science (different from Spain, Italy, Greece). In Romania, future teachers study disciplines such as Informational and Communication Technology: Computer application; Computer Assisted Training.

2.2.3 Main findings about leadership concepts in Europe

Managers, leaders and decision makers play a key role in carrying out tasks and duties in their educational organization, as the leaders and the decision makers have a relevant role to enable the transformation and change the education system.

Filtering the results from the SoC Network project, there are even **different definitions for leadership and styles of leadership in educational settings in Europe:** servant leadership, transactional leadership, emotional leadership, transformational leadership, strategic leadership, distributive leadership, e-leadership etc. while there is a clear distinction among **leadership and management in the educational organization.**

Making a step back, the project partners identified which are the competences that educational staff, teachers and their leader acquired during the studies and are necessary requirements to get job as teachers:

- In initial education for a teacher's career in **Greece, Italy, Romania** there is no evidence or direct link with Leadership as a competence to national curricula. Instead, teachers may acquire related competence as CPD, **Continuing Professional Development** opportunities as they want to increase their competences and skills as leaders. In **Cyprus**, future educational leaders need to attend a course in Educational Management and Technology if they attend a master's in education sciences – Educational Leadership and Administration.

- In **Spain educational leadership is considered to be a political priority** as it helps students to learn better, and allows for linking the school to its environment, and it is clearly stated in a **law of education** (LOMCE, 2013) in terms **of schools' autonomy** (selection of number of hours

per subject, pedagogical methods and contents) **and leadership** (extended competences for the head of the school) as the basis of school functioning. Spain highlights the importance of educational intelligence for educational leadership as a "shared leadership": strategic thinking, learning management, social relations and creation and animation of organizational structures **as main competences**. While in Italy the **concept of leadership** instead refers to innovation in the field of education; creation of partnership with research centres, universities and local partners with also the valorisation of existing good practices in the educational system.

- In **Belgium and the Netherlands**, a wide variety of opportunities is available on the web as far as taking the lead in educational management is concerned. Core examples focus mainly on initial stages of education accepting and implementing IT in the curriculum and how to benefit from user-friendly educational programs on the web. In order to innovate the curriculum in education considering the enormous wealth of opportunities in learning are immense. But during the last twenty years accepting and using all these tools has grown slowly compared to the speeds of the developments.

3. Chapter 1: Current and Innovative practice

In order to extract the right skills and competences for teachers and their leaders in Europe, current and innovative practices have been analysed. Partners have collected 17 "best practices" according to the criteria expressed in the Methodology (ANNEX N°2).

The 17th best practices[1] have been filtered by 6 criteria, namely: EFFECTIVENESS; EFFICIENCY; RELEVANCE; PARTNERSHIP; TRANSFERABILITY POTENCIAL and ETHICAL SUSTAINABILITY on a scale from 1 to 4, where 1 represent non-sufficient and 4 excellent.

The current and innovative practices that have been selected are:

1. **School on the Cloud** - it's a project aimed at introducing the implementation of Cloud Computing in Education, that provides a comprehensive overview of the aspects of leadership and management related to the implementation of the Cloud in the different education contexts.
   The implementation of the cloud in the school system includes visions, barriers, potential impact and suggestions. Indeed, examining educational visions help leaders to consider the role that the Cloud can play in formal and non-formal contexts[2].

   Average score for the 6 criteria: 3,416666667

   Source: https://www.schoolonthecloud.net/

2. **Greek Digital School – Photodentro** is a huge **repository of open educational resources and practices** that are related to the Greek national curriculum. The project is an innovative way to use cloud technology to efficiently lead education on a national level by the Greek Ministry of

[1] The comprehensive list of current and innovative practice, easily called best practices, are available at ANNEX 2. Best practices n13 and n14 have been "eliminated" as articles have not been consider as best practice to use, but they are available for reader consultation.
[2] http://www.eurogeography.eu/SoC/guidelines/ileader-guidelines.html#intro

Education and Religious Affairs. Indeed, it is a repository of learning objects, educational videos, educational software and open educational practices available for both teachers and students where the use of cloud technology aims for a broad reach and aims to achieve community building processes.

Average score for the 6 criteria: 3,027777778

Source: http://www.dschool.gr/ (available only in Greek)

3. **Cloud Computing for Education: A Professional Development Program for High School Teachers.** The current **program for teachers** was to explore ways in which Cloud Computing technologies can be used to improve classroom instruction. To this end, the program was designed to meet two objectives: first, to expose high school teachers to the concept of Cloud Computing and the technologies associated with it, and second, to help teachers develop curriculum units based on Cloud Computing technologies that can be integrated into different high-school subjects. The Cloud technology provides ample opportunities of exploiting the advantages of the new technologies. Furthermore, learners have further opportunities for collaboration, communication and handling data.

   Average score for the 6 criteria: 2,916666667

   Source: https://peer.asee.org/cloud-computing-for-education-a-professional-development-program-forhigh-school-teachers

While, the winner for each criteria is below represented:

1. **EFFECTIVENESS:** the results have to be measurable. As set of possible measurable can be diplomas, new curriculum, research project and new courses created;
   Most voted Best practice: **Greek Digital School – Photodentro** and the **SoC (School on the Cloud project)** tie first.

2. **EFFICIENCY:** the practices selected must produce results with a defined set of resources and time;
   Most voted Best practice: **SoC (School on the Cloud project)**.

3. **RELEVANCE:** the current and innovative practices need to be in line and fit with the ERASMUS PLUS priorities and L-CLOUD project objectives;
   Most voted Best practice: **Cloud Computing for Education: A Professional Development Program for High School Teachers.**

4. **PARTNERSHIP:** the selected best practices that have been co-created among different stakeholders such as schools, training institutes, research centre, policy makers;
   Most voted Best practice: **SoC (School on the Cloud project).**

5. **TRANSFERABILITY POTENCIAL:** each best practice and initiative must be open source so that the results can be available and consulted by all;
   Most voted Best practice: **SoC (School on the Cloud project)** and **Interactive School Books,** which is used by the Greek Ministry to deliver all books used in the Greek K-12 curriculum through the cloud to all students in the country. Indeed, all Greek schoolbooks are accessible through any browser in any pc or mobile device made available through the use of cloud technology.

6. **ETHICAL SUSTAINABILITY:** the best practices: sustainable from an environmental, economic and social point of view;
   Most voted Best practice: **SoC (School on the Cloud project).**

Understanding the varied projects, programmes and needs of the different educational systems in Europe is fundamental in order to achieve the leadership of the cloud in the educational system. According to the winning best practices, the following guidelines are mentioned:

- ***Change and readiness*** *as the ability for an organization to initiate and respond to change in ways that creates advantage for them, minimizing risks that they may face. The reading of an organization is crucial to cloud computing and top management should support this;*
- ***Governance****, as changes involve governance. Governance is the way education institutions are organized and managed according to three perspective: leadership, implementation procedures and education & learning;*
- ***Making Plans.*** *The governing principle is that an organization should design, implement and maintain a coherent set of policies, processes and system to manage the risks to its information assets, ensuring acceptable level of risk in terms of information security management system;*
- ***Implementation of leadership.*** *Leadership in an educational organization is a significant factor that affects effectiveness. Traditional leadership is a process in which one member of an organization influences and controls the behaviour of others in order to achieve common goals.*

4. Chapter 2: Competence Framework at a national, European and International level.

This chapter entails the collection of guidelines developed in partner countries, in Europe and internationally for preparing teachers and school leaders for ICT based future world, including strategies for dynamic curricula developments.

Project partners collected several competence framework and information related to the competences related to educational cloud leaders worldwide. The list below is the selection of the above-mentioned material by the project partners at the best of their knowledge.

Lists of competence framework and articles related to **adaptive educational cloud leaders**:

1. Five Traits of a Good Educational Leader (2014, USA);
2. The Teacher Leadership Competencies (2014, USA);
3. Educator and School Leader Competencies Can promote systems coherence in Competency Education (USA).
4. Teacher Leader Competency Framework (2015, USA);
5. Nine Competencies for Teaching Empathy (2018, USA);
6. Leadership Competence Framework (2014, Australia);
7. Top 10 Digital Skills for Education Leaders (2016, USA);
8. Charlotte Danielson's Framework for Teaching (2013, USA);
9. Digital Learning Framework for Post-Primary Schools (2015, Ireland);

10. Professional Development Framework for Digital Learning (2018, South Africa);
11. Technology in Education Framework: Teaching and Learning, Administrative Operations, Provincial Infrastructure (2013, Canada);
12. EDUCATIONAL LEADERSHIP COMPETENCE FRAMEWORKS (2014, Spain);
13. DIGITAL TEACHING COMPETENCE FRAMEWORKS (2017, Spain);
14. Catalonia: Digital framework - Digital Agenda 2020 (2014, Spain);
15. Catalonia: Reference framework (2018, Catalunya);
16. Fundation "Digital Spain" (Fundación España Digital) – (2015, Spain);
17. Leadership Competency Framework (2013, USA);
18. Standards for school leaders: competency frameworks and their applicability (2012, United Kingdom);
19. UNESCO ICT Competency Framework For Teachers (UNESCO 2011);
20. Teach to Lead – Leadership Competency Framework (2016, Australia);
21. Leadership Competency Framework (United Kingdom);
22. Digital Competence of Educators (2017, Luxemburg);
23. STRATEGISCH COMPETENTIE DENKEN (2018, The Netherlands);
24. SCHOOLLEIDERSREGISTER PO BASISCOMPETENTIES (The Netherlands);
25. Het geheim van de innovatieve schoolleider (The Netherlands).
26. Waar blijft de middenmanager? Een onderzoek naar de strategische rol van team- en afdelingsleiders in het voortgezet onderwijs (The Netherlands).
27. De leidinggevende in het onderwijs als regisseur (The Netherlands).
28. Competentieontwikkeling M-decreet (Belgium).
29. Een nieuw profiel voor de leraar secundair onderwijs. Hoe worden leraren daartoe gevormd? (Belgium).
30. Education competency frameworks (2016, UK);
31. Digital Skills competency framework (2018, UK);
32. Professional Digital Learning Framework (2018, UK);
33. Curriculum for Digital Education Leadership (2016, South Africa);
34. Building digital capabilities framework (2016, UK);
35. Leadership competency framework in education (2012, USA);
36. UK Professional Standards Framework – UKPSF (UK);
37. KIPP leadership framework and competency model (2016, USA);
38. National Council of School Leaders: Facilitation competency framework (2017, UK);

Numerous articles, curriculum and competence frameworks already exist in the fields of education, digital literacy and digital skills, they vary from country to country.

As for the purpose of the project, some limitations have been encountered as there is not a specific competence framework related to adaptive cloud educational leaders. Mainly articles and competence frameworks refer to leadership as a single concept, digital literacy and competences for teachers and education staff. Furthermore, different composition of skills and competences have been identified in relation to leadership and leadership concepts. There is no shared definition about the concept of leadership and educational leaders, as also reported previously in this report. It emerges the need to identify a common shared definition about leadership as a competence in relation to adaptive cloud educational leaders.

In the Competence Framework related to *Curriculum for Digital Education Leadership* (South Africa, 2016) the concept of educational leadership and digital skills has no clear indication to cloud technologies . But it provides an interesting overview, indeed *"…we propose digital education, which is about increasing people's capacity in digital literacy (i.e. context-based digital literacy practices), rather than a digital competence approach (because there is no one-size-fits-all method).* ***This therefore indicates a need for digital educational leaders who can lead others and foster digital literacy relevant to the individual and local contexts by: creating awareness of and enhancing access to available resources; developing capacity in individuals, curricula and organizations; making informed, context-appropriate decisions; and cultivating innovation or being change agents in their own contents****".*

Adaptive leadership is a complex process as it influences the analysis at different level. For instance, it entails the potential to inform decision makers regarding the choice of the cloud technologies suitable for different educational contexts and to inform instructional design about the need for new technologies, inverting what the L-CLOUD consortium has defined as the technology push. Adaptive educational leaders must lead by example and master digital technologies.

5. Guidelines for Skills and Competences for Adaptive Education Cloud Leaders

In a rapidly changing and interconnected world, it is essential for education systems to provide learners with adequate competencies to cope with social and professional realities in the 21st century (e.g. OECD, 2015a; Schleicher, 2015; Wiseman and Anderson, 2014). In the Information Age (Castells, 2010), knowledge-based professions require human capital that can coordinate complex challenges and adapt fluid skill sets to changing demands (e.g. OECD, 2010a, 2011). High-quality and equitable education is a key component in the acquisitions of the key competences for lifelong learning (Council of the European Union, 2006) and thus a priority across national governments and international organisations (e.g. European Commission, 2010; Fullan, 2010; Kinuthia and Marshall, 2013)[3].

[3] Digital Education Policies in Europe and Beyond, 2017, JRC Join Research Centre for Policy Report

According to the research developed by the project partners, in this chapter some guidelines have been identified to guide the L-CLOUD consortium to develop the Qualification Framework for Education Cloud Leaders based on Skills and Competence and in order to develop a training course.

Three main competence areas have been identified: **digital education, educational leadership and cloud computing for educational leaders.**

As for the first area identified, the European Framework for Digital Competence of Educators (DigCompEdu) a set of digital competences for educators to manage and seize the potential of digital technologies for enhancing and innovating education[4].

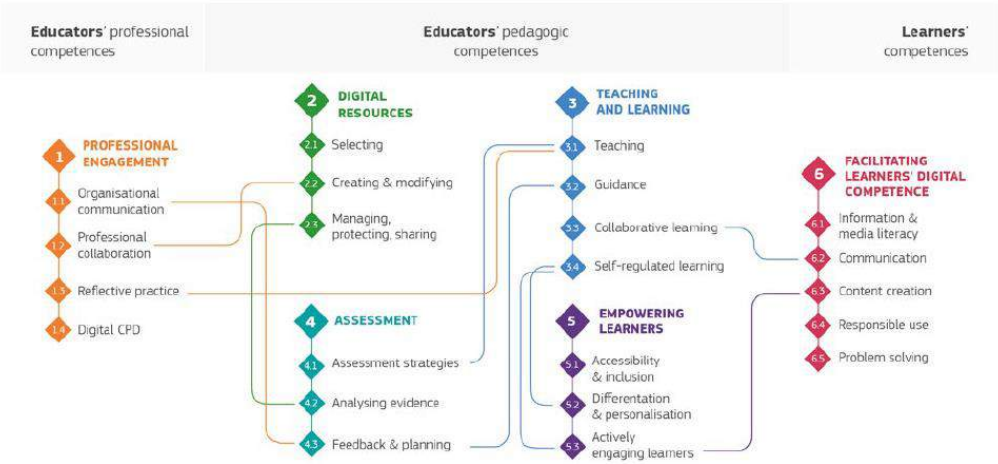


FIGURE 1: THE DIGCOMPEDU FRAMEWORK

The European Framework for Digital Competence of Educators has been taken as reference document as its aim is to provide a general framework to identify the educator's specific digital competences model as it also does not rely only on one level of education (primary vs tertiary education), but it is transversal to all the level of education.

The DigCompEdu identifies 6 areas: 1. **Professional development** for educators in terms of individual personal development and the use the digital technologies for professional interaction; 2. **Digital Resources**, instead is focused on the digital competences that educators need to use, create and share digital resources for learning; 3. **Teaching and Learning,** is dedicated to managing the usage of digital technologies in teaching and learning; 4. **digital technologies and assessment**; 5. **Empowering learners,** provides an overview of the potential of digital technologies for increasing the learning and teaching strategies towards a learners-centred approach; 6. **Facilitating Learners' Digital Competences,** last but not least the sixth area focuses on the pedagogical competences to facilitate students digital competences,

Concerning the second area identified, educational leadership, several competences framework and

[4] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu

articles have been analysed such as the Educational Leadership Competence Framework (2014, Spain); Standards for school leaders: competency framework and their applicability (2012, United Kingdom); Teach to lead (2014, Australia), Curriculum for Digital skills competence framework and much more. As stated in the Standards for school leaders: competency framework and their applicability framework, *competency frameworks and professional standards for school leaders are now widespread but expressed in differing degree of detail with some examining the leader's role in fine details and making a distinction between functional (or occupational) and personal competences, and with the evidence need to demonstrate "competence" at every level*[5].

As there are different leadership styles it is quite difficult to propose just one, in general traditional leadership is a process in which one member of an organization influences and controls the behaviour of others in order to achieve common goals (School on the Cloud: Guidelines for leaders and management, 2016)[6]. In the contest of Cloud Educational leaders, the main challenge is therefore to establish a framework for change and empowering member staff to embrace the pedagogical opportunities to create authentic learning while giving up control of learning to the leaders themselves. As stated in the Conceptual Framework for Digital Educational Leadership, a curriculum for digital leadership must entail at least 2 parts: digital education and leadership in digital education, with digital literacy as the basis for both. The underpinning assumption is that *when an individual becomes a digital education leader, that individual must first demonstrate capability in the practices identified with digital education*[7].

A holistic view of digital education leadership is provided below, where digital literacy is the baseline for digital education and being leaders in the field[8]:

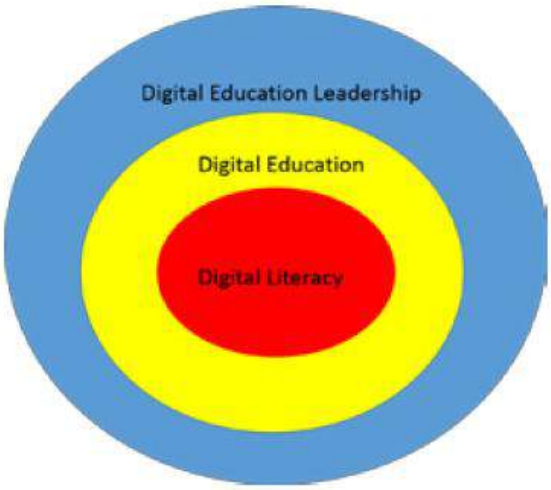


FIGURE 1. A HOLISTIC VIEW OF DIGITAL EDUCATION LEADERSHIP.

[5] http://www.schoolleadership.eu/sites/default/files/standards-school-leaders-competency-frameworks-applicability-2012_6.pdf
[6] School on the Cloud: Guidelines for leaders and management, 2016, School on the cloud project.
[7] Curriculum for Digital Education Leadership: a concept paper, Commonwealth of Learning and University of Cape town, 2016.
[8] Curriculum for Digital Education Leadership: a concept paper, Commonwealth of Learning and University of Cape town, 2016.

Furthermore, the concept of leadership cannot be separated from the one of governance, that represents the way in which institutions are formally organized and managed. Indeed, one of three perspective that the School on the Cloud project proposes is to see governance from the leadership perspective. From this analysis it emerges that *educational institutions must be prepared to implement cloud computing as cloud services impact on all the processes, making governance critical to effectively understand and control risks*[9]*.* According to the same analysis, *leaders should be able to determine whether managers are taking the necessary steps ensure a good system of governance is in place* making a distinction between the school educational leaders and the managers.

The third competence area identified is related to Cloud Computing for education and its adaptation to educational cloud leaders. As previously seen, different countries have approached cloud computing in different ways: from managing and administrate school system more efficiently (also in financial terms), some others have started already to understand the pedagogical potential behind it implementing innovative learning environment and changing the communication school strategy.

Due to the rapid change that technology brings and the financial limit to invest in the right technology, the need to have a clear vision on the role of educational leaders emerge. As suggested by the UNESCO ICT Competency Framework it is important to have a cross-sectoral approach through ICT in education (e.g. Teachers competences, learning material, ICT equipment etc.). The framework does not specifically mention Cloud Computing, but it offers a framework with three approaches to teaching: technology literacy, knowledge deepening and knowledge creation to structure the framework of ICT competences for teachers:

[9] School on the Cloud: Guidelines for leaders and management, 2016, School on the cloud project.

THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS			
	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

The framework not only divides in the three areas, but it also structures the teachers' work in six main aspects: understanding ICT in education, Curriculum and Assessment, Pedagogy, ICT, Organization and Administration, teacher professional learning. Even if it does not refer to educational leaders, the framework offers a valid approach to cloud computing in education.

In the *Technology in Education Framework: teaching and learning, administrative operations, provisional infrastructure* instead is a structure on the role and the responsibilities of the different actors involved in implementing ICT in education is presented. It provides an overview on the roles of the ministers, school division's professionals and advisory groups for implementing technology in education in terms of policy direction and effective governance. For each level of governance several roles have been identified, such as: Policy and direction, Infrastructure, Funding, Technology infusion, Professional learning, accountability, distance education, data collection and analysis, data and information management, future thinking.

In all the three areas identified, digital literacy represents the baseline for area development.

DUTCH(NL) VERSION

1. Inleiding

L-CLOUD is een project van twee jaar, medegefinancierd met de steun van de Europese Unie: een belangrijk strategisch partnerschap voor schoolonderwijs in het kader van het Europese programma Erasmus plus. L-CLOUD is het acroniem dat staat voor Developing Tomorrow's Cloud Education Leaders.

Het project werd medegefinancierd door het Cypriotische nationale agentschap: Stichting voor het beheer van Europese programma's voor levenslang leren (FMELLP) in 2018.
Het project is gestart in oktober 2018 en duurt 24 maanden.

Cloud computing is een innovatieve technologie die internet gebruikt om een breed scala aan IT-services te leveren en die een exponentiële groei doormaakt. Ondersteunende producten zoals toepassingen voor mobiele apparaten zijn bijvoorbeeld talrijk, waaronder e-mail, informatieopslag, delen van bestanden, hulpmiddelen voor samenwerking, digitale communicatie en andere diensten. Tegelijkertijd veranderen de verwachtingen van schoolleiders, zodat onderwijsinstellingen een belangrijk leiderschap moeten tonen om de uitdagingen van innovatieve samenwerkingshulpmiddelen en -inhouden te omarmen (bijv. 24/7 toegang tot veilige, betrouwbare netwerken en de mogelijkheid om te creëren, leveren en delen van inhoud tussen instellingen).
De acceptatie van cloud computing in het onderwijs blijft gefragmenteerd, terwijl cloud computing veel voordelen biedt, beleidsmakers zijn zich grotendeels niet bewust van de potentiële voordelen van leren, onderwijzen en beheer. Daarom zijn er trainings- en ondersteuningssystemen nodig om hen te helpen bij te blijven met de snel veranderende Cloud Computing-omgeving. Leiderschap is ook nodig voor pedagogische verandering, anders zullen docenten doorgaan met de paradox van het gebruik van oude lesmethoden, maar met nieuwe hulpmiddelen.

Dit rapport omvat de Richtlijnen voor vaardigheden en competenties voor Cloud Managers van Adaptive Education. Het doel van dit rapport is om de basis te leggen voor de constructie van het kwalificatiekader voor onderwijs Cloud Leaders op basis van vaardigheden en competenties.
De methodologie om de richtlijnen te ontwikkelen is gebaseerd op de onderzoeken naar de definitie van de belangrijkste concepten, de stand van zaken in geselecteerde Europese landen en de beste werkwijzen. Bovendien zijn de richtlijnen gebaseerd op de belangrijkste resultaten van de School on the Cloud-projecten en de competentiekaders die door de projectpartners op nationaal, Europees en internationaal niveau zijn verzameld.

Dit rapport (IO1.A4) bestaat uit 5 delen, los van de huidige introductie.

- Voorbereiding: Stand van zaken en definities die een **dynamische en adaptieve woordenlijst** bevatten met betrekking tot de belangrijkste terminologie en concepten van het L-CLOUD-project en de **stand van zaken aangaande de techniek van de leraren en hun opleiders met betrekking tot cloud computers, leiderschap en innovatieve onderwijsmethoden;**

- Hoofdstuk 1: **Huidige en innovatieve werkwijzen,** ookwel 'best practices'**,** gefilterd uit de resultaten van het **SoC Network-project** en **nieuwe praktijken ontdekt door de projectpartners.** De beste werkwijzen hebben vervolgens op basis van 6 criteria voorrang gekregen: EFFECTIVITEIT; EFFICIENCY; RELEVANTIE; PARTNERSCHAP; POTENTIELE OVERDRAAGBAARHEID en ETHISCHE DUURZAAMHEID.

- Hoofdstuk 2: een summatieve verzameling van **competentiekaders** en artikelen met competentierichtlijnen ontwikkeld in partnerlanden, Europees en internationaal niveau voor het voorbereiden van leraren en schoolleiders op ICT-gebaseerde toekomstige wereld (inclusief

een ontwikkeld dynamisch curriculum).

- **Richtlijnen voor vaardigheden en competenties voor Adaptief Onderwijskundig Leiderschap in de Cloud;**

- **Bijlagen in het Engels** deze omvatten:

- Bijlage 1: Activiteit: Stand van zaken van Adaptief Onderwijskundig Leiderschap in de Cloud in het land van de geselecteerde partner (Cyprus, Spanje, Roemenië, Griekenland, België en Nederland en Italië);

- Bijlage 2: Activiteit: huidige en innovatieve praktijk van Adaptief Onderwijskundig Leiderschap in de Cloud op Europees en internationaal niveau;

- Bijlage 3: Activiteit: identificeer bestaande competentiekaders en artikelen met de belangrijkste vaardigheden en competenties voor educatieve cloud-leiders op nationaal, Europees en internationaal niveau;

- Bijlage 4: IO1-methodologie

De richtlijnen voor vaardigheden en competenties voor Adaptief Onderwijskundig Leiderschap in de Cloud zijn bedoeld om een overzicht in kaart te brengen van het professionele profiel, de ervaring en voorbeelden van ´best practices´ van Adaptief Onderwijskundig Leiderschap in de Cloud, op basis van de beste kennis van partners in Europa en daarbuiten. De belangrijkste conclusies van de analyse zullen de projectpartners ondersteunen bij het beter vormgeven van **het kwalificatiekader voor Onderwijskundig Leiderschap in de Cloud op basis van vaardigheden en competenties.**

De belangrijkste uitkomsten met betrekking tot de contouren van Cloud Computing in het onderwijs is het belang voor scholen in Europa door haar innovatieve kracht. Zelfs al zijn de veranderingen traag en worden zij anders geïmplementeerd in de verschillende landen, dan nog is het potentieel vrij hoog en wereldwijd erkend. In het algemeen is Cloud Computing in het onderwijs op grote schaal gebruikt om de belangrijkste bestuurlijke functies van de onderwijssystemen te ondersteunen, terwijl de integratie in leren en onderwijzen veel meer gefragmenteerd is doordat scholen afhankelijk zijn van het initiatief van individuele docenten. De potentiële voordelen van CLOUD COMPUTING zijn namelijk niet alleen gerelateerd aan het besparen van geld op managementniveau, maar ook aan het transformeren van de manier waarop leraren lesgeven en de manier waarop studenten leren.

De partners die betrokken zijn bij de ontwikkeling van het rapport zijn:

- EACG-European Association of Career Guidance as project coordinator (CYPRUS);
- UB – Universitat de Barcelona (SPAIN);
- Colegiul National Pedagogic "Mircea Scarlat" (ROMANIA);
- DOUKA EKPAIDEFTIRIA AE - PALLADION LYKEION EKFPAIDEUTHRIA DOUKA (GREECE);
- EUROGEO VZW- EUROPEAN ASSOCIATION OF GEOGRAPHERS (BELGIUM);
- DLEARN - European Digital Learning Network (ITALY).

2. Voorbereiding: Stand van zaken en definities

Dit hoofdstuk beoordeelt en analyseert de bestaande richtlijnen en competentiestructuren / systemen, beoordeelt leiderschapsconcepten en -benaderingen - definieert doelen en gewenste resultaten en zal de stand van zaken bepalen van het **concept van Adaptief Onderwijskundig Leiderschap in de Cloud** in Europa.

2.1 L-CLOUD dynamische en adaptieve Begrippenlijst

De **L-CLOUD DYNAMISCHE en ADAPTIEVE BEGRIPPENLIJST** is een fundamenteel hulpmiddel dat door de projectpartners is ontworpen om de belangrijkste concepten en definities op te slaan in relatie tot het project. Hoofdconcepten en definities worden in alfabetische volgorde opgeslagen en dienen als basis voor het totale project.

De dynamische en adaptieve begrippenlijst L-CLOUD *Engelstalig* is beschikbaar op de huidige Google Doc-link:

https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit

Wat omvat Adaptief Onderwijskundig Leiderschap in de Cloud?

Adaptief Onderwijskundig Leiderschap in de Cloud manifesteert zich door middel van experts die zich als doel stellen de kwaliteit van het onderwijs en het onderwijssysteem zelf te verbeteren. Het aanpassingsvermogen van deze leiders omarmt het vermogen om de anderen te beïnvloeden en te enthousiasmeren door persoonlijke belangenbehartiging, visie en gedrevenheid, en om toegang te krijgen tot bronnen om een solide platform voor verandering te bouwen door de cloudtechnologieën aan te passen om het onderwijs te verbeteren aangaande onderwijzen, leren en op het gebied van onderwijsmanagement.

2.2 Stand van zaken in geselecteerde partner landen betreffende Adaptief Onderwijsjkundig Leiderschap in de Cloud

2.2.1 Inleiding

De stand van zaken in de geselecteerde landen wil een algemeen overzicht bieden op het gebied van gereedschappen ´tools´, techniek en wetenschap, op basis van de beste kennis van partners met betrekking tot ´Educational Cloud Leaders´ (2018/2019). De projectpartners concentreren zich hierbij op het onderzoek van de gemeenschappelijke methodologieën in hun land van herkomst met betrekking tot leraren, onderwijzend personeel en schooldirecties. Ook wordt aandacht besteed aan het curriculum in universitaire programma's op nationaal en regionaal niveau met betrekking tot de voorbereiding van de leerkracht op het onderwerp van het project. De onderzoeken zijn gericht op leiderschapsconcepten en -benaderingen, -doelen en -resultaten; evenals cloud computing-

technologieën en hun gebruik in het onderwijssysteem.

Het doel is om te begrijpen hoe de verschillende systemen werken en richtlijnen te geven die rekening houden met alle partnerlanden die betrokken zijn bij dit onderzoek. Over het algemeen moet worden geconcludeerd dat er **geen gemeenschappelijke definitie en strategie** bestaat tussen de landen met betrekking tot leiderschap en adaptief onderwijskundig leiderschap in de cloud in Europa.

De geselecteerde landen zijn Cyprus, Spanje, Roemenië, Griekenland, Italië, België en Nederland.

2.2.2. Belangrijkste uitkomsten betreffende Cloud Computing

Elke lidstaat die het consortium vertegenwoordigt, presenteert een **nationale strategie** voor de implementatie van **digitale strategieën.**

- In Italië en Griekenland bestaat er geen direct verband tussen de competenties van docenten met betrekking tot cloud computing. In beide landen omvat het initiële onderwijs voor leraren in feite niet expliciet Cloud Computing als onderwerp.

- **Cloud computing** in Italië wordt genoemd in het nationale digitale plan om voornamelijk het schoolmanagement (en administratief) systeem te ondersteunen. Terwijl in Cyprus de focus van de lerarencarrière ligt op digitale geletterdheid, waaronder cloud computing, en minder aan de managementkant (EU-project - 2022), toont dit een geheel andere benadering van het onderwerp.

- Alle landen noemen CPD, *Continual Professional Development* , voortdurende professionele ontwikkelingskansen, vergelijkbaar met een leven lang leren programma´s, voor leerkrachten met betrekking tot cloud computing (Spanje, Nederland, Italië enz.) Voor het gebruik van ICT om het leerproces te vergemakkelijken, om het onderwijsadministratiesysteem te ondersteunen en om een nieuwe leeromgeving te creëren en hierbij het lerarenberoep te faciliteren;

- In Cyprus is het gebruik van ICT een politieke prioriteit, studenten voor "Leraar" -studies moeten slagen voor het examen Educatieve technologie, Informatietechnologie ter Ondersteuning van Natuurwetenschappen (anders dan in Spanje, Italië, Griekenland). In Roemenië bestuderen toekomstige leraren disciplines zoals informatie- en communicatietechnologie: computertoepassingen; Computerondersteunde training.

2.2.3 Belangrijkste uitkomsten betreffende leiderschapsconcepten in Europa

Managers, leiders en beleidsmakers spelen een sleutelrol bij het uitvoeren van taken en plichten in hun educatieve organisatie, omdat de leiders en de beleidsmakers een relevante rol hebben om de transformatie en verandering van het onderwijssysteem mogelijk te maken.

Uit de resultaten van het School on the Cloud Netwerk project kwamen **verschillende definities voor leiderschap en stijlen van leiderschap in een onderwijskundige setting** in Europa naar voren: s HYPERLINK "https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit" ervant leadership, transactional leadership, emotional leadership, transformational leadership,

strategic leadership, distributive leadership, e-leadership etc. Er is echter een groot verschil tussen **leiderschap en management** in de onderwijsorganisatie.

De projectpartners identificeerden de competenties die onderwijspersoneel, docenten en hun leider tijdens de studies hebben verworven en welke zijn noodzakelijke vereisten om aan de slag te gaan als docent:

- In het initiële onderwijs voor een lerarencarrière in **Griekenland, Italië, Roemenië** is er geen bewijs of directe link met leiderschap als een competentie voor nationale leerplannen. In plaats daarvan kunnen leraren verwante competentie verwerven als **CPD**, permanente professionele ontwikkelingskansen omdat ze hun competenties en vaardigheden als leiders willen vergroten. In **Cyprus** moeten toekomstige onderwijsleiders een cursus Educatief Management en Technologie volgen als ze een master volgen in onderwijswetenschappen: onderwijsleiderschap en administratie.

- In **Spanje wordt onderwijskundig leiderschap beschouwd als een politieke prioriteit** omdat het studenten helpt beter te leren, en het mogelijk maakt om de school met zijn omgeving te verbinden, en het wordt duidelijk vermeld in een **wet van het onderwijs** (LOMCE, 2013) in termen van **de autonomie van scholen** (selectie van aantal uren per vak, pedagogische methoden en inhoud) **en leiderschap** (uitgebreide competenties voor het hoofd van de school) als basis voor schoolfunctioneren. Spanje benadrukt het belang van educatieve intelligentie voor pedagogisch leiderschap als een "gedeeld leiderschap": strategisch denken, leermanagement, sociale relaties en het creëren en stimuleren van organisatiestructuren als **hoofdcompetenties**. Terwijl in Italië het **begrip leiderschap** in plaats daarvan verwijst naar innovatie op het gebied van onderwijs; het creëren van een partnerschap met onderzoekscentra, universiteiten en lokale partners met ook de valorisatie van bestaande goede praktijken in het onderwijssysteem.

- In **België en Nederland** zijn op het web heel wat mogelijkheden beschikbaar voor zover het gaat om het voortouw nemen op het gebied van onderwijsbeheer. Kernvoorbeelden richten zich voornamelijk op de eerste stadia van het onderwijs, acceptatie en implementatie van IT in het curriculum en hoe te profiteren van gebruiksvriendelijke educatieve programma's op het web. Om het curriculum in het onderwijs te innoveren gezien de enorme rijkdom aan mogelijkheden zijn de kansen voor leren enorm. Maar in de afgelopen twintig jaar is het accepteren en gebruiken van al deze tools maar langzaam gegroeid in vergelijking met de snelheden van de ontwikkelingen.

3. Hoofdstuk 1: De Actuele en Innovatieve Praktijk

Om de juiste vaardigheden en competenties voor leraren en hun leiders in Europa in beeld te krijgen, zijn huidige en innovatieve werkwijzen geanalyseerd. Partners hebben 17 "best practices" verzameld volgens de criteria uitgedrukt in de Methodologie (BIJLAGE N ° 2).

De 17 beste voorbeelden zijn getoetst op 6 criteria, namelijk: EFFECTIVITEIT; EFFICIENCY; RELEVANTIE; PARTNERSCHAP; POTENTIËLE OVERDRAAGBAARHEID EN ETHISCHE DUURZAAMHEID daarbij werd een schaal van 1 tot 4 gehanteerd, waarbij 1 niet-toereikend of onvoldoende is en 4 uitstekend.

De actuele en innovatieve praktijkvoorbeelden die zijn geselecteerd:

- **School on the Cloud** - het is een project gericht op de introductie en implementatie van Cloud Computing in het onderwijs, het biedt een uitgebreid overzicht van de aspecten van leiderschap en management met betrekking tot de implementatie van de cloud in de verschillende onderwijscontexten.
  De implementatie van de cloud in het schoolsysteem omvat visies, belemmeringen, potentiële impact en suggesties. Het onderzoeken van educatieve visies helpt leiders om na te denken over de rol die de cloud kan spelen in formele en niet-formele contexten van het onderwijs.

  Gemiddelde score voor de 6 criteria: 3,416666667

  Bron www.schoolonthecloud.net

- **Greek Digital School - Photodentro** is een enorme **opslagplaats van open leermiddelen en -praktijkvoorbeelden** die verband houden met het Griekse nationale curriculum. Het project is een innovatieve manier om cloudtechnologie te gebruiken om het onderwijs op nationaal niveau efficiënt te leiden door het Griekse ministerie van Onderwijs en Religieuze Zaken. Het is inderdaad een opslagplaats van leerobjecten, educatieve video's, educatieve software en open onderwijspraktijken die beschikbaar zijn voor zowel docenten als studenten, waarbij het gebruik van cloudtechnologie een groot bereik beoogt en gericht is op community building-processen.

  Gemiddelde score voor de 6 criteria: 3,027777778

  Bron www.dschool.gr (alleen in Grieks)

- **Cloud Computing for Education: een professioneel ontwikkelingsprogramma voor middelbare schoolleraren**. Het huidige **programma voor leraren** was om manieren te verkennen waarop cloud computing-technologieën kunnen worden gebruikt om de lessen te verbeteren. Hiertoe was het programma ontworpen om aan twee doelstellingen te voldoen: ten eerste om leraren op de middelbare school kennis te laten maken met het concept Cloud Computing en de bijbehorende technologieën, en ten tweede om docenten te helpen bij het ontwikkelen van leerplaneenheden op basis van cloud computing-technologieën die kunnen worden gebruikt geïntegreerd in verschillende middelbare schoolvakken. De Cloud-technologie biedt volop mogelijkheden om de voordelen van de nieuwe technologieën te benutten. Verder hebben leerlingen nog meer mogelijkheden voor gegevens over samenwerking, communicatie en verwerking.

  Gemiddelde score voor de 6 criteria: 2,916666667

Bron https://peer.asee.org/cloud-computing-for-education-a-professional-development-program-forhigh-school-teachers

De hoogste scores per categorie en het daarbij behorende project:

• **EFFECTIVITEIT** de resultaten moeten meetbaar zijn. Als set van mogelijke meetbare resultaten kunnen dienen diploma's, nieuwe leerplannen, onderzoeksprojecten en nieuwe cursussen;
Meest gekozen best practices: **Greek Digital School - Photodentro** én het **SoC (School on the Cloud-project**)

- **EFFICIËNTIE** de geselecteerde praktijken moeten resultaten opleveren met een gedefinieerde set van middelen en tijd;
  Meest gekozen best practice: SoC (project School on the Cloud).

- **RELEVANTIE** de huidige en innovatieve werkwijzen moeten in overeenstemming zijn met en passen bij de ERASMUS PLUS-prioriteiten en de L-CLOUD-projectdoelstellingen;
  Meest gekozen beste praktice: Cloud Computing for Education: een professioneel ontwikkelingsprogramma voor middelbare schoolleraren.

- **PARTNERSCHAP** de geselecteerde best practices die zijn samengebracht onder verschillende belanghebbenden, zoals scholen, opleidingsinstituten, onderzoekscentra, beleidsmakers;
  Meest gekozen best practice: SoC (project School on the Cloud).

- **TRANSFERABILITY POTENCIAL:** each best practice and initiative must be open source so that the results can be available and consulted by all;
  Most voted Best practice: **SoC (School on the Cloud project)** and **Interactive School Books,** which is used by the Greek Ministry to deliver all books used in the Greek K-12 curriculum through the cloud to all students in the country. Indeed, all Greek schoolbooks are accessible through any browser in any pc or mobile device made available through the use of cloud technology.

- **POTENTIELE OVERDRAAGBAARHEID** elke beste praktijk en elk initiatief moet open source zijn, zodat de resultaten door iedereen beschikbaar en raadpleegbaar kunnen zijn;
  Best practices: **SoC (School on the Cloud-project)** én **Interactive School Books**, dat door het Griekse ministerie wordt gebruikt om alle boeken die in het Griekse K-12-curriculum worden gebruikt via de cloud aan alle studenten in het land te bezorgen. Inderdaad, alle Griekse schoolboeken zijn toegankelijk via elke browser op elke pc of mobiel apparaat die beschikbaar wordt gemaakt door het gebruik van cloudtechnologie.

- **ETHISCHE DUURZAAMHEID** de beste voorbeelden betreffende duurzaam vanuit een ecologisch, economisch en sociaal oogpunt.
  Best practice **SoC (School on the Cloud project).**

Het begrijpen van de gevarieerde projecten, programma's en behoeften van de verschillende onderwijssystemen in Europa is fundamenteel om leiderschap in de cloud in het onderwijssysteem te ontwikkelen en te bereiken. Volgens de winnende ´best practices´ worden hierbij de volgende richtlijnen genoemd:

- ***Verandering en gereedheid*** *als het vermogen van een organisatie om veranderingen te initiëren en hierop te reageren op manieren die voordelen voor hen creëren, waardoor de risico's waarmee zij worden geconfronteerd worden geminimaliseerd. Het begrijpen van een organisatie is cruciaal voor cloud computing en het topmanagement moet dit ondersteunen;*
- ***Governance,*** *aangezien veranderingen betrekking hebben op governance. Governance is de manier waarop onderwijsinstellingen worden georganiseerd en beheerd volgens drie perspectieven: leiderschap, implementatieprocedures en onderwijs en leren;*
- ***Plannen maken****. Het leidende principe is dat een organisatie een coherent geheel van beleidslijnen, processen en systemen moet ontwerpen, implementeren en onderhouden om de risico's voor haar informatieactiva te beheren, waardoor een aanvaardbaar risiconiveau wordt gewaarborgd in termen van informatiebeveiligingsbeheersysteem;*
- ***Implementatie van leiderschap****. Leiderschap in een educatieve organisatie is een belangrijke factor die de effectiviteit beïnvloedt. Traditioneel leiderschap is een proces waarbij een lid van een organisatie het gedrag van anderen beïnvloedt en controleert om gemeenschappelijke doelen te bereiken.*

4. Hoofdstuk 2: Competentie Framework op nationaal, Europees en Internationaal niveau.

Dit hoofdstuk omvat de verzamelingen van richtlijnen die in partnerlanden, in Europa en internationaal zijn ontwikkeld om leraren en schoolleiders voor te bereiden op ICT-gebaseerde toekomstige wereld, inclusief strategieën voor dynamische curriculaontwikkelingen.

Projectpartners verzamelden verschillende competentiekaders en informatie met betrekking tot de competenties gerelateerd aan onderwijskundig leiderschap in de cloud wereldwijd. De onderstaande lijst is de selectie van bovengenoemde materiaal verzameld door de projectpartners naar hun beste weten.

Lijst betreffende competentie framework en artikelen met betrekking tot **adaptief onderwijskundig leiderschap in de cloud** :

1. Five Traits of a Good Educational Leader (2014, USA);
2. The Teacher Leadership Competencies (2014, USA);
3. Educator and School Leader Competencies Can promote systems coherence in Competency Education (USA).
4. Teacher Leader Competency Framework (2015, USA);
5. Nine Competencies for Teaching Empathy (2018, USA);
6. Leadership Competence Framework (2014, Australia);
7. Top 10 Digital Skills for Education Leaders (2016, USA);
8. Charlotte Danielson's Framework for Teaching (2013, USA);

9. Digital Learning Framework for Post-Primary Schools (2015, Ireland);

10. Professional Development Framework for Digital Learning (2018, South Africa);

11. Technology in Education Framework: Teaching and Learning, Administrative Operations, Provincial Infrastructure (2013, Canada);

12. EDUCATIONAL LEADERSHIP COMPETENCE FRAMEWORKS (2014, Spain);

13. DIGITAL TEACHING COMPETENCE FRAMEWORKS (2017, Spain);

14. Catalonia: Digital framework - Digital Agenda 2020 (2014, Spain);

15. Catalonia: Reference framework (2018, Catalunya);

16. Fundation "Digital Spain" (Fundación España Digital) – (2015, Spain);

17. Leadership Competency Framework (2013, USA);

18. Standards for school leaders: competency frameworks and their applicability (2012, United Kingdom);

19. UNESCO ICT Competency Framework For Teachers (UNESCO 2011);

20. Teach to Lead – Leadership Competency Framework (2016, Australia);

21. Leadership Competency Framework (United Kingdom);

22. Digital Competence of Educators (2017, Luxemburg);

23. STRATEGISCH COMPETENTIE DENKEN (2018, The Netherlands);

24. SCHOOLLEIDERSREGISTER PO BASISCOMPETENTIES (The Netherlands);

25. Het geheim van de innovatieve schoolleider (The Netherlands)https://www.kpcgroep.nl/publicaties/boeken/proefschrift-het-geheim-van-de-innovatieve-schoolleider/

26. Waar blijft de middenmanager? Een onderzoek naar de strategische rol van team- en afdelingsleiders in het voortgezet onderwijs (The Netherlands). https://dspace.library.uu.nl/handle/1874/373165

27. De leidinggevende in het onderwijs als regisseur (The Netherlands). https://wij-leren.nl/persoonlijk-leiderschap-onderwijs.php

28. Competentieontwikkeling M-decreet (Belgium). https://onderwijs.vlaanderen.be/nl/competentieontwikkeling-m-decreet

29. Een nieuw profiel voor de leraar secundair onderwijs. Hoe worden leraren daartoe gevormd? (Belgium). https://www.vlaanderen.be/publicaties/een-nieuw-profiel-voor-de-leraar-secundair-onderwijs-hoe-worden-leraren-daartoe-gevormd-informatiebrochure-bij-de-invoering-van

30. Education competency frameworks (2016, UK);
31. Digital Skills competency framework (2018, UK);
32. Professional Digital Learning Framework (2018, UK);
33. Curriculum for Digital Education Leadership (2016, South Africa);
34. Building digital capabilities framework (2016, UK);
35. Leadership competency framework in education (2012, USA);
36. UK Professional Standards Framework – UKPSF (UK);
37. KIPP leadership framework and competency model (2016, USA);
38. National Council of School Leaders: Facilitation competency framework (2017, UK);

Er bestaan al tal van artikelen, curriculum- en competentiekaders op het gebied van onderwijs, digitale geletterdheid en digitale vaardigheden, deze verschillen van land tot land.

Wat het doel van het project betreft, zijn enkele beperkingen aangetroffen, aangezien er geen specifiek competentiekader is met betrekking tot adaptief onderwijskundig leiderschap in de cloud. Voornamelijk artikelen en competentiekaders verwijzen naar leiderschap als een enkel concept, digitale geletterdheid en competenties voor leraren en onderwijspersoneel. Verder is een verschillende samenstelling van vaardigheden en competenties geïdentificeerd met betrekking tot leiderschaps- en leiderschapsconcepten. Er is geen gedeelde definitie over het concept van leiderschap en educatieve leiders, zoals ook eerder in dit rapport is vermeld. Het blijkt dat er een gemeenschappelijke gedeelde definitie van leiderschap moet worden gedefinieerd als een competentie in relatie tot adaptief onderwijskundig leiderschap in in de cloud.

In het Competentie Framework met betrekking tot *Curriculum for Digital Education Leadership* (Zuid-Afrika, 2016) heeft het concept van pedagogisch leiderschap en digitale vaardigheden geen duidelijke indicatie voor cloudtechnologieën. Maar het biedt een interessant overzicht, inderdaad: "... we stellen ons digitaal onderwijs voor waarbij het gaat over het vergroten van de capaciteit van mensen op het gebied van digitale vaardigheden (dwz contextgebaseerde praktijken voor digitale geletterdheid), in plaats van een digitale competentiebenadering (omdat er geen one-size-fits-all methode is). **Dit duidt dus op een behoefte aan leiders in digitaal onderwijs die anderen kunnen leiden en digitale geletterdheid kunnen bevorderen die relevant is voor de individuele en lokale context door: bewustzijn creëren voor en toegang tot beschikbare bronnen vergroten; capaciteit ontwikkelen in individuen, curricula en organisaties; die geïnformeerde, contextgerichte beslissingen nemen; en daarbij cultiveren van innovatie ontwikkelen en veranderingsgericht zijn in hun eigen omgeving ".**

Adaptive leadership is a complex process as it influences the analysis at different level. For instance, it entails the potential to inform decision makers regarding the choice of the cloud technologies suitable for different educational contexts and to inform instructional design about the need for new technologies, inverting what the L-CLOUD consortium has defined as the technology push. Adaptive educational leaders must lead by example and master digital technologies.

Adaptief leiderschap is een complex proces omdat het de analyse op een ander niveau beïnvloedt. Het houdt bijvoorbeeld het potentieel in om besluitvormers te informeren over de keuze van de cloudtechnologieën die geschikt zijn voor verschillende onderwijscontexten en om educatieve ontwerpers te informeren over de behoefte aan nieuwe technologieën, het L-CLOUD-consortium heeft dit gedefi- nieerd als de technologische push. Adaptieve onderwijskundige leiders moeten het goede voorbeeld geven en zich meester maken van digitale technologieën.

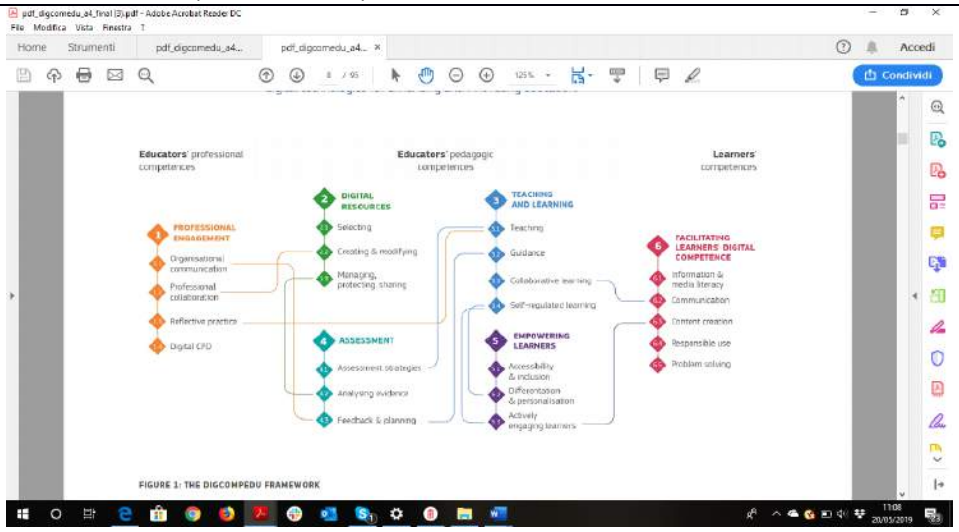
5. Richtlijnen betreffende Vaardigheden en Competenties voor Adaptief Onderwijskundig Leiderschap in de Cloud

In een snel veranderende en onderling verbonden wereld is het essentieel voor onderwijssystemen om studenten voldoende competenties te bieden om de sociale en professionele realiteit in de 21ste eeuw het hoofd te bieden (bijvoorbeeld OECD, 2015a, Schleicher, 2015; Wiseman and Anderson, 2014). In het informatietijdperk (Castells, 2010) vereisen kennisgebaseerde beroepen menselijk kapitaal dat complexe uitdagingen kan coördineren en vloeiend vaardigheden kan aanpassen aan de veranderende vraag (bijvoorbeeld OECD, 2010a, 2011). Hoogwaardig en rechtvaardig/gelijkwaardig onderwijs is een sleutelcomponent in de verwerving van de sleutelcompetenties voor een levenslang leren (Raad van de Europese Unie, 2006) en dus een prioriteit voor alle nationale regeringen en internationale organisaties (bijv. Europese Commissie, 2010; Fullan, 2010; Kinuthia en Marshall, 2013).

Volgens het onderzoek dat is ontwikkeld door de projectpartners, zijn in dit hoofdstuk enkele richtlijnen vastgesteld om het L-CLOUD-consortium te begeleiden bij het ontwikkelen van het kwalificatiekader voor onderwijskundig leiderschap in de Cloud op basis van vaardigheden en competenties en om een training te ontwikkelen.

Er zijn drie hoofdcompetitiegebieden vastgesteld: **digitaal onderwijs, onderwijskundig leiderschap en cloud computing voor leiders in het onderwijs.**

Wat het eerste geïdentificeerde gebied betreft, is het Europees kader voor digitale competentie van oonderwijskundigen (DigCompEdu) een reeks digitale vaardigheden voor onderwijzenden om het potentieel van digitale technologieën voor het verbeteren en innoveren van onderwijs te beheren en te benutten.



The European Framework for Digital Competence of Educators has been taken as reference document as its aim is to provide a general framework to identify the educator's specific digital competences model as it also does not rely only on one level of education (primary vs tertiary education), but it is transversal to all the level of education.

Het Europese kader voor digitale bekwaamheid van onderwijzenden is als referentiedocument genomen omdat het een algemeen kader beoogt om het specifieke model voor digitale vaardigheden van de onderwijzer te identificeren, aangezien het niet alleen op één opleidingsniveau (primair versus tertiair onderwijs) is gebaseerd, maar het is transversaal naar alle niveaus van het onderwijs.

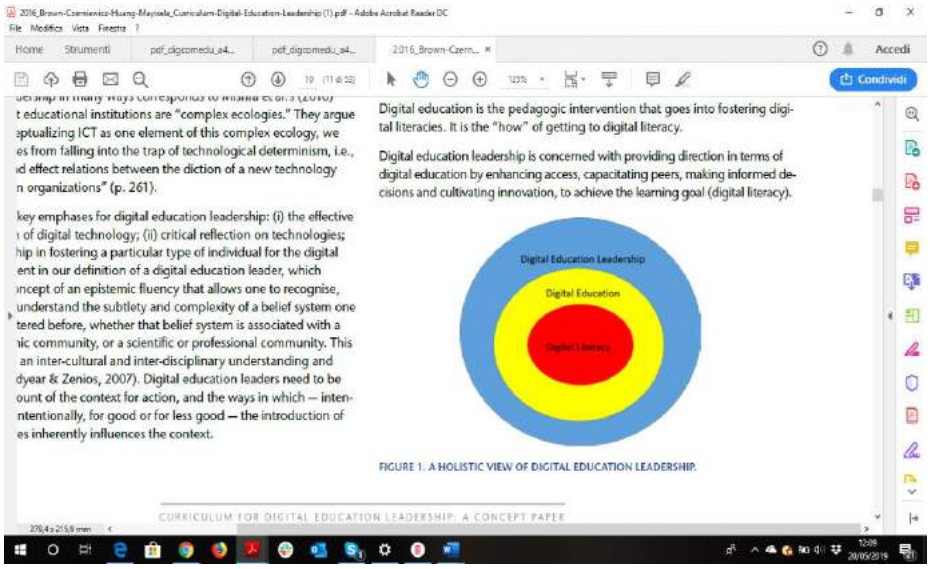
De DigCompEdu identificeert 6 gebieden: 1. **Professionele ontwikkeling** voor onderwijzenden in termen van individuele persoonlijke ontwikkeling en het gebruik van de digitale technologieën voor professionele interactie; 2. **Digitale bronnen**, dit is vooral gericht op de digitale competenties die onderwijzenden nodig hebben om digitale bronnen te gebruiken, aan te maken en delen en om te onderwijzen; 3. **Onderwijzen en leren**, is gewijd aan het beheer van het gebruik van digitale technologieën bij lesgeven en leren; 4. **digitale technologieën en toetsing;** 5. **Empowerment van lerenden**, biedt een overzicht van het potentieel van digitale technologieën voor het vergroten van de leer- en onderwijsstrategieën naar een op leren gerichte aanpak; 6**. Het faciliteren van de Digitale competenties van lerenden** , zeker niet op de laatste plaats, het zesde gebied richt zich op de pedagogische competenties om de digitale vaardigheden van leerlingen te vergemakkelijken,

Met betrekking tot het tweede geïdentificeerde gebied, onderwijskundig leiderschap, is een kader met verschillende competenties en artikelen geanalyseerd, zoals het Educational Leadership Competence Framework (2014, Spanje); Normen voor schoolleiders: competentiekader en hun toepasbaarheid (2012, Verenigd Koninkrijk); Teach to lead (2014, Australië), Curriculum for Digital skills competence framework en nog veel meer. Zoals vermeld in de Standaarden voor schoolleiders: competentiekader en haar toepasbaarheidsraamwerk, *de competentiekaders en de professionele normen voor schoolleiders zijn nu wijdverspreid maar uitgedrukt in verschillende mate van detail, waarbij sommige*

de rol van de leider in fijne details onderzoeken en een onderscheid maken tussen functionele (of beroepsmatige) en persoonlijke competenties, en met het bewijsmateriaal moet "competentie" op elk niveau worden aangetoond.

Omdat er verschillende leiderschapsstijlen zijn, is het vrij moeilijk om er slechts één te presenteren, in het algemeen is traditioneel leiderschap een proces waarbij een lid van een organisatie het gedrag van anderen beïnvloedt en controleert om gemeenschappelijke doelen te bereiken (School on the Cloud: richtlijnen voor leiders en management, 2016). In de wedstrijd van Cloud Education-leiders is de belangrijkste uitdaging daarom om een kader voor verandering in te stellen en medewerkers van leden de mogelijkheid te bieden de pedagogische mogelijkheden te omarmen om authentiek leren te creëren en de controle over het leren op te geven aan de leiders zelf. Zoals gesteld in het conceptueel kader voor digitaal onderwijsleiderschap, moet een curriculum voor digitaal leiderschap ten minste twee delen omvatten: digitaal onderwijs en leiderschap in digitaal onderwijs, met digitale geletterdheid als basis voor beide. De onderliggende veronderstelling is *dat wanneer een individu een leider in digitaal onderwijs wordt, dat individu eerst vermogen moet aantonen in de praktijken die zijn geïdentificeerd met digitaal onderwijs.*

Een holistische kijk op leiderschap op het gebied van digitaal onderwijs wordt hieronder weergegeven, waar digitale vaardigheden de basis vormen voor digitaal onderwijs en leiders zijn in het veld:

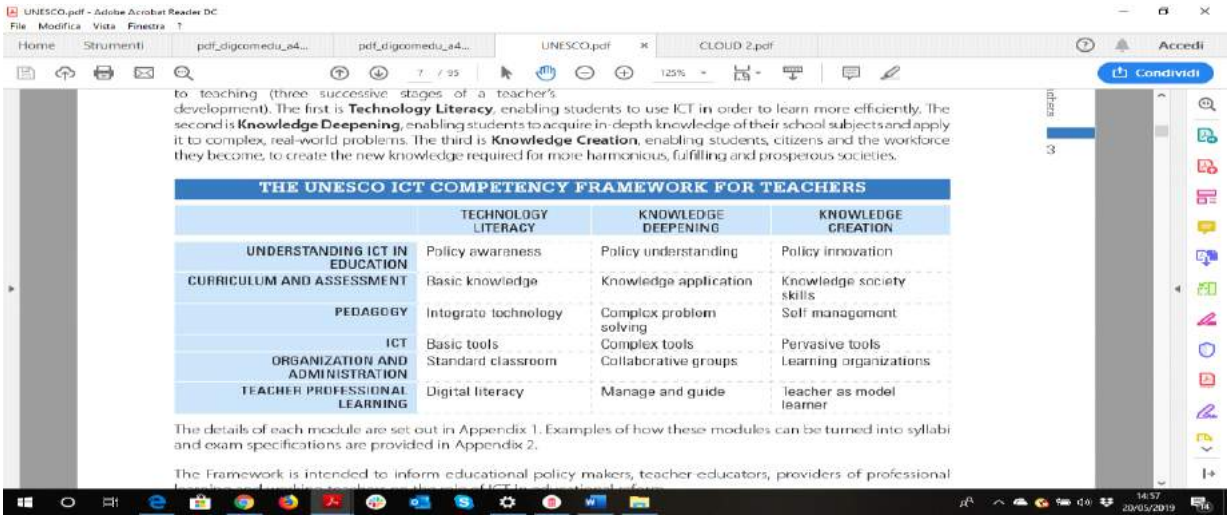


Bovendien kan het concept van leiderschap niet worden gescheiden van dat van bestuur/governance, dat is de manier waarop instellingen formeel worden georganiseerd en beheerd. Inderdaad, een van de drie perspectieven die het project School on the Cloud voorstelt is om governance te zien vanuit het perspectief van leiderschap. Uit deze analyse blijkt dat *onderwijsinstellingen bereid moeten zijn om cloud computing toe te passen aangezien cloudservices impact hebben op alle processen, waardoor governance cruciaal is om risico's goed te begrijpen en beheersen.* Volgens dezelfde analyse moeten leiders kunnen bepalen of managers de nodige stappen ondernemen om te zorgen voor een goed governancesysteem dat een onderscheid maakt tussen de schoolleiders en de managers.

Het derde geïdentificeerde competentiegebied heeft betrekking op Cloud Computing voor onderwijs

en de aanpassing ervan aan onderwijskundige cloud leaders. Zoals eerder gezien, hebben verschillende landen cloud computing op verschillende manieren benaderd: van het efficiënter beheren en beheren van het schoolsysteem (ook in financiële termen), sommige anderen zijn al begonnen het pedagogische potentieel te begrijpen dat achter de implementatie van een innovatieve leeromgeving en de communicatie over de school en onderwijsstrategie veranderd.

Vanwege de snelle verandering die technologie met zich meebrengt en de financiële beperkingen om te investeren in de juiste technologie, ontstaat de behoefte aan een duidelijke visie op de rol van onderwijsleiders. Zoals voorgesteld door het UNESCO ICT Competentiekader is het belangrijk om een intersectorale benadering te hebben door middel van ICT in het onderwijs (bijv. Competenties van docenten, leermateriaal, ICT-apparatuur, enz.). In dit kader wordt Cloud Computing niet specifiek genoemd, maar het biedt een kader met drie benaderingen van lesgeven: technologiegeletterdheid, kennisverdieping en kenniscreatie om het raamwerk van ICT-competenties voor leraren te structureren:


to teaching (three successive stages of a teacher's development). The first is **Technology Literacy**, enabling students to use ICT in order to learn more efficiently. The second is **Knowledge Deepening**, enabling students to acquire in-depth knowledge of their school subjects and apply it to complex, real-world problems. The third is **Knowledge Creation**, enabling students, citizens and the workforce they become, to create the new knowledge required for more harmonious, fulfilling and prosperous societies.

THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS

	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	teacher as model learner

The details of each module are set out in Appendix 1. Examples of how these modules can be turned into syllabi and exam specifications are provided in Appendix 2.

The Framework is intended to inform educational policy makers, teacher educators, providers of professional

Het raamwerk onderscheidt niet alleen op drie gebieden, maar structureert ook het werk van de docenten in zes hoofdaspecten: begrip van ICT in het onderwijs, Curriculum en Assessment, Pedagogiek, ICT, Organisatie en Administratie, het professioneel leren van docenten. Ook al verwijst het niet naar onderwijsleiders, het raamwerk biedt een geldige benadering van cloud computing in het onderwijs.

In de *Technologie in een Onderwijskundig Raamwerk: onderwijs en leren, administratieve activiteiten, voorlopige infrastructuur* wordt een structuur gepresenteerd over de rol en de verantwoordelijkheden van de verschillende actoren die betrokken zijn bij de implementatie van ICT in het onderwijs. Het biedt een overzicht van de rollen van de ministers, de professionals van de schooldivisies en adviesgroepen voor het implementeren van technologie in het onderwijs in termen van beleidsrichting en effectief bestuur. Voor elk bestuursniveau zijn verschillende rollen geïdentificeerd, zoals: beleid en richting, infrastructuur, financiering, technologie-infusie, professioneel leren, verantwoording, afstandsonderwijs, gegevensverzameling en -analyse, gegevens- en informatiebeheer, toekomstdenken. Op alle drie geïdentificeerde gebieden vormt digitale alfabetisering de basis voor gebiedsontwikkeling.

FRENCH VERSION

1. Introduction

L-CLOUD est un projet de deux ans, cofinancé avec le soutien de l'Union européenne: un partenariat stratégique important pour l'éducation scolaire dans le cadre du programme européen Erasmus plus. L-CLOUD est l'acronyme de Developing Tomorrow's Cloud Education Leaders.

Le projet a été cofinancé par l'Agence nationale chypriote: Fondation pour la gestion de programmes européens d'apprentissage tout au long de la vie (FMELLP) en 2018.
Le projet a débuté en octobre 2018 et dure 24 mois.

Le cloud computing est une technologie innovante qui utilise Internet pour fournir une large gamme de services informatiques et connaît une croissance exponentielle. Les produits de support tels que les applications pour appareils mobiles sont nombreux, notamment la messagerie électronique, le stockage d'informations, le partage de fichiers, les outils de collaboration, la communication numérique et d'autres services. Dans le même temps, les attentes des chefs d'établissement évoluent et les établissements d'enseignement doivent faire preuve de leadership afin de relever les défis des outils et du contenu de collaboration innovants (par exemple, un accès 24/7 à des réseaux sécurisés et fiables et la capacité de créer, de diffuser et de partager du contenu entre institutions).

L'acceptation de l'informatique en nuage dans l'éducation reste fragmentée, alors que l'informatique en nuage offre de nombreux avantages, mais que les décideurs ne sont généralement pas conscients des avantages potentiels de l'apprentissage, de l'enseignement et de la gestion. C'est pourquoi des systèmes de formation et de support sont nécessaires pour les aider à rester en phase avec l'évolution rapide de l'environnement de Cloud Computing. Le leadership est également nécessaire pour un changement pédagogique, sinon les enseignants continueront à utiliser le paradoxe consistant à utiliser des méthodes d'enseignement anciennes, mais avec de nouveaux outils.

Ce rapport comprend les Lignes directrices relatives aux aptitudes et compétences destinées aux gestionnaires de Cloud en éducation adaptative. Le présent rapport a pour objectif de jeter les bases de la construction du cadre de qualification pour l'éducation des leaders dans le Cloud, basé sur les aptitudes et les compétences.

La méthodologie d'élaboration des lignes directrices repose sur des études portant sur la définition des concepts clés, l'état des lieux dans certains pays européens et les meilleures pratiques. De plus, les lignes directrices sont basées sur les résultats les plus importants des projets de School on the Cloud et sur les cadres de compétences rassemblés par les partenaires du projet aux niveaux national, européen et international.

Ce rapport (IO1.A4) comprend 5 parties distinctes de l'introduction actuelle.

• Préparation: état des lieux et définitions comprenant un glossaire dynamique et adaptable concernant la terminologie et les concepts clés du projet L-CLOUD et l'état de la technique des enseignants et de leurs formateurs en ce qui concerne les ordinateurs en nuage, leadership et méthodes d'enseignement novatrices;
• Chapitre 1: Pratiques actuelles et innovantes, également connues sous le nom de meilleures pratiques, filtrées des résultats du projet SoC Network et des nouvelles pratiques découvertes par les partenaires du projet. Les meilleures pratiques ont ensuite été hiérarchisées en fonction de 6 critères: EFFECTIVITÉ; EFFICACITÉ PERTINENCE Partenariat; TRANSFERABILITE POTENTIELLE ET DURABILITE ETHIQUE.

• Chapitre 2: un ensemble de cadres et d'articles de compétences contenant des directives de

compétences développées dans les pays partenaires, aux niveaux européen et international, afin de préparer les enseignants et les chefs d'établissement à un monde fondé sur les TIC (y compris un curriculum dynamique développé).

• des lignes directrices sur les aptitudes et compétences pour un leadership éducatif adaptatif dans le nuage;

Les annexes en anglais comprennent:

• Annexe 1: Activité: Statut du leadership éducatif adaptatif dans le nuage dans le pays du partenaire sélectionné (Chypre, Espagne, Roumanie, Grèce, Belgique, Pays-Bas et Italie);

• Annexe 2: Activité: pratiques actuelles et innovantes en matière de leadership éducatif adaptatif dans le nuage aux niveaux européen et international;

• Annexe 3: Activité: identifier les cadres de compétences existants et les articles comportant des compétences clés pour les responsables de l'informatique en nuage au niveau national, européen et international;

• Annexe 4: méthodologie IO1

Les lignes directrices relatives aux aptitudes et aux compétences en matière de leadership pédagogique adaptatif dans le Cloud visent à fournir un aperçu du profil professionnel, de l'expérience et des exemples de «meilleures pratiques» du leadership pédagogique adaptatif dans le Cloud, sur la base des meilleures connaissances. de partenaires en Europe et au-delà. Les conclusions les plus importantes de l'analyse aideront les partenaires du projet à mieux définir le cadre de qualification pour le leadership éducatif dans le nuage, sur la base de compétences et de compétences.

Les résultats les plus importants en ce qui concerne les contours de l'informatique en nuage dans l'éducation sont l'importance pour les écoles en Europe de par son pouvoir d'innovation. Même si les changements sont lents et mis en œuvre différemment selon les pays, le potentiel est encore assez élevé et reconnu dans le monde entier. En général, le Cloud Computing a été largement utilisé dans l'éducation pour prendre en charge les principales fonctions administratives des systèmes éducatifs, tandis que l'intégration dans l'apprentissage et l'enseignement est beaucoup plus fragmentée car les écoles dépendent de l'initiative individuelle des enseignants. Les avantages potentiels de CLOUD COMPUTING ne sont pas seulement liés aux économies réalisées au niveau de la direction, mais également à la transformation de la façon dont les enseignants enseignent et dont les étudiants apprennent.

Les partenaires impliqués dans l'élaboration du rapport sont:

- EACG-European Association of Career Guidance as project coordinator (CYPRUS);
- UB – Universitat de Barcelona (SPAIN);
- Colegiul National Pedagogic "Mircea Scarlat" (ROMANIA);
- DOUKA EKPAIDEFTIRIA AE - PALLADION LYKEION EKFPAIDEUTHRIA DOUKA (GREECE);
- EUROGEO VZW- EUROPEAN ASSOCIATION OF GEOGRAPHERS (BELGIUM);
- DLEARN - European Digital Learning Network (ITALY).

2. Préparation: statut et définitions

Ce chapitre évalue et analyse les lignes directrices existantes et les structures / systèmes de compétences, évalue les concepts et les approches en matière de leadership - définit les objectifs et les résultats souhaités et déterminera l'état d'avancement du concept de leadership en matière d'éducation adaptative dans le nuage en Europe..

2.1. Glossaire dynamique et adaptatif L-CLOUD

La liste des concepts dynamiques et adaptatifs de L-Cloud est un outil fondamental conçu par les partenaires du projet pour stocker les concepts et définitions clés en rapport avec le projet. Les concepts et définitions principaux sont stockés dans l'ordre alphabétique et servent de base à l'ensemble du projet.

La liste dynamique et adaptative des termes L-CLOUD en anglais est disponible sur le lien Google Doc actuel:

https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit

Que comprend le leadership éducatif adaptatif dans le nuage?

Le leadership éducatif adaptatif dans le nuage se manifeste à travers des experts qui visent à améliorer la qualité de l'éducation et du système éducatif lui-même. L'adaptabilité de ces dirigeants implique la capacité d'influencer et d'inspirer les autres par le biais de plaidoyers personnels, d'une vision et de leur enthousiasme, et d'accéder à des ressources pour créer une plate-forme solide pour le changement en adaptant les technologies cloud à l'amélioration de l'éducation. sur l'enseignement, l'apprentissage et dans le domaine de la gestion de l'éducation.

2.2 État d'avancement dans certains pays partenaires du leadership en matière d'éducation adaptative dans le Cloud

2.2.1 Introduction

La situation dans les pays sélectionnés veut offrir un aperçu général dans le domaine des outils, des outils et de la technologie, sur la base des meilleures connaissances des partenaires en matière de "Leaders en matière de nuages éducatifs en éducation" (2018/2019). Les partenaires du projet se concentrent sur la recherche de méthodologies communes dans leur pays d'origine en ce qui concerne les enseignants, le personnel enseignant et les directeurs d'école. Une attention particulière est également accordée au programme dans les programmes universitaires aux niveaux national et régional en ce qui concerne la préparation des enseignants à la matière du projet. Les études se concentrent sur les concepts et approches du leadership, les objectifs et les résultats; ainsi que les technologies de cloud computing et leur utilisation dans le système éducatif.

L'objectif est de comprendre le fonctionnement des différents systèmes et de fournir des lignes directrices qui prennent en compte tous les pays partenaires impliqués dans cette étude. En général, il faut en conclure qu'il n'y a pas de définition ni de stratégie communes entre les pays en matière de leadership et de leadership éducatif adaptatif dans le cloud en Europe.

Les pays sélectionnés sont Chypre, l'Espagne, la Roumanie, la Grèce, l'Italie, la Belgique et les Pays-Bas.

2.2.2. Résultats principaux concernant le cloud computing

Chaque État membre représentant le consortium présente une stratégie nationale pour la mise en œuvre de stratégies numériques.

- En Italie et en Grèce, il n'y a pas de lien direct entre les compétences des enseignants en matière de cloud computing. Dans les deux pays, la formation initiale des enseignants n'inclut pas explicitement le Cloud Computing en tant que matière.

- Le cloud computing en Italie est mentionné dans le plan numérique national pour soutenir principalement le système de gestion (et administratif) des écoles. Alors qu'à Chypre, la carrière des enseignants est axée sur la culture numérique, y compris l'informatique en nuage, et moins sur la gestion (projet de l'UE - 2022), cela montre une approche complètement différente de la question.

- Tous les pays mentionnent le DPC, le développement professionnel continu, des opportunités de développement professionnel continu, comparables aux programmes d'apprentissage tout au long de la vie, pour les enseignants d'informatique en nuage (Espagne, Pays-Bas, Italie, etc.) pour l'utilisation des TIC pour faciliter le processus d'apprentissage. , soutenir le système d'administration de l'éducation et créer un nouvel environnement d'apprentissage facilitant ainsi la profession d'enseignant;

- À Chypre, l'utilisation des TIC est une priorité politique. Les étudiants inscrits à un programme d'études "Enseignant" doivent passer avec succès l'examen Technologie de l'éducation, Soutien des technologies de l'information aux sciences naturelles (contrairement à l'Espagne, l'Italie et la Grèce). En Roumanie, les futurs enseignants étudient des disciplines telles que les technologies de l'information et de la communication: applications informatiques; Formation assistée par ordinateur.

2.2.3 Principaux résultats concernant les concepts de leadership en Europe

Les gestionnaires, les dirigeants et les décideurs jouent un rôle clé dans l'exécution des tâches et des tâches de leur organisation éducative, car ils ont un rôle important à jouer pour permettre la transformation et le changement du système éducatif.

Les résultats du projet de réseau School on the Cloud ont révélé différentes définitions du leadership et des styles de leadership dans un environnement éducatif en Europe: expériences de leadership, leadership transactionnel, leadership émotionnel, leadership transformationnel, leadership stratégique, leadership distributif, e-leadership, etc. Cependant, il existe une grande différence entre le leadership et la gestion dans l'organisation éducative.

Les partenaires du projet ont identifié les compétences acquises par le personnel enseignant, les enseignants et leur responsable au cours des études, ainsi que les conditions nécessaires pour se lancer

en enseignement:

- Dans la formation initiale pour une carrière d'enseignant **en Grèce, en Italie et en Roumanie**, il n'existe aucune preuve ou lien direct avec le leadership en tant que compétence pour les programmes nationaux. Au lieu de cela, les enseignants peuvent acquérir des compétences connexes telles que le DPC, des opportunités de développement professionnel permanent, car ils souhaitent renforcer leurs compétences et leurs compétences en tant que leaders. **À Chypre**, les futurs responsables de l'éducation doivent suivre un cours de gestion de l'éducation et de la technologie s'ils suivent un master en sciences de l'éducation: direction et administration de l'éducation.

- **En Espagne**, le leadership pédagogique est considéré comme une priorité politique car il aide les élèves à mieux apprendre et permet de connecter l'école à son environnement. C'est clairement énoncé dans une loi sur l'éducation (LOMCE, 2013): de l'autonomie des écoles (choix du nombre d'heures par matière, des méthodes pédagogiques et du contenu) et du leadership (compétences étendues du chef d'établissement) comme base du fonctionnement de l'école. L'Espagne souligne l'importance de l'intelligence pédagogique pour le leadership pédagogique en tant que "leadership partagé": pensée stratégique, gestion de l'apprentissage, relations sociales et création et stimulation de structures organisationnelles en tant que compétences clés. Tandis qu'en Italie, le concept de leadership fait plutôt référence à l'innovation dans l'éducation; créer un partenariat avec des centres de recherche, des universités et des partenaires locaux, y compris la promotion des bonnes pratiques existantes dans le système éducatif.

- **En Belgique et aux Pays-Bas**, de nombreuses options sont disponibles sur le Web, dans la mesure où il s'agit de prendre les devants dans le domaine de la gestion de l'éducation. Les exemples clés portent principalement sur les premières étapes de la formation, l'acceptation et la mise en œuvre des technologies de l'information dans le programme et sur la manière de tirer parti de programmes éducatifs conviviaux sur le Web. Pour innover dans le curriculum en éducation, étant donné l'énorme richesse des possibilités, les possibilités d'apprentissage sont énormes. Mais au cours des vingt dernières années, l'acceptation et l'utilisation de tous ces outils n'a progressé que lentement par rapport à la rapidité des développements.

3. Chapitre 1: Pratiques actuelles et novatrices

Afin d'identifier les bonnes aptitudes et compétences pour les enseignants et leurs dirigeants en Europe, les pratiques actuelles et innovantes ont été analysées. Les partenaires ont rassemblé 17 "bonnes pratiques" selon les critères énoncés dans la méthodologie (ANNEXE N ° 2).

Les 17 meilleurs exemples ont été testés sur 6 critères, à savoir: EFFECTIVITÉ; EFFICACITÉ PERTINENCE Partenariat; TRANSFÉRABILITÉ POTENTIELLE ET DURABILITÉ ÉTHIQUE Une échelle de 1 à 4 a été utilisée, 1 étant insuffisante ou insuffisante et 4 excellente.

Les exemples pratiques actuels et innovants qui ont été sélectionnés:

- **School on the Cloud** - C'est un projet visant à introduire et à mettre en œuvre le Cloud Computing dans l'éducation. Il offre une vue d'ensemble complète des aspects du leadership et de la gestion en ce qui concerne la mise en œuvre du Cloud dans différents contextes éducatifs.

La mise en œuvre du Cloud dans le système scolaire comprend des visions, des obstacles, un impact potentiel et des suggestions. Explorer les visions éducatives aide les dirigeants à réfléchir au rôle que le cloud peut jouer dans les contextes éducatifs formels et non formels.

Note moyenne pour les 6 critères: 3.416666667

Source www.schoolonthecloud.net

- **Greek Digital School** - **Photodentro est un vaste dépôt de ressources pédagogiques** ouvertes et d'exemples pratiques liés au programme national grec. Le projet est un moyen novateur d'utiliser la technologie Cloud pour gérer efficacement l'éducation au niveau national par le biais du ministère grec de l'éducation et des affaires religieuses. C'est en effet un référentiel d'objets d'apprentissage, de vidéos pédagogiques, de logiciels pédagogiques et de pratiques pédagogiques libres accessibles aux enseignants et aux étudiants, où l'utilisation de la technologie cloud vise à atteindre un large éventail et à se concentrer sur les processus de construction de communautés.

Note moyenne pour les 6 critères: 3.027777778

Source www.dschool.gr (uniquement en grec)

- **Cloud Computing for Education: programme de développement professionnel destiné aux enseignants du secondaire**. Le programme actuel pour les enseignants consistait à explorer les moyens d'utiliser les technologies de l'informatique en nuage pour améliorer les cours. À cette fin, le programme avait été conçu pour répondre à deux objectifs: premièrement, initier les enseignants du secondaire au concept de Cloud Computing et aux technologies associées et, deuxièmement, aider les enseignants à développer des modules de formation basés sur le cloud. technologies informatiques pouvant être utilisées dans différentes matières du lycée. La technologie Cloud offre de nombreuses opportunités pour exploiter les avantages des nouvelles technologies. De plus, les étudiants ont encore plus d'options pour les données sur la collaboration, la communication et le traitement.
  Note moyenne pour les 6 critères: 2,916666667

  Source https://peer.asee.org/cloud-computing-for-education-a-professional-development-program-forhigh-school-teachers

Les scores les plus élevés par catégorie et le projet correspondant:

- **EFFICACITÉ** Les résultats doivent être mesurables. Les diplômes, les nouveaux programmes, les projets de recherche et les nouveaux cours peuvent servir d'ensemble de résultats mesurables possibles;
  Meilleures pratiques choisies: Greek Digital School - Photodentro et le SoC (projet School on the Cloud)
- **Les pratiques choisies avec EFFICACITÉ** doivent produire des résultats avec un ensemble défini de ressources et de temps;
  Meilleure pratique choisie: SoC (projet School on the Cloud).

- **Les pratiques actuelles et innovantes de PERTINENCE** doivent être cohérentes et conformes aux priorités d'ERASMUS PLUS et aux objectifs du projet L-CLOUD;
  Meilleure pratique choisie: Cloud Computing for Education: programme de développement professionnel destiné aux enseignants du secondaire.

- **PARTENARIAT** les meilleures pratiques sélectionnées qui ont été rassemblées entre différentes parties prenantes, telles que les écoles, les établissements de formation, les centres de recherche, les décideurs politiques;
  Meilleure pratique choisie: SoC (projet School on the Cloud).

- **POTENTIEL DE TRANSFERABILITE**: chaque bonne pratique et initiative doit être de source ouverte pour que les résultats puissent être disponibles et consultés par tous;
  La plupart ont voté les meilleures pratiques: le projet SoC (School on the Cloud) et les manuels scolaires interactifs, qui sont utilisés par le ministère grec pour diffuser tous les livres utilisés dans le programme d'enseignement grec de la maternelle à la 12e année dans le nuage à tous les élèves du pays. En effet, tous les manuels scolaires grecs sont accessibles via n'importe quel navigateur, sur n'importe quel ordinateur ou appareil mobile mis à disposition via la technologie cloud.

- **TRANSFERABILITE POTENTIELLE** Toute meilleure pratique ou initiative doit être open source afin que les résultats puissent être disponibles et consultables par tous;
  Meilleures pratiques: SoC (projet School on the Cloud) et Interactive School Books, utilisés par le ministère grec pour distribuer tous les livres utilisés dans le programme d'enseignement grec de la maternelle à la 12e année à tous les élèves du pays via le cloud. En effet, tous les manuels grecs sont accessibles via n'importe quel navigateur, sur n'importe quel ordinateur ou appareil mobile mis à disposition via la technologie cloud.

- **DURABILITÉ ÉTHIQUE** les meilleurs exemples de durabilité des points de vue écologique, économique et social.
  Meilleure pratique: SoC (projet School on the Cloud).

Comprenant la diversité des projets, des programmes et des besoins des différents systèmes éducatifs en Europe est fondamental pour développer et obtenir un leadership dans le cloud dans le système éducatif. Selon les «meilleures pratiques» gagnantes, les directives suivantes sont mentionnées:

- ***Le changement et l'état de préparation*** en tant que capacité d'une organisation à initier des changements et à y réagir de manière à leur procurer des avantages, en minimisant les risques auxquels ils sont confrontés. Comprendre une organisation est crucial pour le cloud computing et la direction doit le supporter;
- ***Gouvernance***, puisque les changements concernent la gouvernance. La gouvernance est la manière dont les établissements d'enseignement sont organisés et gérés selon trois perspectives: leadership, procédures de mise en œuvre, éducation et apprentissage;
- ***Faites des plans***. Le principe directeur est qu'une organisation doit concevoir, mettre en œuvre et maintenir un ensemble cohérent de politiques, processus et systèmes pour gérer les risques liés à ses actifs informationnels, garantissant ainsi un niveau de risque acceptable en termes de système de gestion de la sécurité des informations;
- ***Mise en œuvre du leadership***. Le leadership dans une organisation éducative est un facteur important qui influence l'efficacité. Le leadership traditionnel est un processus par lequel un membre d'une organisation influence et contrôle le comportement des autres pour atteindre des objectifs communs.

4. Chapitre 2: Cadre de compétences aux niveaux national, européen et international.

Ce chapitre contient les ensembles de lignes directrices élaborées dans les pays partenaires, en Europe et au niveau international pour préparer les enseignants et les chefs d'établissement à un monde fondé sur les TIC, y compris des stratégies pour le développement dynamique de programmes d'études.

Les partenaires du projet ont collecté différents référentiels de compétences et informations concernant les compétences liées au leadership éducatif dans le cloud dans le monde entier. La liste ci-dessous est la sélection du matériel ci-dessus recueilli par les partenaires du projet au mieux de leurs connaissances.

Liste concernant le cadre de compétences et les articles relatifs au **leadership éducatif adaptatif dans le Cloud** :

1. Five Traits of a Good Educational Leader (2014, USA);
2. The Teacher Leadership Competencies (2014, USA);
3. Educator and School Leader Competencies Can promote systems coherence in Competency Education (USA).
4. Teacher Leader Competency Framework (2015, USA);
5. Nine Competencies for Teaching Empathy (2018, USA);
6. Leadership Competence Framework (2014, Australia);
7. Top 10 Digital Skills for Education Leaders (2016, USA);
8. Charlotte Danielson's Framework for Teaching (2013, USA);
9. Digital Learning Framework for Post-Primary Schools (2015, Ireland);
10. Professional Development Framework for Digital Learning (2018, South Africa);
11. Technology in Education Framework: Teaching and Learning, Administrative Operations, Provincial Infrastructure (2013, Canada);
12. EDUCATIONAL LEADERSHIP COMPETENCE FRAMEWORKS (2014, Spain);
13. DIGITAL TEACHING COMPETENCE FRAMEWORKS (2017, Spain);
14. Catalonia: Digital framework - Digital Agenda 2020 (2014, Spain);
15. Catalonia: Reference framework (2018, Catalunya);
16. Fundation "Digital Spain" (Fundación España Digital) – (2015, Spain);
17. Leadership Competency Framework (2013, USA);

18. Standards for school leaders: competency frameworks and their applicability (2012, United Kingdom);

19. UNESCO ICT Competency Framework For Teachers (UNESCO 2011);

20. Teach to Lead – Leadership Competency Framework (2016, Australia);

21. Leadership Competency Framework (United Kingdom);

22. Digital Competence of Educators (2017, Luxemburg);

23. STRATEGISCH COMPETENTIE DENKEN (2018, The Netherlands);

24. SCHOOLLEIDERSREGISTER PO BASISCOMPETENTIES (The Netherlands);

25. Het geheim van de innovatieve schoolleider (The Netherlands)https://www.kpcgroep.nl/publicaties/boeken/proefschrift-het-geheim-van-de-innovatieve-schoolleider/

26. Waar blijft de middenmanager? Een onderzoek naar de strategische rol van team- en afdelingsleiders in het voortgezet onderwijs (The Netherlands). https://dspace.library.uu.nl/handle/1874/373165

27. De leidinggevende in het onderwijs als regisseur (The Netherlands). https://wij-leren.nl/persoonlijk-leiderschap-onderwijs.php

28. Competentieontwikkeling M-decreet (Belgium). https://onderwijs.vlaanderen.be/nl/competentieontwikkeling-m-decreet

29. Een nieuw profiel voor de leraar secundair onderwijs. Hoe worden leraren daartoe gevormd? (Belgium). https://www.vlaanderen.be/publicaties/een-nieuw-profiel-voor-de-leraar-secundair-onderwijs-hoe-worden-leraren-daartoe-gevormd-informatiebrochure-bij-de-invoering-van

30. Education competency frameworks (2016, UK);

31. Digital Skills competency framework (2018, UK);

32. Professional Digital Learning Framework (2018, UK);

33. Curriculum for Digital Education Leadership (2016, South Africa);

34. Building digital capabilities framework (2016, UK);

35. Leadership competency framework in education (2012, USA);

36. UK Professional Standards Framework – UKPSF (UK);

37. KIPP leadership framework and competency model (2016, USA);

38. National Council of School Leaders: Facilitation competency framework (2017, UK);

Il existe déjà de nombreux articles, programmes et référentiels de compétences dans les domaines de l'éducation, de la culture numérique et des compétences numériques, qui diffèrent d'un pays à l'autre.

En ce qui concerne le but du projet, certaines limitations ont été constatées, car il n'existait pas de cadre de compétences spécifique en matière de leadership éducatif adaptatif dans le cloud. Les articles et les référentiels de compétences font principalement référence au leadership en tant que concept unique, à l'alphabétisation numérique et aux compétences numériques des enseignants et du personnel éducatif. En outre, une composition différente de compétences et de compétences a été identifiée en ce qui concerne les concepts de leadership et de leadership. Il n'existe pas de définition commune du concept de leadership et des leaders de l'éducation, comme mentionné précédemment dans le présent rapport. Il semble qu'une définition commune commune du leadership doit être définie comme une compétence en relation avec le leadership éducatif adaptatif dans le Cloud.

Dans le Cadre de compétences pour les programmes de formation au leadership en éducation numérique (Afrique du Sud, 2016), le concept de leadership pédagogique et de compétences numériques n'indique pas clairement les technologies en nuage. Mais il fournit un aperçu intéressant, en effet: "... nous introduisons notre éducation numérique qui consiste à augmenter les capacités des personnes dans le domaine des compétences numériques **(c.-à-d. Des pratiques contextuelles pour la littératie numérique), plutôt que des compétences numériques. Approche axée sur les compétences (car il n'existe pas de méthode unique), ce qui indique un besoin en leaders de l'éducation numérique capables de diriger les autres et de promouvoir une culture numérique pertinente pour le contexte individuel et local en: et accroître l'accès aux ressources disponibles; développer les capacités des individus, des programmes et des organisations; prendre des décisions éclairées et adaptées au contexte, tout en favorisant l'innovation et en privilégiant le changement dans leur propre environnement ".**

Le leadership adaptatif est un processus complexe car il influence l'analyse à différents niveaux. Par exemple, cela implique la possibilité d'informer les décideurs sur le choix des technologies cloud adaptées à différents contextes éducatifs et d'informer la conception pédagogique de la nécessité de nouvelles technologies, inversant ainsi ce que le consortium L-CLOUD a défini comme l'appui technologique. Les responsables de l'éducation adaptative doivent donner l'exemple et maîtriser les technologies numériques.

Le leadership adaptatif est un processus complexe car il influence l'analyse à un niveau différent. Par exemple, il a le potentiel d'informer les décideurs sur le choix de technologies cloud adaptées à différents contextes éducatifs et d'informer les concepteurs pédagogiques sur le besoin de nouvelles technologies, ce que le consortium L-CLOUD a défini comme l'impulsion technologique. . Les responsables de l'éducation adaptative doivent donner l'exemple et maîtriser les technologies numériques.

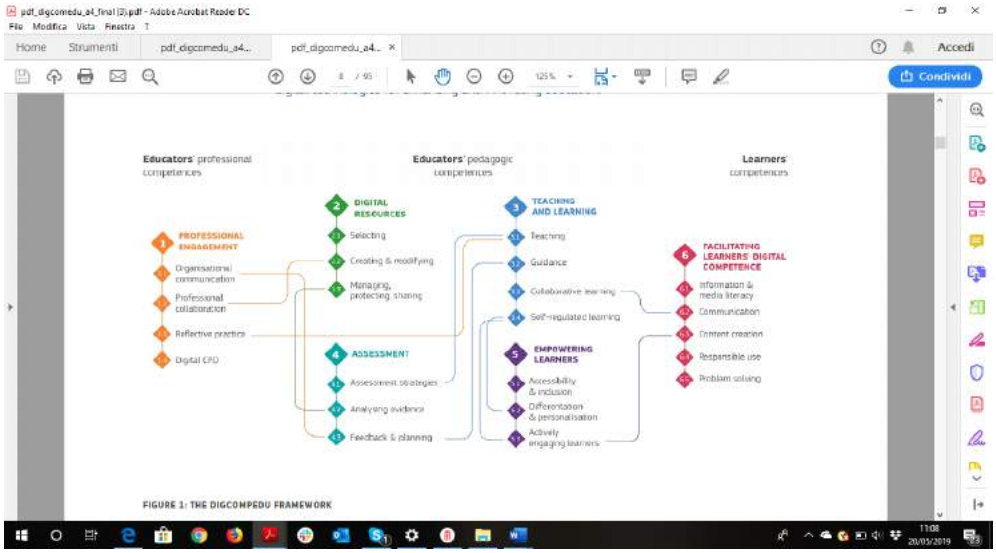
5. Lignes directrices sur les aptitudes et les compétences pour un leadership éducatif adaptatif dans le Cloud

Dans un monde en mutation rapide et interconnecté, il est essentiel que les systèmes éducatifs fournissent aux étudiants les compétences suffisantes pour faire face à la réalité sociale et professionnelle du XXIe siècle (OCDE, 2015a, Schleicher, 2015; Wiseman et Anderson, 2014). À l'ère de l'information (Castells, 2010), les professions du savoir ont besoin d'un capital humain capable de coordonner des défis complexes et d'adapter en douceur les compétences à l'évolution de la demande (par exemple, OCDE, 2010a, 2011). Une éducation de qualité et équitable / égale est un élément clé de l'acquisition de compétences clés pour l'apprentissage tout au long de la vie (Conseil de l'Union européenne, 2006) et constitue dès lors une priorité pour tous les gouvernements nationaux et les organisations internationales (par exemple, Commission européenne, 2010; Fullan, 2010). Kinuthia et Marshall, 2013).

Selon les recherches développées par les partenaires du projet, certaines lignes directrices ont été établies dans ce chapitre pour guider le consortium L-CLOUD dans l'élaboration du cadre de qualifications pour le leadership éducatif dans le nuage, basé sur les compétences et les compétences, et pour développer la formation. .

Trois principaux domaines de concurrence ont été identifiés: **l'éducation numérique, le leadership pédagogique et l'informatique en nuage pour les responsables de l'éducation.**

Pour le premier domaine identifié, le cadre européen pour la compétence numérique des experts en éducation (DigCompEdu) est un ensemble de compétences numériques permettant aux enseignants de gérer et d'exploiter le potentiel des technologies numériques pour améliorer et innover l'éducation.



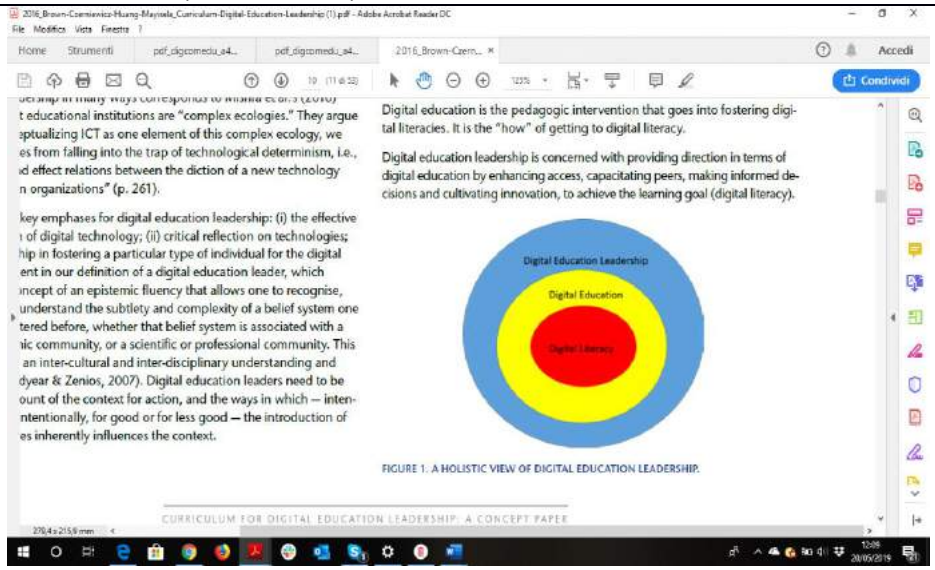
Le cadre européen des compétences numériques des enseignants a été pris comme document de référence car il vise à définir un modèle général de compétences numériques de l'enseignant, dans la mesure où il repose non seulement sur un niveau d'enseignement (primaire ou supérieur), mais transversalement à tous les niveaux d'enseignement.

Le DigCompEdu identifie 6 domaines: 1. **Le développement professionnel des enseignants** en termes de développement personnel individuel et d'utilisation des technologies numériques pour une interaction professionnelle; 2. **Les sources numériques**, principalement axées sur les compétences numériques dont les enseignants ont besoin pour utiliser, créer et partager des ressources numériques et pour enseigner; 3. **Enseignement et apprentissage**, est dédié à la gestion de l'utilisation des technologies numériques dans l'enseignement et l'apprentissage. 4. **technologies numériques** et tests; 5. **L'autonomisation des apprenants** donne un aperçu du potentiel des technologies numériques pour améliorer les stratégies d'apprentissage et d'enseignement en vue d'une approche axée sur l'apprentissage; 6. **Faciliter les compétences numériques des apprenants**, et non des moindres, le sixième domaine met l'accent sur les compétences pédagogiques destinées à faciliter les compétences numériques des apprenants.

En ce qui concerne le deuxième domaine identifié, le leadership éducatif, un cadre avec différentes compétences et différents articles a été analysé, tel que le Cadre de compétences en leadership éducatif (2014, Espagne); Normes pour les chefs d'établissement: cadre de compétences et applicabilité (2012, Royaume-Uni); Teach to Lead (2014, Australie), Cadre de compétences pour le curriculum du numérique et bien plus encore. *Comme indiqué dans les Normes pour les chefs d'établissement: le cadre de compétences et son cadre d'applicabilité, les cadres de compétences et les normes professionnelles pour les chefs d'établissement sont désormais répandus mais plus ou moins détaillés, certains examinant le rôle du chef d'établissement dans les détails les plus fins et distinguant les fonctions (ou professionnelles) et personnelles, et la preuve doit démontrer une "compétence" à tous les niveaux*.

Comme il existe différents styles de leadership, il est assez difficile d'en présenter un seul. En général, le leadership traditionnel est un processus dans lequel un membre d'une organisation influence et contrôle le comportement des autres pour atteindre des objectifs communs (School on the Cloud: directives pour les dirigeants et la direction, 2016). Par conséquent, dans le concours des leaders de l'éducation en nuage, le principal défi est d'établir un cadre de changement et de donner aux membres du personnel la possibilité d'exploiter les possibilités pédagogiques de créer un apprentissage authentique et de donner la maîtrise de l'apprentissage aux utilisateurs. dirigeants eux-mêmes. Comme indiqué dans le cadre conceptuel du leadership en éducation numérique, un programme d'enseignement en leadership numérique doit comporter au moins deux parties: l'éducation numérique et le leadership en éducation numérique, la littératie numérique étant à la base de ces deux éléments. *L'hypothèse sous-jacente est que lorsqu'un individu devient un chef de file de l'éducation numérique, il doit d'abord démontrer sa capacité à utiliser les pratiques identifiées avec l'éducation numérique.*

Vous trouverez ci-dessous une vision globale du leadership en éducation numérique, où les compétences numériques constituent la base de l'éducation numérique et des leaders dans le domaine


t educational institutions are "complex ecologies." They argue
aptualizing ICT as one element of this complex ecology, we
es from falling into the trap of technological determinism, i.e.,
d effect relations between the diction of a new technology
n organizations" (p. 261).

key emphases for digital education leadership: (i) the effective
of digital technology; (ii) critical reflection on technologies;
hip in fostering a particular type of individual for the digital
ent in our definition of a digital education leader, which
ncept of an epistemic fluency that allows one to recognise,
understand the subtlety and complexity of a belief system one
tered before, whether that belief system is associated with a
ic community, or a scientific or professional community. This
an inter-cultural and inter-disciplinary understanding and
dyear & Zenios, 2007). Digital education leaders need to be
ount of the context for action, and the ways in which – inten-
ntentionally, for good or for less good — the introduction of
es inherently influences the context.

Digital education is the pedagogic intervention that goes into fostering digital literacies. It is the "how" of getting to digital literacy.

Digital education leadership is concerned with providing direction in terms of digital education by enhancing access, capacitating peers, making informed decisions and cultivating innovation, to achieve the learning goal (digital literacy).

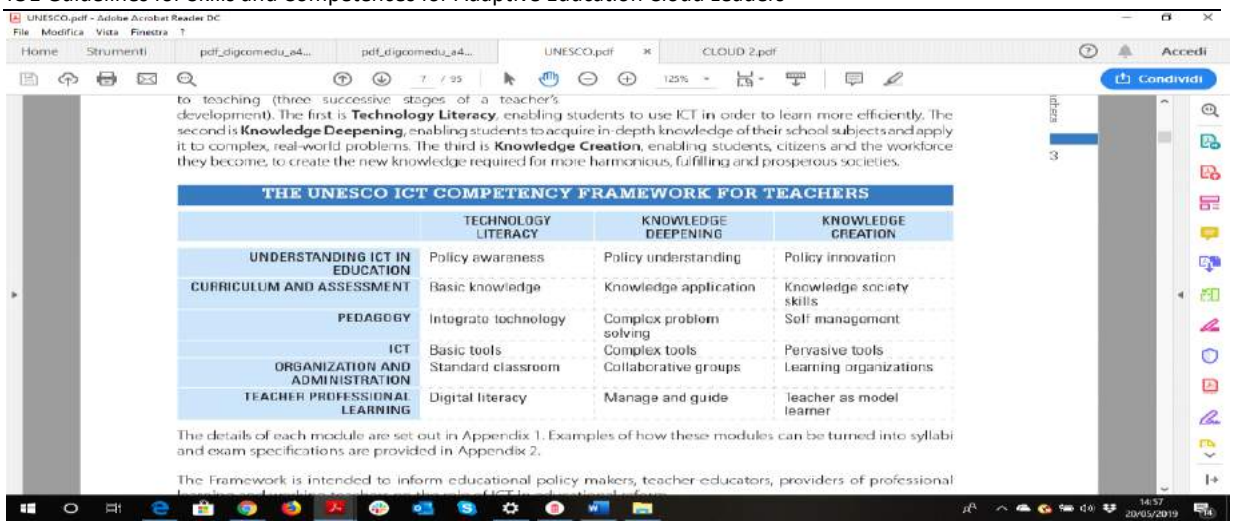
FIGURE 1: A HOLISTIC VIEW OF DIGITAL EDUCATION LEADERSHIP.

CURRICULUM FOR DIGITAL EDUCATION LEADERSHIP: A CONCEPT PAPER

De plus, le concept de leadership ne peut pas être séparé de celui de gouvernance, qui est la manière dont les institutions sont organisées et gérées de manière formelle. En effet, l'une des trois perspectives proposées par le projet School on the Cloud est de voir la gouvernance du point de vue du leadership. Cette analyse montre que les établissements d'enseignement doivent être prêts à utiliser l'informatique en nuage car les services en nuage ont une incidence sur tous les processus. La gouvernance est donc essentielle pour comprendre et gérer correctement les risques. Selon la même analyse, les dirigeants doivent être en mesure de déterminer si les gestionnaires prennent les mesures nécessaires pour assurer un système de bonne gouvernance différenciant les chefs d'établissement et les gestionnaires.

Le troisième domaine de compétence identifié concerne l'informatique en nuage pour l'éducation et son adaptation aux leaders de l'informatique en nuage. Comme nous l'avons vu précédemment, différents pays ont abordé l'informatique en nuage de différentes manières: en gérant et en gérant plus efficacement le système scolaire (également en termes financiers), d'autres ont déjà commencé à comprendre le potentiel pédagogique de la mise en œuvre d'un environnement d'apprentissage innovant et des la communication concernant l'école et la stratégie éducative ont changé.

En raison de l'évolution rapide de la technologie et des contraintes financières inhérentes à l'investissement dans la technologie appropriée, il est nécessaire de définir clairement le rôle des responsables de l'éducation. Comme proposé dans le cadre de compétences en TIC de l'UNESCO, il est important d'adopter une approche intersectorielle par le biais des TIC dans l'éducation (compétences des enseignants, matériel didactique, matériel informatique, etc.). Le cloud computing n'est pas spécifiquement mentionné dans ce contexte, mais il offre un cadre avec trois approches pédagogiques: initiation à la technologie, approfondissement des connaissances et création de connaissances pour structurer le cadre de compétences TIC des enseignants:



to teaching (three successive stages of a teacher's development). The first is **Technology Literacy**, enabling students to use ICT in order to learn more efficiently. The second is **Knowledge Deepening**, enabling students to acquire in-depth knowledge of their school subjects and apply it to complex, real-world problems. The third is **Knowledge Creation**, enabling students, citizens and the workforce they become, to create the new knowledge required for more harmonious, fulfilling and prosperous societies.

THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS

	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awaraness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	teacher as model learner

The details of each module are set out in Appendix 1. Examples of how these modules can be turned into syllabi and exam specifications are provided in Appendix 2.

The Framework is intended to inform educational policy makers, teacher educators, providers of professional

Le cadre distingue non seulement trois domaines, mais structure également le travail des enseignants selon six aspects principaux: compréhension des TIC dans l'éducation, programme et évaluation, pédagogie, TIC, organisation et administration et apprentissage professionnel des enseignants. Même s'il ne fait pas référence aux leaders de l'éducation, le cadre offre une approche valable de l'informatique en nuage dans l'éducation.

Dans le cadre de la technologie dans l'éducation: éducation et apprentissage, activités administratives, infrastructure provisoire, une structure est présentée concernant le rôle et les responsabilités des différents acteurs impliqués dans la mise en œuvre des TIC dans l'éducation. Il donne un aperçu des rôles des ministres, des professionnels des divisions scolaires et des groupes consultatifs dans la mise en œuvre de technologies de l'éducation, en termes d'orientation des politiques et de gouvernance efficace. Différents rôles ont été définis pour chaque niveau de gouvernement, tels que: politique et direction, infrastructure, financement, infusion technologique, apprentissage professionnel, responsabilisation, apprentissage à distance, collecte et analyse de données, gestion des données et de l'information, réflexion prospective. La culture numérique constitue la base du développement des zones dans les trois zones identifiées.

GREEK VERSION

1. Εισαγωγή

Το L-CLOUD είναι ένα διετές πρόγραμμα, το οποίο συγχρηματοδοτείται με την υποστήριξη της Ευρωπαϊκής Ένωσης – Στρατηγική Σύμπραξη για τη Σχολική Εκπαίδευση στο πλαίσιο του Ευρωπαϊκού Προγράμματος Erasmus Plus. Το L-CLOUD είναι το ακρωνύμιο για την ανάπτυξη των μελλοντικών ηγετών της Εκπαίδευσης σε περιβάλλον Cloud.

Το έργο συγχρηματοδοτείται από την Κυπριακή Εθνική Μονάδα: Ίδρυμα Διαχείρισης Ευρωπαϊκών Προγραμμάτων (ΙΔΕΠ) Δια Βίου Μάθησης για το 2018.
Το έργο ξεκίνησε τον Οκτώβριο του 2018 και θα διαρκέσει 24 μήνες.

Το Cloud computing είναι μια πρωτοποριακή τεχνολογία που χρησιμοποιεί το διαδίκτυο για την παροχή μιας ευρείας ποικιλίας υπηρεσιών πληροφορικής και αναπτύσσεται με ταχύ ρυθμό. Για παράδειγμα, τα προϊόντα υποστήριξης (όπως οι εφαρμογές για κινητές συσκευές, το ηλεκτρονικό ταχυδρομείο, η αποθήκευση πληροφοριών, η κοινή χρήση αρχείων, τα συνεργατικά εργαλεία, οι ψηφιακές επικοινωνίες και άλλες υπηρεσίες) πολλαπλασιάζονται. Ταυτόχρονα, οι προσδοκίες των ηγετών της εκπαίδευσης αλλάζουν, ώστε τα εκπαιδευτικά ιδρύματα να πρέπει να επιδείξουν σημαντική ηγετική προσέγγιση για να συμπεριλάβουν τις προκλήσεις των καινοτόμων συνεργατικών εργαλείων και περιεχομένων (π.χ. πρόσβαση 24 ώρες το 24ωρο σε ασφαλή, αξιόπιστα δίκτυα και δυνατότητα δημιουργίας, παράδοσης και κοινοποίησης περιεχομένων μεταξύ των ιδρυμάτων).
Η υιοθέτηση του Cloud Computing στην εκπαίδευση παραμένει ελλιπής επειδή, ενώ το Cloud Computing προσφέρει πολλά πλεονεκτήματα, οι υπεύθυνοι λήψης αποφάσεων δεν είναι πλήρως γνώστες σχετικά με τα ενδεχόμενα οφέλη για τη μάθηση, τη διδασκαλία, τη διοίκηση και τη διαχείριση. Ως εκ τούτου, απαιτούνται συστήματα κατάρτισης και υποστήριξης για να ενημερώνονται οι υπεύθυνοι με το ταχέως μεταβαλλόμενο περιβάλλον Cloud Computing. Απαιτείται λοιπόν ηγετική ώθηση για παιδαγωγική αλλαγή, διαφορετικά οι εκπαιδευτικοί θα συνεχίσουν το παράδοξο της χρήσης παλαιών μεθόδων διδασκαλίας, αλλά με νέα εργαλεία.

Η παρούσα έκθεση περιλαμβάνει τις **Κατευθυντήριες Γραμμές/ Οδηγίες για τις Δεξιότητες και τις Ικανότητες για τους Προσαρμοζόμενους Ηγέτες της Εκπαίδευσης σε περιβάλλον Cloud**. Ο στόχος αυτής της έκθεσης είναι να καθοριστεί η βασική γραμμή για την κατασκευή του πλαισίου προσόντων για τους ηγέτες του Cloud Education με βάση τις δεξιότητες και τις ικανότητες.
Η μεθοδολογία για την ανάπτυξη των κατευθυντήριων γραμμών βασίζεται στις έρευνες σχετικά με τον ορισμό των κύριων εννοιών, την σύγχρονη τεχνολογία σε επιλεγμένες ευρωπαϊκές χώρες και τις βέλτιστες πρακτικές. Επιπλέον, οι Κατευθυντήριες Γραμμές βασίζονται στα κυριότερα αποτελέσματα του έργου School on the Cloud και στα πλαίσια αρμοδιοτήτων που συλλέγονται σε Εθνικό, Ευρωπαϊκό και Διεθνές επίπεδο από τους εταίρους του έργου.

Η έκθεση (IO1.A4) αποτελείται από 5 μέρη, χωρίς να συμπεριλαμβάνει την παρούσα εισαγωγή:

1) Προετοιμασία: Σύγχρονη τεχνολογία και ορισμοί που περιλαμβάνουν **ένα δυναμικό και προσαρμοστικό γλωσσάριο** σχετικά με την κύρια ορολογία και τις έννοιες του έργου L-CLOUD και την **πρόοδο της τέχνης των εκπαιδευτικών και την εκπαίδευση των ηγετών τους σχετικά με τους νέους υπολογιστές, την ηγεσία και την καινοτόμο διδακτική μεθοδολογία.**

2) Κεφάλαιο 1: Τρέχουσες και καινοτόμες πρακτικές, που αναφέρονται εύκολα ως βέλτιστες πρακτικές, φιλτραρισμένες από τα αποτελέσματα του έργου SoC Network και από τις νέες πρακτικές που ανακαλύφθηκαν από τους εταίρους του έργου. Οι βέλτιστες πρακτικές έχουν κατηγοριοποιηθεί σε 6 κριτήρια: ΑΠΟΤΕΛΕΣΜΑΤΙΚΟΤΗΤΑ, ΑΠΟΔΟΤΙΚΟΤΗΤΑ, ΣΥΝΑΦΕΙΑ, ΣΥΝΕΤΑΙΡΙΣΜΟΣ, ΔΥΝΑΤΟΤΗΤΑ ΜΕΤΑΦΟΡΑΣ ΚΑΙ ΗΘΙΚΗ ΒΙΩΣΙΜΟΤΗΤΑ.

3) Κεφάλαιο 2: Συνοπτική συλλογή πλαισίων δεξιοτήτων και άρθρα με κατευθυντήριες γραμμές για τις δεξιότητες που αναπτύσσονται σε χώρες εταίρους, σε Ευρωπαϊκό και Διεθνές επίπεδο, σχετικά με την προετοιμασία των εκπαιδευτικών και των ηγετών της εκπαίδευσης για τον μελλοντικό κόσμο με βάση τις εξελίξεις στην Πληροφορική (συμπεριλαμβανόμενου ενός δυναμικού προγράμματος σπουδών).

4) **Κατευθυντήριες Γραμμές για τις Δεξιότητες και τις Ικανότητες για τους Προσαρμοζόμενους Ηγέτες της Εκπαίδευσης σε περιβάλλον Cloud (ΠΗΕσεΠΣ).**

5) **Παραρτήματα** που περιλαμβάνουν:

- Παράρτημα 1: Δραστηριότητα: Σύγχρονη τεχνολογία των **ΠΗΕσεΠΣ** στις χώρες-εταίρους (Κύπρος, Ισπανία, Ρουμανία, Ελλάδα, Βέλγιο και Ολλανδία και Ιταλία);
- Παράρτημα 2: Δραστηριότητα: Τρέχουσες και καινοτόμες πρακτικές των **ΠΗΕσεΠΣ** σε Ευρωπαϊκό και Διεθνές επίπεδο.;
- Παράρτημα 3: Δραστηριότητα: Προσδιορισμός υφιστάμενων πλαισίων ικανοτήτων για **ΠΗΕσεΠΣ** με τις βασικές δεξιότητες και ικανότητες που απαιτούνται από αυτούς σε εθνικό, ευρωπαϊκό και διεθνές επίπεδο.;
- Παράρτημα 4: Μεθοδολογία IO1.

Οι κατευθυντήριες γραμμές για τις δεξιότητες και τις ικανότητες για τους ΠΗΕσεΠΣ αποσκοπούν στο να δώσουν μια γενική εικόνα του επαγγελματικού προφίλ ενός **ΠΗΕσεΠΣ**, των εμπειριών και των βέλτιστων πρακτικών του, στα πλαίσια της καλύτερη γνώσης των εταίρων για την Ευρώπη και πέραν αυτής. Τα βασικά συμπεράσματα της ανάλυσης θα βοηθήσουν τους εταίρους του έργου για την καλύτερη διαμόρφωση του **Πλαισίου Προσόντων για τους ΠΗΕσεΠΣ με βάση τις Δεξιότητες και τις Ικανότητες.**

Τα κυριότερα συμπεράσματα σχετικά με τα περιγράμματα δείχνουν ότι το Cloud Computing στην εκπαίδευση είναι πολύ σημαντικό για τα σχολεία στην Ευρώπη χάρη στην καινοτόμο δύναμη και σημασία του. Ακόμη και αν οι αλλαγές μπορεί να είναι αργές και να εφαρμόζονται διαφορετικά από τη μια χώρα στην άλλη, οι δυνατότητες είναι αρκετά υψηλές και αναγνωρίζονται παγκοσμίως. Γενικά, το Cloud Computing στην εκπαίδευση χρησιμοποιήθηκε εκτεταμένα για να υποστηρίξει την κύρια διοικητική λειτουργία των εκπαιδευτικών συστημάτων, ενώ η ενσωμάτωσή του στη μάθηση και τη διδασκαλία είναι πολύ πιο ελλιπής και κατακερματισμένη στα σχολεία ή εξαρτάται από την πρωτοβουλία των εκπαιδευτικών. Πράγματι, τα πιθανά οφέλη από την ύπαρξη ηγετών στο CLOUD COMPUTING δεν σχετίζονται μόνο με την εξοικονόμηση χρημάτων σε διευθυντικό επίπεδο, αλλά και με τη μετατροπή του τρόπου διδασκαλίας των εκπαιδευτικών και του τρόπου με τον οποίο μαθαίνουν οι μαθητές.

ΟΙ εταίροι που εμπλέκονται στην ανάπτυξη της παρούσας έκθεσης είναι:

1. EACG-European Association of Career Guidance as project coordinator (CYPRUS), Ευρωπαϊκός Σύνδεσμος Επαγγελματικού Προσανατολισμού (ΚΥΠΡΟΣ),
2. UB – Universitat de Barcelona (SPAIN),

3. Colegiul National Pedagogic "Mircea Scarlat" (ROMANIA),
4. DOUKA EKPAIDEFTIRIA AE - PALLADION LYKEION EKFPAIDEUTHRIA DOUKA (GREECE) (ΕΚΠΑΙΔΕΥΤΗΡΙΑ ΔΟΥΚΑ ΑΕ, ΕΛΛΑΣ)
5. EUROGEO VZW- EUROPEAN ASSOCIATION OF GEOGRAPHERS (BELGIUM);
6. DLEARN - European Digital Learning Network (ITALY).

2. Προετοιμασία: Σύγχρονη τεχνολογία και Ορισμοί

Αυτό το Κεφάλαιο εξετάζει και αναλύει τις υφιστάμενες κατευθυντήριες γραμμές και δομές / συστήματα ικανοτήτων, αναθεωρεί τις έννοιες και τις προσεγγίσεις της ηγεσίας - καθορίζει τους στόχους και τα προτιμώμενα αποτελέσματα και θα καθορίσει την **έννοια των ΠΗΕσεΠΣ Προσαρμοζόμενων Ηγετών της Εκπαίδευσης σε Περιβάλλον Cloud) στην Ευρώπη.**

2.1 Το δυναμικό και προσαρμοστικό γλωσσάριο του L-CLOUD

Το δυναμικό και προσαρμοστικό γλωσσάριο του L-CLOUD είναι ένα θεμελιώδες εργαλείο σχεδιασμένο από τους εταίρους του έργου για την αποθήκευση των κύριων εννοιών και ορισμών σε σχέση με το έργο. Οι κύριες έννοιες και ορισμοί αποθηκεύονται σε αλφαβητική σειρά και θα χρησιμεύσουν ως βάση για το συνολικό έργο.

Το δυναμικό και προσαρμοστικό γλωσσάριο L-CLOUD διατίθεται στον τρέχοντα σύνδεσμο Google Doc:

https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit

Ποιος είναι ο Προσαρμοζόμενος Ηγέτης της Εκπαίδευσης σε Περιβάλλον Cloud (ΠΗΕσεΠΣ);

Οι **ΠΗΕσεΠΣ** ειδικοί με στόχο τη βελτίωση της ποιότητας της εκπαίδευσης και του εκπαιδευτικού συστήματος. Η προσαρμοστικότητα των ηγετών περιλαμβάνει την ικανότητα να επηρεάσουν και να ενθουσιάσουν τους άλλους μέσω της προσωπικής υιοθέτησης, του οράματος και της διάθεσης, και να αποκτήσουν πρόσβαση σε πόρους και πηγές για να δημιουργήσουν μια σταθερή πλατφόρμα για αλλαγή, προσαρμόζοντας τις τεχνολογίες του cloud για να διδάξουν, να μάθουν και να διαχειριστούν το σχολικό σύστημα.

2.2 Σύγχρονη τεχνολογία σε επιλεγμένες χώρες-εταίρους σχετικά με ΠΗΕσεΠΣ .

2.2.1 Εισαγωγή

Η κατάσταση της τεχνολογίας σε επιλεγμένες χώρες επιδιώκει να προσφέρει την σφαιρική εικόνα όσον αφορά τη συσκευή, την τεχνική και το επιστημονικό πεδίο με την καλύτερη γνώση των εταίρων σε σχέση με τους ηγέτες της ψηφιακής εκπαίδευσης (2018/2019). Πράγματι, οι εταίροι του έργου επικεντρώνονται στην έρευνα των κοινών μεθοδολογιών στη χώρα καταγωγής τους σε σχέση με τους

εκπαιδευτικούς, το εκπαιδευτικό προσωπικό και τον διευθυντή. Επίσης, εξετάζεται το πρόγραμμα σπουδών στα πανεπιστημιακά προγράμματα σε εθνικό και περιφερειακό επίπεδο σχετικά με την προετοιμασία του εκπαιδευτικού σχετικά με το θέμα του έργου. Οι έρευνες έχουν επικεντρωθεί σε ιδέες και προσεγγίσεις ηγεσίας, στόχους και αποτελέσματα, καθώς και οι τεχνολογίες Cloud computing και η χρήση τους στο εκπαιδευτικό σύστημα.

Πράγματι, ο στόχος είναι να κατανοήσουμε πώς λειτουργούν τα διαφορετικά συστήματα και να καθοριστούν κατευθύνσεις που λαμβάνουν υπόψη όλους τους εταίρους-κομητείες που εμπλέκονται στην έρευνα αυτή. Σε γενικές γραμμές, πρέπει να θεωρηθεί ότι δεν υπάρχει κοινός ορισμός και στρατηγική μεταξύ όλων των χωρών που σχετίζονται με την ηγεσία και τους **ΠΗΕσεΠΣ** στην Ευρώπη.

Οι επιλεγμένες χώρες είναι η Κύπρος, η Ισπανία, η Ρουμανία, η Ελλάδα, η Ιταλία, το Βέλγιο και οι Κάτω Χώρες.

2.2.2. Κύρια ευρήματα σχετικά με το Cloud Computing

Κάθε κράτος μέλος που εκπροσωπεί την κοινοπραξία παρουσιάζει μια **εθνική στρατηγική** για την εφαρμογή **ψηφιακών στρατηγικών.**

- - Στην Ιταλία και στην Ελλάδα, δεν υπάρχει άμεση σχέση μεταξύ των δεξιοτήτων του εκπαιδευτικού που σχετίζονται με το cloud computing. Στην πραγματικότητα, και στις δύο χώρες η αρχική εκπαίδευση για τους εκπαιδευτικούς δεν περιλαμβάνει ρητά Cloud Computing ως θέμα.

- Το **Cloud Computing** στην Ιταλία αναφέρεται στο εθνικό ψηφιακό σχέδιο για να υποστηρίξει κυρίως το σχολικό σύστημα διαχείρισης (και διοίκησης). Ενώ στην Κύπρο το επίκεντρο της καριέρας του καθηγητή είναι στην ψηφιακό γραμματισμό, συμπεριλαμβανομένου του cloud computing, και λιγότερο στην πλευρά της διαχείρισης (EU project - 2022), παρουσιάζοντας μια εντελώς διαφορετική προσέγγιση στο θέμα.

- Όλες οι χώρες αναφέρουν τη Συνεχή Επαγγελματικής Ανάπτυξης (CPD) για εκπαιδευτικούς που σχετίζονται με το cloud computing (Ισπανία, Ολλανδία, Ιταλία κλπ.) για τη χρήση των Τεχνολογιών της Πληροφορικής και των Επικοινωνιών (ΤΠΕ) για τη διευκόλυνση της μαθησιακής διαδικασίας, για τη στήριξη του συστήματος εκπαιδευτικής διοίκησής και για τη δημιουργία ενός νέου μαθησιακού περιβάλλοντος που να διευκολύνει το επάγγελμα του εκπαιδευτικού.

- Στην Κύπρο η χρήση των ΤΠΕ αποτελεί πολιτική προτεραιότητα, οι φοιτητές στις σπουδές «Δασκάλου» πρέπει να περάσουν τις εξετάσεις της Εκπαιδευτικής Τεχνολογίας, Υποστήριξη Πληροφορικής για τις Φυσικές Επιστήμες (διαφορετική από την Ισπανία, την Ιταλία, την Ελλάδα). Στη Ρουμανία, οι μελλοντικοί εκπαιδευτικοί μελετούν κλάδους όπως η ΤΠΕ, Εφαρμογές υπολογιστών, Εκπαίδευση με Υπολογιστή.

2.2.3 Κύρια ευρήματα σχετικά με τις έννοιες της ηγεσίας στην Ευρώπη

Οι διευθυντές, οι ηγέτες και οι υπεύθυνοι λήψης αποφάσεων διαδραματίζουν βασικό ρόλο στην εκπλήρωση καθηκόντων στον εκπαιδευτικό οργανισμό τους, καθώς οι ηγέτες και οι υπεύθυνοι λήψης

αποφάσεων έχουν να διαδραματίσουν σημαντικό ρόλο για να δώσουν τη δυνατότητα στο μετασχηματισμό και την αλλαγή του εκπαιδευτικού συστήματος.

Φιλτράροντας τα αποτελέσματα από το έργο SoC Network, υπάρχουν ακόμα **διάφοροι ορισμοί για ηγεσία και μορφές ηγεσίας σε εκπαιδευτικά συστήματα στην Ευρώπη:** ηγεσία των υπηκόων, ηγεσία συναλλαγών, συναισθηματική ηγεσία, ηγεσία μετασχηματισμού, στρατηγική ηγεσία, ηγεσία διανομής, ηλεκτρονική ηγεσία κλπ., ενώ υπάρχει σαφής διάκριση μεταξύ **ηγεσίας και διοίκησης σε εκπαιδευτικό οργανισμό.**

Κάνοντας ένα βήμα πίσω, οι εταίροι του έργου αναγνώρισαν ποιες είναι οι ικανότητες που απέκτησε το εκπαιδευτικό προσωπικό, οι εκπαιδευτικοί και ο ηγέτης τους κατά τη διάρκεια των σπουδών και είναι απαραίτητες για να εργαστούν ως εκπαιδευτικοί:

- Στην αρχική εκπαίδευση για καριέρα εκπαιδευτικού στην **Ελλάδα, την Ιταλία και τη Ρουμανία** δεν υπάρχουν στοιχεία ή άμεση σύνδεση με την Ηγεσία ως ικανότητα στα εθνικά προγράμματα σπουδών. Αντ' αυτού, οι εκπαιδευτικοί μπορούν να αποκτήσουν σχετικές ικανότητες **Συνεχούς Επαγγελματικής Ανάπτυξης** (CPD), καθώς θέλουν να αυξήσουν τις ικανότητες και τις δεξιότητές τους ως ηγέτες. Στην **Κύπρο**, οι μελλοντικοί εκπαιδευτικοί ηγέτες πρέπει να ακολουθήσουν ένα μάθημα στην Εκπαιδευτική Διοίκηση και Τεχνολογία εάν παρακολουθούν μεταπτυχιακές σπουδές στις εκπαιδευτικές επιστήμες - Εκπαιδευτική Ηγεσία και Διοίκηση.

- Στην **Ισπανία, η εκπαιδευτική ηγεσία θεωρείται πολιτική προτεραιότητα** καθώς βοηθά τους φοιτητές να μάθουν καλύτερα και επιτρέπει τη σύνδεση του σχολείου με το περιβάλλον του και αναφέρεται σαφώς σε **νόμο της εκπαίδευσης** (LOMCE, 2013) όσον αφορά την **αυτονομία των σχολείων** (επιλογή του αριθμού των ωρών ανά θέμα, παιδαγωγικές μεθόδοι και περιεχόμενο) και **ηγεσίας** (διευρυμένες ικανότητες για τον επικεφαλής του σχολείου) ως βάση για τη λειτουργία του σχολείου. Η Ισπανία υπογραμμίζει τη σημασία της εκπαιδευτικής νοημοσύνης για την εκπαιδευτική ηγεσία ως "κοινή ηγεσία": η στρατηγική σκέψη, η διαχείριση της μάθησης, οι κοινωνικές σχέσεις και η δημιουργία και η εμψύχωση των οργανωτικών δομών ως **βασικών ικανοτήτων**. Ενώ στην Ιταλία η **έννοια της ηγεσίας** αναφέρεται στην καινοτομία στον τομέα της εκπαίδευσης, δημιουργία εταιρικών σχέσεων με ερευνητικά κέντρα, πανεπιστήμια και τοπικούς εταίρους με την αξιοποίηση των υφιστάμενων καλών πρακτικών στο εκπαιδευτικό σύστημα.

- Στο **Βέλγιο και τις Ολλανδία**, υπάρχει μεγάλη ποικιλία ευκαιριών στο διαδίκτυο, όσον αφορά την ανάληψη ηγετικού ρόλου στη διαχείριση της εκπαίδευσης. Βασικά παραδείγματα επικεντρώνονται κυρίως στα αρχικά στάδια της εκπαίδευσης που αποδέχονται και εφαρμόζουν τις ΤΠΕ στο πρόγραμμα σπουδών και πώς μπορούν να επωφεληθούν από φιλικά προς το χρήστη εκπαιδευτικά προγράμματα στο διαδίκτυο προκειμένου να καινοτομήσουν στο πρόγραμμα σπουδών στην εκπαίδευση, λαμβάνοντας υπόψη τον τεράστιο πλούτο των ευκαιριών στη μάθηση. Όμως τα τελευταία είκοσι χρόνια η αποδοχή και χρήση όλων αυτών των εργαλείων έχει αυξηθεί βραδέως σε σχέση με τις ταχύτητες των εξελίξεων.

3. Κεφάλαιο 1: Τρέχουσες και καινοτόμες πρακτικές

Προκειμένου να εξαχθούν συμπεράσματα ως προς τις κατάλληλες δεξιότητες και ικανότητες για τους εκπαιδευτικούς και τους ηγέτες τους στην Ευρώπη, έχουν αναλυθεί οι τρέχουσες και καινοτόμες πρακτικές. Οι εταίροι έχουν συλλέξει 17 "βέλτιστες πρακτικές" σύμφωνα με τα κριτήρια που εκφράζονται στη Μεθοδολογία (ΠΑΡΑΡΤΗΜΑ Ν ° 2).

Οι 17 καλύτερες πρακτικές φιλτράρονται με 6 κριτήρια, και συγκεκριμένα: ΑΠΟΤΕΛΕΣΜΑΤΙΚΟΤΗΤΑ, ΑΠΟΔΟΤΙΚΟΤΗΤΑ, ΣΥΝΑΦΕΙΑ, ΣΥΝΕΤΑΙΡΙΣΜΟΣ, ΔΥΝΑΤΟΤΗΤΑ ΜΕΤΑΦΟΡΑΣ ΚΑΙ ΗΘΙΚΗ ΒΙΩΣΙΜΟΤΗΤΑ σε κλίμακα από 1 έως 4, όπου 1 αντιπροσωπεύει ανεπαρκείς και 4 εξαιρετικές.

Οι τρέχουσες και καινοτόμες πρακτικές που έχουν επιλεγεί είναι:

1. **School on the Cloud** - Πρόκειται για ένα έργο που στοχεύει στην εισαγωγή της εφαρμογής του Cloud Computing στην Εκπαίδευση, το οποίο παρέχει μια συνολική εικόνα των πτυχών της ηγεσίας και της διαχείρισης που σχετίζονται με την εφαρμογή του Cloud σε διαφορετικά πλαίσια εκπαίδευσης.
   Η εφαρμογή του Cloud στο σχολικό σύστημα περιλαμβάνει οράματα, εμπόδια, πιθανές επιπτώσεις και προτάσεις. Πράγματι, η εξέταση των εκπαιδευτικών οραμάτων βοηθά τους ηγέτες να εξετάσουν το ρόλο που μπορεί να διαδραματίσει το Cloud σε επίσημα και μη τυπικά πλαίσια[10]

   Μέση βαθμολογία για τα 6 κριτήρια: 3,416666667

   Πηγή: https://www.schoolonthecloud.net/

2. **Ελληνικό Ψηφιακό Σχολείο - Το φωτοδέντρο** είναι ένα τεράστιο **αποθετήριο ανοιχτών εκπαιδευτικών πόρων και πρακτικών** που σχετίζονται με το ελληνικό εθνικό πρόγραμμα σπουδών. Το έργο είναι ένας καινοτόμος τρόπος να χρησιμοποιηθεί η τεχνολογία cloud για να οδηγήσει αποτελεσματικά την εκπαίδευση σε εθνικό επίπεδο από το Υπουργείο Παιδείας και Θρησκευμάτων της Ελλάδας. Πράγματι, πρόκειται για ένα αποθετήριο μαθησιακών αντικειμένων, εκπαιδευτικών βίντεο, εκπαιδευτικού λογισμικού και ανοικτών εκπαιδευτικών πρακτικών που διατίθενται τόσο για τους εκπαιδευτικούς όσο και για τους μαθητές, όπου η χρήση τεχνολογίας Cloud στοχεύει σε μια ευρεία εμβέλεια και στοχεύει στην επίτευξη κοινοτικών διαδικασιών οικοδόμησης.

   Μέση βαθμολογία για τα 6 κριτήρια: 3,027777778

   Πηγή: http://www.dschool.gr/ (available only in Greek)

3. **Cloud Computing για την Εκπαίδευση: Ένα πρόγραμμα επαγγελματικής ανάπτυξης για τους δασκάλους λυκείου.** Το τρέχον **πρόγραμμα για τους εκπαιδευτικούς** ήταν να διερευνηθούν τρόποι με τους οποίους οι τεχνολογίες Cloud Computing μπορούν να χρησιμοποιηθούν για τη βελτίωση της διδασκαλίας στην τάξη. Για το σκοπό αυτό, το πρόγραμμα σχεδιάστηκε για να ανταποκριθεί σε δύο στόχους: πρώτον, να εκθέσει τους δασκάλους του Λυκείου στην έννοια του Cloud Computing και τις σχετικές τεχνολογίες και, δεύτερον, να βοηθήσει τους εκπαιδευτικούς να αναπτύξουν εκπαιδευτικές μονάδες βασισμένες σε τεχνολογίες Cloud Computing που θα μπορούν να ενσωματωθούν σε διάφορα θέματα του λυκείου. Η τεχνολογία Cloud παρέχει άφθονες ευκαιρίες εκμετάλλευσης των πλεονεκτημάτων των νέων

[10] http://www.eurogeography.eu/SoC/guidelines/ileader-guidelines.html#intro

τεχνολογιών. Επιπλέον, οι εκπαιδευόμενοι έχουν περισσότερες ευκαιρίες για συνεργασία, επικοινωνία και χειρισμό δεδομένων.

Μέση βαθμολογία για τα 6 κριτήρια: 2,916666667

Πηγή: https://peer.asee.org/cloud-computing-for-education-a-professional-development-program-forhigh-school-teachers

Ενώ ο νικητής για κάθε κριτήριο παρουσιάζεται παρακάτω:

1. **ΑΠΟΤΕΛΕΣΜΑΤΙΚΟΤΗΤΑ:** Τα αποτελέσματα πρέπει να είναι μετρήσιμα. Ως σύνολο πιθανών μετρήσιμων μπορεί να είναι τα διπλώματα, το νέο πρόγραμμα σπουδών, το ερευνητικό πρόγραμμα και τα νέα μαθήματα που δημιουργήθηκαν.
   Οι περισσότεροι ψήφισαν την καλύτερη πρακτική: **Ελληνικό Ψηφιακό Σχολείο - Το Φωτοδέντρο** και **School on the Cloud**.

2. **ΑΠΟΔΟΤΙΚΟΤΗΤΑ:** Οι επιλεγείσες πρακτικές πρέπει να παράγουν αποτελέσματα με καθορισμένο σύνολο πόρων και χρόνου.
   Οι περισσότεροι ψήφισαν την καλύτερη πρακτική: **School on the Cloud**

3. **ΣΥΝΑΦΕΙΑ:** Οι τρέχουσες και καινοτόμες πρακτικές πρέπει να ευθυγραμμίζονται και να ταιριάζουν με τις προτεραιότητες του ERASMUS PLUS και τους στόχους του έργου L-CLOUD.
   Οι περισσότεροι ψηφίστηκαν Καλύτερη πρακτική: **Cloud Computing για την Εκπαίδευση:Ένα πρόγραμμα επαγγελματικής ανάπτυξης για τους δασκάλους λυκείου.**

4. **ΣΥΝΕΤΑΙΡΙΣΜΟΣ:** Οι επιλεγμένες βέλτιστες πρακτικές που δημιουργήθηκαν από κοινού από διάφορους ενδιαφερόμενους, όπως σχολεία, ινστιτούτα κατάρτισης, ερευνητικά κέντρα, υπεύθυνους χάραξης πολιτικής.
   Οι περισσότεροι ψήφισαν την καλύτερη πρακτική: **School on the Cloud**

5. **ΔΥΝΑΤΟΤΗΤΑ ΜΕΤΑΦΟΡΑΣ:** Κάθε βέλτιστη πρακτική και πρωτοβουλία πρέπει να είναι ανοικτού κώδικα, ώστε τα αποτελέσματα να είναι διαθέσιμα και να διαβουλεύονται από όλους.
   Οι περισσότεροι ψήφισαν την καλύτερη πρακτική: **School on the Cloud** και **Interactive School Books**, το οποίο χρησιμοποιείται από το ελληνικό Υπουργείο για να παραδώσει όλα τα βιβλία που χρησιμοποιούνται στο πρόγραμμα σπουδών K-12 μέσω του Cloud σε όλους τους μαθητές της χώρας. Πράγματι, όλα τα ελληνικά σχολικά βιβλία είναι προσβάσιμα μέσω οποιουδήποτε προγράμματος περιήγησης σε οποιοδήποτε υπολογιστή ή κινητή συσκευή που διατίθεται μέσω της χρήσης τεχνολογίας Cloud

6. **ΗΘΙΚΗ ΒΙΩΣΙΜΟΤΗΤΑ:** Οι βέλτιστες πρακτικές που είναι βιώσιμες από περιβαλλοντική, οικονομική και κοινωνική σκοπιά.
   Οι περισσότεροι ψήφισαν την καλύτερη πρακτική: **School on the Cloud**

Η κατανόηση των ποικίλων έργων, προγραμμάτων και αναγκών των διαφόρων εκπαιδευτικών συστημάτων στην Ευρώπη είναι θεμελιώδης για την επίτευξη της Cloud ηγεσίας στο εκπαιδευτικό σύστημα. Σύμφωνα με τις πρακτικές που ψηφίστηκαν ως καλύτερες, αναφέρονται οι ακόλουθες οδηγίες:

- ***Αλλαγή και ετοιμότητα*** *ως η ικανότητα ενός οργανισμού να ξεκινήσει και να ανταποκριθεί στην αλλαγή με τρόπους που δημιουργεί πλεονέκτημα για αυτόν, ελαχιστοποιώντας τους κινδύνους που μπορεί να αντιμετωπίσει. Η ετοιμότητα ενός οργανισμού είναι ζωτικής σημασίας για το cloud computing και η διοίκηση πρέπει να την υποστηρίξει;*
- ***Διακυβέρνηση****, καθώς οι αλλαγές περιλαμβάνουν τη διακυβέρνηση. Η διακυβέρνηση είναι ο τρόπος οργάνωσης και διαχείρισης των εκπαιδευτικών ιδρυμάτων σύμφωνα με τρεις προοπτικές: Ηγεσία, Διαδικασίες Εφαρμογής και Εκπαίδευση & Μάθηση;*
- ***Δημιουργία Πλάνου.*** *Η αρχή που διέπει είναι ότι ένας οργανισμός πρέπει να σχεδιάζει, να εφαρμόζει και να διατηρεί ένα συνεκτικό σύνολο πολιτικών, διαδικασιών και συστημάτων για τη διαχείριση των κινδύνων για τα πληροφοριακά του στοιχεία, διασφαλίζοντας αποδεκτό επίπεδο κινδύνου όσον αφορά το σύστημα διαχείρισης της ασφάλειας των πληροφοριών;*
- ***Υλοποίηση της ηγεσίας.*** *Η ηγεσία σε έναν εκπαιδευτικό οργανισμό είναι σημαντικός παράγοντας που επηρεάζει την αποτελεσματικότητα. Η παραδοσιακή ηγεσία είναι μια διαδικασία στην οποία ένα μέλος μιας οργάνωσης επηρεάζει και ελέγχει τη συμπεριφορά των άλλων για να επιτύχει τους κοινούς στόχους.*

4. Κεφάλαιο 2: Πλαίσιο Δεξιοτήτων σε εθνικό, Ευρωπαϊκό και Διεθνές επίπεδο.

Το κεφάλαιο αυτό περιέχει τη συλλογή από οδηγίες που αναπτύχθηκαν από τις συνεργαζόμενες χώρες, στην Ευρώπη και Διεθνώς για να προετοιμάσει τους δασκάλους και τους ηγέτες της εκπαίδευσης για ένα μελλοντικό κόσμο βασισμένο στην Πληροφορική (ICT), περιλαμβάνοντας στρατηγικές για μια δυναμική ανάπτυξη προγραμμάτων σπουδών.

Οι συνεργάτες του έργου συνέλεξαν αρκετά πλαίσια δεξιοτήτων και πληροφορίες που αφορούν τις δεξιότητες που πρέπει να έχουν διεθνώς οι ηγέτες της εκπαίδευσης. Η παρακάτω λίστα είναι μια επιλογή του προαναφερθέντος υλικού που συγκεντρώθηκε από τους εταίρους του έργου με την καλύτερη γνώση που διέθεταν.

Οι λίστες των δεξιοτήτων και των άρθρων που σχετίζονται με τους **προσαρμοζόμενους ηγέτες της εκπαίδευσης σε περιβάλλον Cloud (ΠΗΕσεΠΣ)**:

1. Five Traits of a Good Educational Leader (2014, USA);
2. The Teacher Leadership Competencies (2014, USA);
3. Educator and School Leader Competencies Can promote systems coherence in Competency Education (USA).
4. Teacher Leader Competency Framework (2015, USA);
5. Nine Competencies for Teaching Empathy (2018, USA);
6. Leadership Competence Framework (2014, Australia);
7. Top 10 Digital Skills for Education Leaders (2016, USA);
8. Charlotte Danielson's Framework for Teaching (2013, USA);
9. Digital Learning Framework for Post-Primary Schools (2015, Ireland);
10. Professional Development Framework for Digital Learning (2018, South Africa);

11. Technology in Education Framework: Teaching and Learning, Administrative Operations, Provincial Infrastructure (2013, Canada);
12. EDUCATIONAL LEADERSHIP COMPETENCE FRAMEWORKS (2014, Spain);
13. DIGITAL TEACHING COMPETENCE FRAMEWORKS (2017, Spain);
14. Catalonia: Digital framework - Digital Agenda 2020 (2014, Spain);
15. Catalonia: Reference framework (2018, Catalunya);
16. Fundation "Digital Spain" (Fundación España Digital) – (2015, Spain);
17. Leadership Competency Framework (2013, USA);
18. Standards for school leaders: competency frameworks and their applicability (2012, United Kingdom);
19. UNESCO ICT Competency Framework For Teachers (UNESCO 2011);
20. Teach to Lead – Leadership Competency Framework (2016, Australia);
21. Leadership Competency Framework (United Kingdom);
22. Digital Competence of Educators (2017, Luxemburg);
23. STRATEGISCH COMPETENTIE DENKEN (2018, The Netherlands);
24. SCHOOLLEIDERSREGISTER PO BASISCOMPETENTIES (The Netherlands);
25. Het geheim van de innovatieve schoolleider (The Netherlands).
26. Waar blijft de middenmanager? Een onderzoek naar de strategische rol van team- en afdelingsleiders in het voortgezet onderwijs (The Netherlands).
27. De leidinggevende in het onderwijs als regisseur (The Netherlands).
28. Competentieontwikkeling M-decreet (Belgium).
29. Een nieuw profiel voor de leraar secundair onderwijs. Hoe worden leraren daartoe gevormd? (Belgium).
30. Education competency frameworks (2016, UK);
31. Digital Skills competency framework (2018, UK);
32. Professional Digital Learning Framework (2018, UK);
33. Curriculum for Digital Education Leadership (2016, South Africa);
34. Building digital capabilities framework (2016, UK);
35. Leadership competency framework in education (2012, USA);
36. UK Professional Standards Framework – UKPSF (UK);
37. KIPP leadership framework and competency model (2016, USA);
38. National Council of School Leaders: Facilitation competency framework (2017, UK);

Στον τομέα της εκπαίδευσης, του ψηφιακού γραμματισμού και των ψηφιακών δεξιοτήτων, υπάρχει πλήθος άρθρων, προγραμμάτων σπουδών και πλαίσια δεξιοτήτων που ποικίλουν από χώρα σε χώρα.

Για τις ανάγκες του έργου, έχουν τεθεί ορισμένοι περιορισμοί καθώς τα άρθρα αντιμετωπίστηκαν σαν να μην υπάρχει ένα συγκεκριμένο πλαίσιο δεξιοτήτων που να σχετίζεται με την εκπαίδευση των ηγετών προσαρμοσμένη στο cloud. Κυρίως τα άρθρα και τα πλαίσια δεξιοτήτων αναφέρονται στην ηγεσία μεμονωμένα, στον ψηφιακό γραμματισμό και στις δεξιότητες για τους δασκάλους και το προσωπικό στον τομέα της εκπαίδευσης. Επιπρόσθετα, έχουν αναγνωριστεί διάφοροι συνδυασμοί ικανοτήτων και δεξιοτήτων σε σχέση με την ηγεσία και την αντίληψη για την ηγεσία. Δεν υπάρχει ένας κοινός ορισμός για την αντίληψη της ηγεσίας και των ηγετών της εκπαίδευσης, όπως προαναφέρθηκε σε αυτό το κείμενο. Προκύπτει η ανάγκη να αναδυθεί ένας κοινά αποδεκτός ορισμός για την ηγεσία ως δεξιότητα σε σχέση με την εκπαιδευτική ηγεσία προσαρμοσμένη στο cloud.

Στο 'Competence Framework related to Curriculum for Digital Education Leadership' (Νότια Αφρική, 2016) η αντίληψη της εκπαιδευτικής ηγεσίας και οι ψηφιακές δεξιότητες δεν έχουν κάποια σαφή ένδειξη για την τεχνολογία του cloud. Αλλά προσφέρει μια πραγματικά ενδιαφέρουσα επισκόπηση '… προτείνουμε μια ψηφιακή εκπαίδευση η οποία σχετίζεται με την αύξηση των ικανοτήτων των ατόμων στον ψηφιακό γραμματισμό (για παράδειγμα πρακτικές ψηφιακού γραμματισμού βασισμένες σε κείμενα), παρά μια προσέγγιση ψηφιακών δεξιοτήτων (διότι δεν υπάρχει μια μέθοδος που να προσαρμόζεται σε όλες). **Αυτό επομένως υποδεικνύει ότι υπάρχει μια ανάγκη για ψηφιακούς ηγέτες της εκπαίδευσης που θα μπορεί να καθοδηγήσει άλλους και να προάγει την ψηφιακή εκπαίδευση που σχετίζεται με το ατομικό και τοπικό πλαίσιο με τρόπο ώστε να δημιουργήσει μια αντίληψη και να δώσει πρόσβαση σε διαθέσιμες πηγές: αναπτύσσοντας την ικανότητα στα άτομα, προγράμματα σπουδών και οργανισμούς, δημιουργώντας αποφάσεις κατάλληλες και ενημερωμένες και αναπτύσσοντας καινοτομίες ή αλλάζοντας τους παράγοντες στα δικά τους πλαίσια.**

Η προσαρμοσμένη ηγετική ικανότητα είναι μία περίπλοκη διαδικασία καθώς επηρεάζει την ανάλυση σε διαφορετικά επίπεδα. Για παράδειγμα, προϋποθέτει τη δυνατότητα να ενημερώνει τους αρμόδιους για τη λήψη αποφάσεων σχετικά με τις επιλογές των τεχνολογιών cloud κατάλληλες για διαφορετικά εκπαιδευτικά περιβάλλοντα και να πληροφορεί τους υπεύθυνους για τη δημιουργία εκπαιδευτικών προγραμμάτων, για την ανάγκη νέων τεχνολογιών, αναστρέφοντας αυτό που η ομάδα του L-CLOYD όρισε ως "technology push". Η προσαρμοσμένη εκπαίδευση των ηγετών πρέπει να αποτελέσει παράδειγμα προς μίμηση και να τελειοποιήσει της ψηφιακές τεχνολογίες.

5. Οδηγίες για Ικανότητες και Δεξιότητες για την Εκπαίδευση για τους Προσαρμοζόμενους Ηγέτες της Εκπαίδευσης σε περιβάλλον cloud (ΠΗΕσεΠΣ)

Σε ένα διαρκώς εναλλασσόμενο και διασυνδεόμενο κόσμο, είναι απαραίτητο για τα εκπαιδευτικά συστήματα να εφοδιάζουν τους ηγέτες με επαρκείς δεξιότητες ώστε να διαχειρίζονται την κοινωνική και επαγγελματική πραγματικότητα του 21ου αιώνα (π.χ. OECD, 2015a; Schleicher 2015; Wiseman and Anderson, 2014). Στην Εποχή της Πληροφορίας (Castells, 2010), τα επαγγέλματα που βασίζονται στην πληροφορία απαιτούν ανθρώπους οι οποίοι θα μπορούν να συντονίζουν τις περίπλοκες προκλήσεις και να προσαρμόζουν ομάδες ρευστών ικανοτήτων στις διαρκώς μεταβαλλόμενες απαιτήσεις (π.χ. OECD, 2010a; 2011). Η υψηλής ποιότητας και δίκαιη εκπαίδευση είναι το βασικό κλειδί στην απόκτηση των βασικών δεξιοτήτων στη δια βίου μάθηση (Ευρωπαϊκό Συμβούλιο, 2006) και κατά συνέπεια μια προτεραιότητα στις εθνικές κυβερνήσεις και στους παγκόσμιους οργανισμούς (π.χ. Ευρωπαϊκή Επιτροπή, 2010, Fullan, 2010, Kinuthia and Marshall, 2013)[11].

Σύμφωνα με την έρευνα που πραγματοποιήθηκε από τους εταίρους του έργου, στο κεφάλαιο αυτό εντοπίστηκαν ορισμένες κατευθυντήριες γραμμές για να οδηγήσουν την επιτροπή του L-CLOUD να αναπτύξει το Πλαίσιο Προσόντων για τους ΠΗΕσεΠΣ με βάση τις Δεξιότητες και τις Ικανότητες και με τρόπο ώστε να αναπτύξουν μια σειρά μαθημάτων κατάρτισης.

Τρείς βασικές περιοχές δεξιοτήτων έχουν προσδιοριστεί: **ψηφιακή εκπαίδευση, ηγετικές ικανότητες στην εκπαίδευση και τεχνολογία cloud για τους ηγέτες της εκπαίδευσης.**

Όσον αφορά την πρώτη περιοχή που προσδιορίστηκε, το Ευρωπαϊκό Πλαίσιο για τις Ψηφιακές Δεξιότητες των Εκπαιδευτικών (DigCompEdu) έχει δημιουργήσει μια σειρά ψηφιακών δεξιοτήτων για τους εκπαιδευτικούς ώστε να διαχειρίζονται και να αντιλαμβάνονται τις δυνατότητες των ψηφιακών τεχνολογιών για την εκπαιδευτική ενίσχυση και καινοτομία[12].

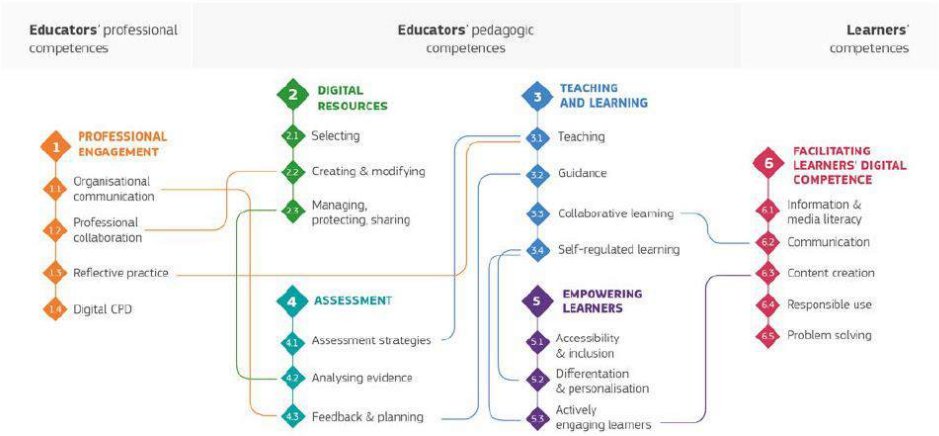


FIGURE 1: THE DIGCOMPEDU FRAMEWORK

[11] Digital Education Policies in Europe and Beyond, 2017, JRC Join Research Centre for Policy Report
[12] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu

Το Ευρωπαϊκό Πλαίσιο για την Ψηφιακή Δεξιότητα των Εκπαιδευτικών έχει αποτελέσει κείμενο αναφοράς καθώς σκοπός του είναι να δημιουργήσει ένα γενικό πλαίσιο για να επισημάνει ένα μοντέλο με συγκεκριμένες ψηφιακές ικανότητες για τους εκπαιδευτικούς όπως επίσης δεν αναφέρεται μόνο σε ένα επίπεδο εκπαίδευσης (πρωτοβάθμια vs τριτοβάθμια εκπαίδευση), αλλά δεν είναι μπορούν να εφαρμοστούν οριζόντια σε όλα τα επίπεδα της εκπαίδευσης.

Το DigCompEdu επισημαίνει 6 περιοχές: 1. **Επαγγελματική Ανάπτυξη** για τους εκπαιδευτικούς σε σχέση με την ατομική ανάπτυξη και την χρήση των ψηφιακών τεχνολογιών για επαγγελματική συνεργασία. 2. **Ψηφιακές Πηγές**, είναι εστιασμένες στις ψηφιακές δεξιότητες που χρειάζεται να δημιουργήσουν οι εκπαιδευτικοί καθώς και η δημιουργία και κοινοποίηση ψηφιακών πηγών για εκμάθηση, 3. **Διδασκαλία και εκμάθηση**, αναφέρεται στη διαχείριση των ψηφιακών τεχνολογιών στην διδασκαλία και την μάθηση, 4. **Ψηφιακές τεχνολογίες και αξιολόγηση**, 5. **Δημιουργία Κινήτρου για τους Εκπαιδευόμενους**, παρέχει μια γενική ανασκόπηση στις πιθανές ψηφιακές τεχνολογίες αυξάνοντας τις στρατηγικές εκμάθησης και διδασκαλίας σε μια πιο μαθητοκεντρική προσέγγιση, 6. **Διευκόλυνση των Ψηφιακών Δεξιοτήτων των Εκπαιδευόμενων**, η έκτη και τελευταία περιοχή δίνει έμφαση στις παιδαγωγικές δεξιότητες που θα διευκολύνουν τους μαθητές στις ψηφιακές δεξιότητες.

Όσον αφορά τη προαναφερθείσα δεύτερη περιοχή, 'οι ηγετικές ικανότητες της εκπαίδευσης', το πλαίσιο των δεξιοτήτων της έχει αναλυθεί σε αρκετά άρθρα όπως το 'Educational Leadership Competence Framework' (2014, Ισπανία), 'Standards for school leaders: competency framework and their applicability' (2012, Ηνωμένο Βασίλειο), 'Teach to lead' (2014, Αυστραλία), 'Curriculum for Digital skills competence framework' και πολλά ακόμα. Όπως αναφέρθηκε στο 'Standards for school leaders: competency framework and their applicability framework', τα πλαίσια των δεξιοτήτων και τα επαγγελματικά πρότυπα για τους ηγέτες των σχολείων είναι πλέον διαδεδομένα σε ευρεία κλίμακα αλλά εκφράζονται με διαφορετικό βαθμό λεπτομέρειας, ενώ μερικά από αυτά εξετάζουν το ρόλο του ηγέτη με μεγάλη λεπτομέρεια και διαφοροποιούνται ανάμεσα στις λειτουργικές (ή επαγγελματικές) και ατομικές δεξιότητες, με την ανάγκη να καταδείξουν τη 'δεξιότητα' σε κάθε επίπεδο[13].

Καθώς υπάρχουν διαφορετικοί τρόποι ηγεσίας είναι δύσκολο να προταθεί ένας. Σε γενικές γραμμές, η παραδοσιακή ηγεσία είναι μια διαδικασία στην οποία ένα μέλος από κάθε οργανισμό επηρεάζει και ελέγχει την συμπεριφορά των υπολοίπων με σκοπό την επίτευξη κοινών στόχων (School on the Cloud: Guidelines for leaders and management, 2016)[14]. Στο πλαίσιο των ηγετών της εκπαίδευσης μέσω της τεχνολογίας cloud, η βασική πρόκληση είναι να θεσπιστεί ένα πλαίσιο για αλλαγή και ενδυνάμωση ώστε τα μέλη του προσωπικού να υιοθετήσουν τις παιδαγωγικές ευκαιρίες ώστε να δημιουργήσουν αυθεντική μάθηση ενώ ταυτόχρονα παραδίδουν τον έλεγχο της μάθησης στους ηγέτες του ίδιους. Όπως αναφέρθηκε στο 'Conceptual Framework for Digital Educational Leadership' ένα πρόγραμμα σπουδών για την ψηφιακή ηγεσία πρέπει να περιλαμβάνει τουλάχιστον 2 μέρη: (α) ψηφιακή εκπαίδευση και (β) ηγεσία στην ψηφιακή εκπαίδευση, με τον ψηφιακό γραμματισμό να αποτελεί τη βάση και για τα δύο. Η υπόθεση αυτή υποστηρίζεται *από το γεγονός ότι όταν ένα άτομο γίνεται ηγέτης ψηφιακής εκπαίδευσης πρέπει πρώτα να δείξει την ικανότητα του σε πρακτικές που*

[13] http://www.schoolleadership.eu/sites/default/files/standards-school-leaders-competency-frameworks-applicability-2012_6.pdf
[14] School on the Cloud: Guidelines for leaders and management, 2016, School on the cloud project.

συμπίπτουν με την ψηφιακή εκπαίδευση[15].

Παρακάτω δίνεται μια ολιστική άποψη των ηγετικών ικανοτήτων στην ψηφιακή εκπαίδευση, όπου ο ψηφιακός γραμματισμός είναι η βάση για την ψηφιακή εκπαίδευση και στο να αποτελέσει κάποιος ηγετικό στέλεχος στο πεδίο αυτό[16].

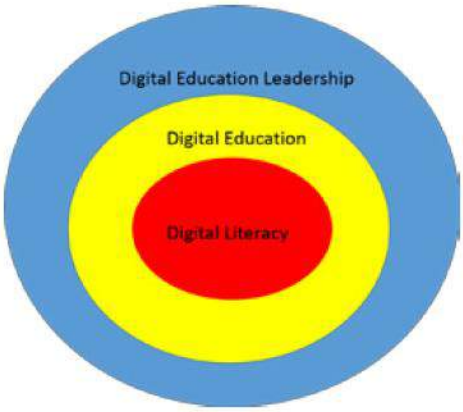


FIGURE 1. A HOLISTIC VIEW OF DIGITAL EDUCATION LEADERSHIP.

Επιπλέον, η έννοια της ηγεσίας δεν μπορεί να διαχωριστεί από την διοίκηση, η οποία απεικονίζει τον τρόπο με τον οποίο οι οργανισμοί οργανώνονται και διοικούνται. Όντως, μία από τις τρείς προοπτικές που προτείνει το έργο "School on the cloud" είναι να δει τη διοίκηση από τη σκοπιά του ηγέτη. Από αυτή την ανάλυση προκύπτει ότι τα εκπαιδευτικά ιδρύματα πρέπει να είναι έτοιμα να ενσωματώσουν το Cloud Computing διότι οι υπηρεσίες Cloud επηρεάζουν όλες τις διαδικασίες, κάνοντας τη διοίκηση κριτική στην αποτελεσματική κατανόηση και στον έλεγχο των κινδύνων[17]. Σύμφωνα με την ίδια ανάλυση, οι ηγέτες πρέπει να είναι ικανοί να καθορίσουν κατά πόσο οι διευθυντές ακολουθούν τα απαραίτητα βήματα ώστε να διασφαλίσουν την ύπαρξη ενός καλού συστήματος διοίκησης που διακρίνει τους ηγέτες της εκπαίδευσης από τους διευθυντές.

Η τρίτη περιοχή δεξιοτήτων που εντοπίστηκε σχετίζεται με το Cloud Computing για την εκπαίδευση και την προσαρμογή του στους ΠΗΕσεΠΣ. Όπως παρατηρήθηκε παραπάνω, υπάρχουν διαφορετικές προσεγγίσεις από τις χώρες στο θέμα του cloud computing: από τη διοίκηση και τη διαχείριση του σχολικού συστήματος αποτελεσματικότερα (ακόμα και σε οικονομικούς όρους), άλλοι έχουν ήδη ξεκινήσει να αντιλαμβάνονται την παιδαγωγική προοπτική πίσω από την εφαρμογή καινοτόμων περιβαλλόντων εκμάθησης και να αλλάζουν την επικοινωνιακή στρατηγική του σχολείου.

Λόγω της γρήγορης αλλαγής που επιφέρει η τεχνολογία και ο οικονομικός περιορισμός στην επένδυση της σωστής τεχνολογίας, αναδύεται η ανάγκη για μια ξεκάθαρη οπτική του ρόλου των εκπαιδευτικών ηγετών. Όπως προτάθηκε από την UNESCO ICT για το πλαίσιο δεξιοτήτων είναι σημαντική μια διατομεακή προσέγγιση μέσω του ICT στην εκπαίδευση (π.χ. Δεξιότητες των Δασκάλων, εκπαιδευτικό υλικό, εξοπλισμός πληροφορικής κλπ.). Το πλαίσιο δεν αναφέρεται ειδικά στην τεχνολογία Cloud, αλλά προσφέρει ένα πλαίσιο με τρεις προσεγγίσεις στη διδασκαλία:

[15] Curriculum for Digital Education Leadership: a concept paper, Commonwealth of Learning and University of Cape town, 2016.
[16] Curriculum for Digital Education Leadership: a concept paper, Commonwealth of Learning and University of Cape town, 2016.
[17] School on the Cloud: Guidelines for leaders and management, 2016, School on the cloud project.

τεχνολογία, γραμματισμό, ενίσχυση της γνώσης και δημιουργία γνώσης για να δομήσει ένα πλαίσιο δεξιοτήτων πληροφορικής για τους δασκάλους.

THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS			
	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

Το πλαίσιο δεν διαχωρίζεται μόνο στις τρεις περιοχές, αλλά δομεί επίσης τη δουλειά των δασκάλων σε 6 περιοχές: κατανόηση της πληροφορικής στην εκπαίδευση, Προγράμματα Σπουδών και Παιδαγωγική Κατάρτιση, Πληροφορική, Οργάνωση και Διοίκηση, επαγγελματική εκμάθηση δασκάλων. Ακόμα και αν δεν αναφέρεται στους ηγέτες της εκπαίδευσης, το πλαίσιο προσφέρει μια έγκυρη προσέγγιση στην τεχνολογία cloud στην εκπαίδευση.

Στο πλαίσιο της 'Τεχνολογίας στην Εκπαίδευση: η διδασκαλία και η εκμάθηση, οι διοικητικές λειτουργίες, οι προσωρινές δομές' παρουσιάζεται μια δομή πάνω στο ρόλο και τις ευθύνες των διάφορων συντελεστών στην εφαρμογή της πληροφορικής στην εκπαίδευση. Παρέχει μια επισκόπηση στους ρόλους των υπουργών, στο διαχωρισμό των σχολικών επαγγελμάτων και συμβουλευτικές ομάδες για την εφαρμογή της τεχνολογίας στην εκπαίδευση με όρους περιφερειακής πολιτικής και αποτελεσματικής διακυβέρνησης. Για κάθε επίπεδο διακυβέρνησης διάφοροι ρόλοι έχουν αναγνωριστεί όπως: Πολιτική και Κατεύθυνση, Υποδομές, Χρηματοδότηση, Ανάμειξη της Τεχνολογία, Επαγγελματική Εκμάθηση, Υπευθυνότητα, Εκπαίδευση εξ αποστάσεως, Συλλογή και Ανάλυση Δεδομένων και Διαχείριση Πληροφοριών, μέριμνα για το μέλλον.

Σε αυτές τις τρεις αναγνωρισμένες περιοχές, ο ψηφιακός γραμματισμός αποτελεί τη βάση για την ανάπτυξη.

ITALIAN VERSION

1. Introduzione

L-CLOUD è un progetto della durata di due anni, cofinanziato dall'Unione europea - Partenariato strategico per l'istruzione scolastica nell'ambito del programma europeo Erasmus plus. L-CLOUD è l'acronimo che sta per Developing Tomorrow's Cloud Education Leaders (Sviluppare i leader del settore dell'educazione in grado di adattarsi ai cambiamenti offerti dal cloud computing).

Il progetto è cofinanziato dall'agenzia nazionale: Foundation for the management of European Lifelong Learning Programmes (FMELLP).
Il progetto è iniziato nell'ottobre 2018 e durerà 24 mesi.

Il cloud computing sta vivendo una crescita esponenziale e si tratta di una tecnologia innovativa che utilizza internet per offrire un'ampia varietà di servizi IT. Ad esempio, i prodotti di supporto come le applicazioni degli smartphone si stanno moltiplicando: e-mail, archiviazione di informazioni, condivisione di file, strumenti di collaborazione, comunicazioni digitali e altri servizi. Contemporaneamente, le aspettative dei leader scolastici stanno cambiando, di conseguenza le istituzioni educative devono sviluppare una leadership significativa per affrontare le sfide poste dagli strumenti e dai contenuti collaborativi innovativi (quali ad esempio accesso 24/7 a reti sicure e affidabili con la possibilità di creare, consegnare e condividere contenuti tra istituzioni). In generale si può dire che l'adozione del Cloud Computing nell'istruzione rimane frammentata perché, anche se offre molti vantaggi, i “decision makers” sono in gran parte inconsapevoli dei potenziali benefici dei sistemi cloud per l'apprendimento, l'insegnamento, l'amministrazione e la gestione delle scuole. Pertanto, è necessario formare, supportare e aggiornare costantemente le istituzioni scolastiche sull’ evoluzione dello stesso. La leadership è necessaria anche per un cambiamento pedagogico, altrimenti gli educatori continueranno ad usare vecchi metodi di insegnamento ma con nuovi strumenti.

Questo report racchiude le **linee guida per la definizione delle abilità e delle competenze dei leader del settore dell'educazione capaci di adattarsi ai cambiamenti offerti dal cloud computing** (Developing Tomorrow's Cloud Education Leaders). Lo scopo di questo report è quindi quello di creare le basi per la costruzione del quadro delle qualifiche per i leader del settore istruzione basato su competenze specifiche.
La metodologia usata per sviluppare le linee guida si basa sulle ricerche condotte in alcuni paesi Europei e racchiude le definizioni dei concetti principali ovvero un’istantanea sulla situazione attuale e sulle best practices. Inoltre, le linee guida si basano sui principali risultati del progetto “School on the Cloud” e sui quadri delle competenze ritenuti essenziali dai partner del progetto a livello nazionale, europeo e internazionale.

Senza considerare questa introduzione, il report (IO1.A4) è diviso in 5 parti:

1) Preparazione: State of the Art e definizioni che comprendono un **glossario dinamico adattativo** circa la terminologia e i concetti principali del progetto L-CLOUD, **lo stato attuale delle esperienze e della formazione degli insegnanti circa il cloud computing, la leadership educativa e le metodologie didattiche innovative;**

2) Capitolo 1: **Pratiche attuali e innovative**, best practices, filtrate dai risultati del **progetto SoC Network** e dalle **nuove pratiche individuate dai partner del progetto**. Le best practices sono state classificate in ordine di priorità grazie a 6 criteri: EFFICACIA, EFFICIENZA, RILEVANZA, PARTNERSHIP, TRASFERIBILITA’ DEL POTENZIALE e SOSTENIBILITA’ ETICA.

3) Capitolo 2: una selezione dei **quadri di competenze**, articoli e linee guida delle competenze sviluppate nei paesi partner a livello europeo e internazionale per formare insegnanti e dirigenti scolastici al mondo del futuro basato sulle TIC (compresi i curriculum dinamici).

4) **Linee guida per la definizione delle competenze dei leader del settore dell'educazione capaci di adattarsi ai cambiamenti offerti dal cloud computing** (Developing Tomorrow's Cloud Education Leaders);

5) Gli **Annex** invece comprendono:

- Annex 1: Attività: State of the Art dei leader del settore educazione in grado di adattarsi al Cloud computing nei paesi partner selezionati (Cipro, Spagna, Romania, Grecia, Belgio, Paesi Bassi e Italia);
- Annex 2: Attività: Pratiche attuali e innovative riferite ai leader del settore dell'educazione capaci di adattarsi ai cambiamenti offerti dal cloud computing a livello Europeo ed internazionale;
- Annex 3: Attività: Identificare articoli e quadri di competenze riferiti ai leader del settore dell'educazione capaci di adattarsi ai cambiamenti offerti dal cloud computing a livello Europeo ed internazionale;
- Annex 4: Metodologia IO1.

Le linee guida per la definizione delle abilità e competenze dei leader del settore dell'educazione capaci di adattarsi ai cambiamenti offerti dal cloud computing sono volte a fornire una panoramica della mappatura del profilo professionale dei leader dell'educazione "Cloud", ed esperienze e best practices dei paesi Europei. Le principali conclusioni dell'analisi forniranno ai partner di progetto le informazioni necessarie per sviluppare al meglio **il quadro delle qualificazioni dei leader del settore dell'educazione adattabili ai cambiamenti del cloud computing con relative abilità e competenze.**

Grazie al carattere innovativo delle scuole Europee, le principali scoperte relative al concetto di Cloud Computing nell'istruzione sono molto importanti. Anche se i cambiamenti potrebbero essere lenti e assorbiti in modo diverso da un paese all'altro, il potenziale è elevato e riconosciuto a livello mondiale. In generale, il Cloud Computing è stato ampiamente utilizzato per supportare le scuole nelle funzioni amministrative, mentre la sua integrazione nei processi di apprendimento e di insegnamento è molto più frammentata o dipende dall'iniziativa dei singoli insegnanti. In effetti, i benefici potenziali dell'essere leader del CLOUD COMPUTING non sono solo legati al risparmio di denaro a livello manageriale, ma anche alla trasformazione del modo in cui gli insegnanti insegnano e del modo in cui gli studenti apprendono.

I partner coinvolti nello sviluppo del report sono:

1. EACG-European Association of Career Guidance as project coordinator (CIPRO);
2. UB – Universitat de Barcelona (SPAGNA);
3. Colegiul National Pedagogic "Mircea Scarlat" (ROMANIA);
4. DOUKA EKPAIDEFTIRIA AE - PALLADION LYKEION EKFPAIDEUTHRIA DOUKA (GRECIA);
5. EUROGEO VZW- EUROPEAN ASSOCIATION OF GEOGRAPHERS (BELGIO);
6. DLEARN - European Digital Learning Network (ITALIA).

2. Preparazione: State of the art e definizione

Questo capitolo esamina e analizza le linee guida e le strutture/sistemi di competenza esistenti e i concetti e gli approcci di leadership. Inoltre definisce gli obiettivi e i risultati preferiti e definirà la situazione attuale del concetto di **leader educativi in grado di adattarsi ai cambiamenti del Cloud computing** in Europa.

2.1 L-CLOUD dinamico e glossario adattativo

Il **GLOSSARIO DINAMICO E ADATTIVO DEL PROGETTO L-CLOUD** è uno strumento fondamentale progettato dai partner di progetto per riunire e chiarire i concetti principali e la loro definizione. I concetti e le definizioni principali sono organizzati in ordine alfabetico e rappresentano il punto di riferimento per l'intero progetto.

Il Glossario è disponibile al seguente link di Google Doc:

https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit

Chi è un leader del settore dell'educazione in grado di adattarsi ai cambiamenti offerti dal cloud computing?

I leader del settore dell'educazione in grado di adattarsi ai cambiamenti offerti dal cloud computing sono esperti che hanno l'obiettivo di migliorare la qualità dell'istruzione e del sistema educativo stesso. La flessibilità dei leader comprende la capacità di influenzare ed entusiasmare gli altri attraverso il proprio sostegno e la propria visione, di accedere alle risorse con lo scopo di costruire una base solida per il cambiamento adattando le tecnologie cloud per l'insegnamento, l'apprendimento e la gestione del sistema scolastico.

2.2 State of the art nei paesi partner circa i leader del settore dell'educazione in grado di adattarsi ai cambiamenti offerti dal cloud computing

2.2.1 Introduzione

Lo state of the art nei paesi selezionati in relazione ai Cloud Leader vuole fornire una panoramica della situazione attuale in relazione ai dispositivi, le tecniche e le aree scientifiche disponibili in Europa al meglio delle conoscenze dei partner (2018/2019). Infatti, i partner di progetto si sono concentrati sulla ricerca, nel loro paese di origine, delle metodologie comuni riguardo la formazione degli insegnanti, il personale docente e i dirigenti scolastici. Per quanto riguarda la preparazione degli insegnanti sul tema del progetto, sono stati analizzati anche i curriculum dei programmi universitari a livello nazionale e regionale. Le ricerche si sono focalizzate su concetti e approcci di leadership, obiettivi e risultati; così come le tecnologie di cloud computing e il loro utilizzo nel sistema educativo.

L'obiettivo è capire come funzionano i sistemi formativi dei paesi partner e stabilire delle linee guida che tengano conto di tutti i paesi coinvolti. In generale si deve considerare che tra i paesi partner **non esiste né una definizione né una strategia comune** sulla leadership e sugli "educational cloud leaders" in Europa.

I paesi selezionati sono Cipro, Spagna, Romania, Grecia, Italia, Belgio e Paesi Bassi.

2.2.2. Principali risultati sul Cloud Computing

Ogni Stato membro che rappresenta il consorzio ha adottato una **strategia nazionale** per l'attuazione delle **strategie digitali**.

- In Italia e in Grecia non esiste un collegamento diretto tra le competenze degli insegnanti relative al cloud computing. In entrambi i paesi, infatti, la formazione iniziale degli stessi non include esplicitamente il cloud computing come materia.
- Il **Cloud Computing** in Italia è menzionato nel piano digitale nazionale per supportare principalmente il sistema di gestione (e amministrazione) della scuola. Mentre a Cipro l'attenzione degli insegnanti è più focalizzata sull'alfabetizzazione digitale, compreso il cloud computing, e meno sul lato della gestione (progetto UE - 2022), mostrando un approccio completamente diverso alla materia.
- Tutti i paesi supportano attività di Sviluppo professionale continuo degli insegnanti (CPD, "Continual Professional Development" in relazione al cloud computing" (Spagna, Olanda, Italia ecc.), tramite l'utilizzo delle TIC, come mezzo per facilitare il processo di apprendimento, per supportare il sistema educativo-amministrativo e per creare un nuovo ambiente di apprendimento con il fine di facilitare il lavoro di insegnante;
- A Cipro l'uso delle TIC è una priorità politica, gli studenti che frequentano gli studi per diventare insegnanti devono superare l'esame di Educazione tecnologica e Informatica per i programmi di Scienze naturali (diversamente da Spagna, Italia, Grecia). In Romania, i futuri insegnanti studiano discipline come le tecnologie dell'informazione e della comunicazione: applicazione informatica e formazione telematica (tramite computer).

2.2.3 Principali risultati sul concetto di leadership in Europa

Dirigenti, leader e "decision makers" svolgono un ruolo chiave nello svolgimento delle proprie mansioni all'interno della loro organizzazione. Di fatti i leader e i "decision makers" hanno un ruolo rilevante per consentire la trasformazione e il cambiamento del sistema educativo.

Filtrando i risultati del progetto SoC Network, **in Europa troviamo diverse definizioni di leadership e stili di leadership in ambito educativo**: servant leadership (leader che servono gli altri e non se stessi), leadership transazionale, leadership emotiva, leadership trasformativa, leadership strategica, leadership distributiva, e-leadership, ecc. Inoltre, nelle scuole **esiste una chiara distinzione tra leadership e management**.

Facendo un passo indietro, i partner del progetto hanno identificato quali sono le competenze che il personale educativo, gli insegnanti e il loro leader acquisiscono durante gli studi. E quali requisiti sono ritenuti necessari per l'ottenimento di un lavoro come insegnante:

- Nella formazione iniziale per la carriera da insegnante in **Grecia, Italia e Romania** non ci sono prove o legami diretti con la leadership come competenza nei curricula nazionali. Al contrario, gli insegnanti possono acquisire competenze correlate come **CPD** (Continuing Professional

Development - sviluppo professionale continuo) in quanto vogliono aumentare le loro competenze e abilità come leader. A **Cipro** i futuri leader educativi se frequentano un master in scienze dell'istruzione - leadership educativa e amministrazione devono obbligatoriamente frequentare un corso in gestione e tecnologia dell'istruzione.

- In **Spagna la leadership educativa è considerata una priorità politica** in quanto si ritiene che aiuti gli studenti ad apprendere al meglio e permette un collegamento diretto con la scuola. Viene chiaramente riportato in una **legge sull'istruzione** (LOMCE, 2013), che regola il funzionamento della scuola, **l'importanza dell'autonomia degli istituti educativi** (selezione del numero di ore per materia, metodi pedagogici e contenuti) **e della leadership** (competenze essenziali anche per il dirigente scolastico). In Spagna viene sottolineata l'importanza di educare in modo costruttivo alla leadership educativa come "leadership condivisa": il pensiero strategico, la gestione dell'apprendimento, le relazioni sociali e la creazione-animazione di strutture organizzative fanno parte delle **competenze principali**. In Italia invece **il concetto di leadership** si riferisce all'innovazione nel campo dell'istruzione: creazione di partnership con centri di ricerca, università e partner locali per la valorizzazione delle buone pratiche esistenti nel sistema educativo.
- Per quanto riguarda l'adozione della leadership nella gestione dell'istruzione in **Belgio e nei Paesi Bassi** si trova una grande varietà di opportunità sul web. Gli esempi principali si concentrano sulle fasi iniziali dell'istruzione che accettano e implementano le tecnologie dell'informazione nei programmi di studio e spiegano come beneficiarne. Considerando l'enorme ricchezza di opportunità di apprendimento il fine ultimo è di innovare il curriculum educativo. Purtroppo negli ultimi vent'anni l'accettazione e l'utilizzo di questi strumenti è cresciuto lentamente rispetto alla velocità degli sviluppi della tecnologia.

3. Capitolo 1: Pratiche attuali ed innovative

Al fine di estrapolare a livello Europeo le giuste capacità e competenze degli insegnanti e dei loro leader, sono state analizzate le pratiche più attuali e innovative. I partner hanno raccolto 17 "best practice" secondo i criteri espressi nella Metodologia (ANNEX N°2).

Le 17 best practices[18] sono state selezionate grazie a 6 criteri, ovvero: EFFICACIA; EFFICIENZA; RILEVANZA; PARTNERSHIP; TRASFERABILITA' DEL POTENZIALE e SOSTENIBILITA' ETICA su una scala da 1 a 4, dove 1 rappresenta la non sufficienza e 4 l'eccellenza.

Le pratiche attuali e innovative selezionate sono:

1. **School on the Cloud -** è un progetto finalizzato ad introdurre l'implementazione del Cloud Computing in ambito educativo, fornendo una panoramica sugli aspetti legati alla leadership e alla gestione del Cloud nei diversi contesti formativi. **Lo sviluppo del Cloud nel sistema scolastico include nuove prospettive, possibili ostacoli, potenziali impatti ed eventuali suggerimenti**. Infatti, l'esame di questi ultimi aiuta i leader a considerare il ruolo che il Cloud può svolgere in contesti formali e non formali di apprendimento[19].

[18] L'elenco completo delle pratiche attuali e innovative, facilmente definibili come migliori pratiche, è disponibile all'ALLEGATO 2. Le migliori pratiche n13 e n14 sono state "eliminate" in quanto gli articoli non sono stati considerati come migliori pratiche da utilizzare, ma sono disponibili per la consultazione dei lettori.
[19] http://www.eurogeography.eu/SoC/guidelines/ileader-guidelines.html#intro

Punteggio medio dei 6 criteri: 3,416666667

Fonte: https://www.schoolonthecloud.net/

2. **Greek Digital School - Photodentro** è un **deposito di risorse e pratiche educative aperte legate al curriculum nazionale Greco**. Il progetto, voluto dal ministero Greco dell'Educazione e degli Affari Religiosi, si basa su un metodo innovativo per l'utilizzo della tecnologia cloud con lo scopo di guidare efficacemente l'educazione a livello nazionale. Si tratta di un archivio di strumenti di apprendimento, video, software e pratiche educative disponibili sia per gli insegnanti che per gli studenti, dove l'uso della tecnologia cloud ha lo scopo di raggiungere un ampio raggio d'azione e di creare una maggiore coesione comunitaria.

Punteggio medio dei 6 criteri: 3,027777778

Fonte: http://www.dschool.gr/ (Disponibile solo in Greco)

3. **Cloud Computing for Education: A Professional Development Program for High School Teachers**. L'attuale **programma rivolto agli insegnanti** è basato sull'esplorazione dei diversi modi in cui le tecnologie Cloud Computing vengono utilizzate per migliorare l'istruzione in classe. A tal fine, il programma è stato progettato per soddisfare due obiettivi: in primo luogo, per esporre gli insegnanti delle scuole superiori al concetto di Cloud Computing e alle tecnologie ad esso associate, e in secondo luogo per aiutare gli insegnanti a sviluppare unità curriculari basate su tecnologie di Cloud Computing integrabili nelle diverse materie scolastiche per le scuole superiori. La tecnologia Cloud offre ampie opportunità per sfruttare i vantaggi delle nuove tecnologie. Inoltre, gli studenti hanno maggiori opportunità per collaborare, comunicare e gestire i dati.

Punteggio medio dei 6 criteri: 2,916666667

Fonte:https://peer.asee.org/cloud-computing-for-education-a-professional-development-program-forhigh-school-teachers

Mentre i vincitori selezionati per ogni criterio sono:

1.**EFFICACIA**: i risultati devono essere misurabili. Come insieme di possibili riferimenti possiamo trovare diplomi, nuovi programmi di studio, progetti di ricerca e nuovi corsi;
Le best practices più votata sono: **Greek Digital School** - **Photodentro** e il **progetto SoC (School on the Cloud**).

2.**EFFICIENZA**: le pratiche selezionate devono produrre risultati aventi risorse e tempo ben definiti;
La best practice più votata è: **SoC (School on the Cloud).**

3.**RILEVANZA**: le innovative best practice devono essere in linea con le priorità di ERASMUS PLUS e gli obiettivi del progetto L-CLOUD;

La best practice più votata è: **Cloud Computing for Education: A Professional Development Program for High School Teachers.**

4.**PARTNERSHIP**: le best practice selezionate che sono state co-create da diversi stakeholder tra cui scuole, istituti di formazione, centri di ricerca, responsabili politici;
La best practice più votata è: **SoC (School on the Cloud).**

5.**POTENZIALE DI TRASFERABILITÀ**: ogni best practice e iniziativa deve essere "open source" in modo che i risultati possano essere disponibili e consultabili da tutti;
Le best practices più votate sono: **SoC (School on the Cloud)** e **Interactive School Books**. L'ultima iniziativa è stata realizzata dal Ministero greco in modo da fare avere agli studenti, tramite il cloud, tutti i libri utilizzati nel curriculum greco K-12. Infatti, i libri di testo greci sono accessibili attraverso qualsiasi browser da qualsiasi pc o dispositivo mobile grazie all'uso della tecnologia cloud.

6.**SOSTENIBILITA' ETICA**: le best practice sono sostenibili dal punto di vista ambientale, economico e sociale;
La best practice più votata è: **SoC (School on the Cloud).**

Comprendere i diversi progetti, i programmi e le esigenze dei diversi sistemi educativi in Europa è fondamentale per raggiungere la leadership nel sistema educativo. Secondo le best practice vincenti, vengono riportate le seguenti linee guida (SoC – School on the Cloud):

- **Cambiamento e prontezza** → *La capacità di un'organizzazione di avviare e rispondere al cambiamento in modo che dia dei vantaggi, minimizzando i rischi che ci si può trovare ad affrontare. La capacità di un'organizzazione di capire il cloud computing è fondamentale ed essere supportata dal top management;*
- **Governance** → *Ogni cambiamento coinvolge la governance di ogni organizzazione. La governance è il modo in cui le istituzioni educative sono organizzate e gestite secondo tre prospettive: leadership, procedure di implementazione e istruzione e apprendimento;*
- **Pianificare** → *Il principio guida è che un'organizzazione dovrebbe progettare, implementare e mantenere un insieme coerente di politiche, processi e sistemi per gestire i rischi dei suoi asset informativi, assicurando un livello accettabile di rischio in termini di sistema di gestione della sicurezza delle informazioni;*
- **Sviluppo della leadership**→ *La leadership in un'organizzazione educativa è un fattore significativo che ne determina l'efficacia. La leadership tradizionale è un processo in cui un membro di un'organizzazione influenza e controlla il comportamento degli altri per raggiungere obiettivi comuni.*

4. Capitolo 2: Il quadro delle competenze a livello Nazionale, Europeo ed Internazionale.

Questo capitolo comprende una raccolta di linee guida per preparare gli insegnanti e i dirigenti scolastici al mondo futuro basato sulle TIC, e comprende le strategie per lo sviluppo di curricula dinamici sviluppati nei paesi partner, in Europa e a livello internazionale.

I partner del progetto hanno raccolto in tutto il mondo i quadri di competenze e le informazioni relative ai leader del cloud educativo. L'elenco rappresenta la selezione dei partner del progetto al meglio delle loro conoscenze.

Lista dei quadri delle competenze e degli articoli relativi **ai leader del settore dell'educazione in grado di adattarsi ai cambiamenti offerti dal cloud computing**:

1. Five Traits of a Good Educational Leader (2014, USA);
2. The Teacher Leadership Competencies (2014, USA);
3. Educator and School Leader Competencies Can promote systems coherence in Competency Education (USA).
4. Teacher Leader Competency Framework (2015, USA);
5. Nine Competencies for Teaching Empathy (2018, USA);
6. Leadership Competence Framework (2014, Australia);
7. Top 10 Digital Skills for Education Leaders (2016, USA);
8. Charlotte Danielson's Framework for Teaching (2013, USA);
9. Digital Learning Framework for Post-Primary Schools (2015, Irlanda);
10. Professional Development Framework for Digital Learning (2018, Sud Africa);
11. Technology in Education Framework: Teaching and Learning, Administrative Operations, Provincial Infrastructure (2013, Canada);
12. EDUCATIONAL LEADERSHIP COMPETENCE FRAMEWORKS (2014, Spagna);
13. DIGITAL TEACHING COMPETENCE FRAMEWORKS (2017, Spagna);
14. Catalonia: Digital framework - Digital Agenda 2020 (2014, Spagna);
15. Catalonia: Reference framework (2018, Catalogna);
16. Fundation "Digital Spain" (Fundación España Digital) – (2015, Spagna);
17. Leadership Competency Framework (2013, USA);
18. Standards for school leaders: competency frameworks and their applicability (2012, Regno Unito);
19. UNESCO ICT Competency Framework For Teachers (UNESCO 2011);
20. Teach to Lead – Leadership Competency Framework (2016, Australia);
21. Leadership Competency Framework (Regno Unito);

22. Digital Competence of Educators (2017, Lussemburgo);
23. STRATEGISCH COMPETENTIE DENKEN (2018, Paesi Bassi);
24. SCHOOLLEIDERSREGISTER PO BASISCOMPETENTIES (Paesi bassi);
25. Het geheim van de innovatieve schoolleider (Paesi Bassi).
26. Waar blijft de middenmanager? Een onderzoek naar de strategische rol van team- en afdelingsleiders in het voortgezet onderwijs (Paesi bassi).
27. De leidinggevende in het onderwijs als regisseur (Paesi bassi).
28. Competentieontwikkeling M-decreet (Belgio).
29. Een nieuw profiel voor de leraar secundair onderwijs. Hoe worden leraren daartoe gevormd? (Belgio).
30. Education competency frameworks (2016, Regno Unito);
31. Digital Skills competency framework (2018, Regno Unito);
32. Professional Digital Learning Framework (2018, Regno Unito);
33. Curriculum for Digital Education Leadership (2016, Sud Africa);
34. Building digital capabilities framework (2016, Regno Unito);
35. Leadership competency framework in education (2012, USA);
36. UK Professional Standards Framework – UKPSF (Regno Unito);
37. KIPP leadership framework and competency model (2016, USA);
38. National Council of School Leaders: Facilitation competency framework (2017, Regno Unito);

Esistono già numerosi articoli, programmi di studio e quadri di competenze sui settori che riguardano l'istruzione, l'alfabetizzazione digitale e le abilità digitali, anche se variano da paese a paese.

Per quanto riguarda lo scopo del progetto, sono state riscontrate dei limiti nello stato dell'arte in quanto non esiste un quadro specifico delle competenze relativo ai leader educativi in grado di adattarsi ai cambiamenti del cloud computing. Gli articoli e quadri delle competenze principali si riferiscono alla leadership, all'alfabetizzazione digitale, alle competenze degli insegnanti e del personale educativo come concetti singoli. Inoltre, sono state identificate abilità e competenze diverse in relazione al concetto di leadership. Come riportato in precedenza, in questo report non esiste una definizione condivisa del concetto di leadership e di leader educativi. Emerge quindi la necessità di identificare una definizione comune e condivisa di leadership come competenza in relazione ai leader educativi in grado di adattarsi ai cambiamenti del cloud computing.

Nel quadro delle competenze relativo al *Curriculum for Digital Education Leadership* (South Africa, 2016) il concetto di leadership educativa e abilità digitali non ha chiare indicazioni sulle tecnologie cloud. Ma fornisce una interessante panoramica: *"…we propose digital education, which is about increasing people's capacity in digital literacy (i.e. context-based digital literacy practices), rather than a digital competence approach (because there is no one-size-fits-all method).* ***This therefore indicates***

a need for digital educational leaders who can lead others and foster digital literacy relevant to the individual and local contexts by: creating awareness of and enhancing access to available resources; developing capacity in individuals, curricula and organizations; making informed, context-appropriate decisions; and cultivating innovation or being change agents in their own contents".

Una leadership in grado di adattarsi a continui cambiamenti implica un processo complesso in quanto influenza dei diversi livelli di analisi. Ad esempio, potrebbe portare alla possibilità di influenzare i "decisor makers" sulla scelta delle tecnologie cloud adatte ai diversi contesti educativi e di informare le strutture didattiche sulla necessità di nuove tecnologie, invertendo quella che il consorzio L-CLOUD ha definito "spinta tecnologica" ("Technological Push). I leader dell'educazione cloud devono dare l'esempio e padroneggiare le tecnologie digitali.

5. Linee guida per la definizione delle abilità e le competenze dei leader educativi in grado di adattarsi ai cambiamenti del cloud computing

In un mondo interconnesso ed in rapida evoluzione, è essenziale che i sistemi educativi forniscano agli studenti competenze adeguate per affrontare le realtà sociali e professionali del XXI secolo (ad esempio OCSE, 2015a; Schleicher, 2015; Wiseman e Anderson, 2014). Nell'era dell'informazione (Castells, 2010), le professioni basate sulla conoscenza richiedono capitale umano in grado di coordinare sfide complesse e adattare le competenze rispetto alle esigenze mutevoli (ad esempio OECD, 2010a, 2011). Un'istruzione equa e di alta qualità è una componente chiave per acquisire delle competenze per l'apprendimento permanente (Consiglio dell'Unione Europea, 2006) e anche una priorità tra i governi nazionali e le organizzazioni internazionali (es. Commissione Europea, 2010; Fullan, 2010; Kinuthia e Marshall, 2013)[20].

In questo capitolo, secondo la ricerca sviluppata dai partner del progetto, sono state individuate alcune linee guida per dirigere il consorzio L-CLOUD verso lo sviluppo di un quadro delle competenze per gli "educational cloud leaders" con relative abilità e competenze per poi sviluppare un percorso formativo.

Sono state identificate tre principali aree di competenza: **educazione digitale, leadership educativa e cloud computing per i leader educativi.**

Per la prima area identificata fondamentale è il quadro europeo per la competenza digitale degli educatori (DigCompEdu). Si tratta di un insieme di competenze digitali rivolte agli educatori per gestire e sfruttare il potenziale delle tecnologie digitali con il fine di migliorare e innovare l'istruzione[21].

[20] Digital Education Policies in Europe and Beyond, 2017, JRC Join Research Centre for Policy Report
[21] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu

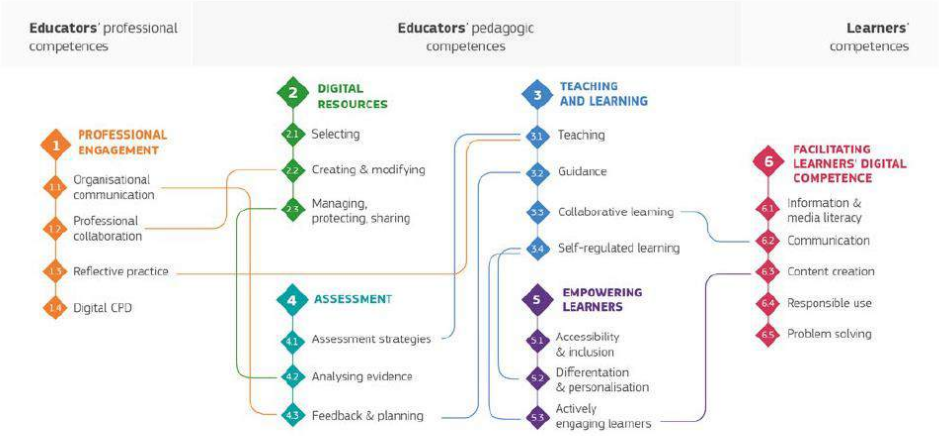


FIGURE 1: THE DIGCOMPEDU FRAMEWORK

Il quadro Europeo per le competenze digitali degli educatori è stato usato come documento di riferimento. Il suo obiettivo è quello di dare un quadro generale in grado di identificare il modello di competenze digitali specifiche infatti dell'educatore. Infatti non si basa su un solo livello di istruzione (istruzione primaria vs istruzione terziaria), ma è trasversale a tutti i livelli di istruzione.

Il DigCompEdu identifica 6 aree: 1. **Lo sviluppo professionale** degli educatori in termini di sviluppo personale individuale e l'uso delle tecnologie digitali per l'interazione professionale; 2. **Risorse Digitali**, area che si concentra sulle competenze digitali di cui gli educatori hanno bisogno per utilizzare, creare e condividere le risorse digitali per l'apprendimento; 3. **Insegnamento e Apprendimento**, area dedicata alla gestione dell'uso delle tecnologie digitali nell'insegnamento e nell'apprendimento; 4. **Tecnologie digitali e valutazioni**; 5. **Potenziare lo studente**, fornendo una panoramica del potenziale delle tecnologie digitali per aumentare le strategie di apprendimento e di insegnamento: un approccio incentrato sugli studenti; 6. **Facilitare l'acquisizione delle competenze digitali per lo studente**, ultimo ma non meno importante, la sesta area si concentra sulle competenze pedagogiche degli educatori per facilitare le competenze digitali degli studenti.

Per quanto riguarda la seconda area identificata, la leadership educativa, sono stati analizzati diversi quadri di competenze e articoli tra cui: Educational Leadership Competence Framework (2014, Spagna); Standards for school leaders: competency framework and their applicability (2012, Regno Unito); Teach to lead (2014, Australia), Curriculum for Digital skills competence framework e molto altro ancora. Come indicato negli standard per i dirigenti scolastici: *competency framework and their applicability framework, competency frameworks and professional standards for school leaders are now widespread but expressed in differing degree of detail with some examining the leader's role in fine details and making a distinction between functional (or occupational) and personal competences, and with the evidence need to demonstrate "competence" at every level*[22].

Poiché esistono diversi stili di leadership è piuttosto difficile proporne uno solo, in generale la

[22] http://www.schoolleadership.eu/sites/default/files/standards-school-leaders-competency-frameworks-applicability-2012_6.pdf

leadership tradizionale è un processo in cui un membro di un'organizzazione influenza e controlla il comportamento degli altri per raggiungere obiettivi comuni (School on the Cloud: Guidelines for leaders and management, 2016)[23]. Nel contesto dei leader educativi nel mondo del cloud, la sfida principale è quella di stabilire un quadro di riferimento per il cambiamento. Inoltre, è fondamentale che i membri dello staff siano in grado di adottare le opportunità pedagogiche che si presentano in modo da creare un apprendimento autentico. Come dichiarato nel quadro concettuale per la leadership educativa digitale, il curriculum ad esso collegato deve comprendere due parti: l'educazione digitale e la leadership nell'educazione digitale, con l'alfabetizzazione digitale come base per entrambi. *L'assunto di base è che quando un individuo diventa un leader dell'educazione digitale, deve prima dimostrare la propria capacità nelle pratiche della stessa*[24].

Di seguito viene fornita una visione olistica della leadership nell'educazione digitale, dove l'alfabetizzazione digitale è la base per l'educazione digitale per diventare leader nel settore[25]:

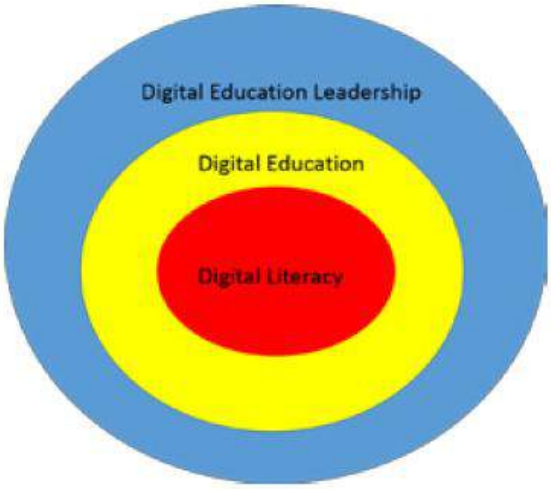


FIGURE 1. A HOLISTIC VIEW OF DIGITAL EDUCATION LEADERSHIP.

Inoltre, il concetto di leadership non può essere separato da quello di governance, che rappresenta il modo in cui le istituzioni sono formalmente organizzate e gestite. Infatti, una delle tre prospettive che il progetto School on the Cloud propone è quella di interpretare la governance dal punto di vista della leadership. *Da questa analisi emerge che le istituzioni educative devono essere preparate ad implementare il Cloud Computing in quanto i servizi cloud hanno un impatto su tutti i processi, rendendo la governance di fondamentale importanza per comprendere e controllare efficacemente i rischi*[26]. Secondo la stessa analisi, i leader dovrebbero essere in grado di determinare se i manager stanno prendendo le misure necessarie per garantire un buon sistema di governance, facendo una netta distinzione tra i leader scolastici e i manager.

[23] School on the Cloud: Guidelines for leaders and management, 2016, Progetto school on the Cloud
[24] Curriculum for Digital Education Leadership: a concept paper, Commonwealth of Learning and University of Cape town, 2016
[25] Curriculum for Digital Education Leadership: a concept paper, Commonwealth of Learning and University of Cape town, 2016.
[26] School on the Cloud: Guidelines for leaders and management, 2016, School on the cloud project.

La terza area di competenza identificata è relativa al Cloud Computing per l'istruzione e in relazione ai leader del sistema educativo. Come già visto in precedenza, diversi paesi si sono avvicinati al Cloud Computing in modi diversi: alcuni per una gestione e amministrazione del sistema scolastico più efficiente (anche in termini finanziari), altri hanno iniziato a comprendere il suo potenziale pedagogico creando un ambiente di apprendimento innovativo e cambiando la strategia scolastica di comunicazione.

A causa del rapido cambiamento che la tecnologia porta con sé e del limite finanziario della scuola per investire nella tecnologia giusta, emerge la necessità di avere una visione chiara sul ruolo degli educatori. Come suggerito dall'UNESCO ICT Competency Framework è importante adottare nel campo dell'istruzione un approccio intersettoriale grazie alle TIC (ad esempio, competenze degli insegnanti, materiale didattico, attrezzature TIC, ecc.). Il quadro delle competenze non menziona specificamente il Cloud Computing, ma offre un quadro con tre approcci all'insegnamento: alfabetizzazione tecnologica; approfondimento della conoscenza; e creazione della conoscenza per strutturare il quadro di competenze TIC per gli insegnanti:

THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS

	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

Il quadro non solo si divide nelle tre aree, ma struttura anche il lavoro degli insegnanti in sei aspetti principali: Comprensione delle TIC nell'istruzione, Curriculum e Valutazione, Pedagogia, TIC, Organizzazione e Amministrazione e Apprendimento professionale per gli insegnanti. Anche se non si riferisce a leader educativi, il quadro delle competenze offre un valido approccio al Cloud Computing nell'educazione.

Nel quadro riferimento *Technology in Education Framework: teaching and learning, administrative operations, provisional infrastructure* viene presentato una metodologia per strutturare il ruolo e le responsabilità dei diversi attori coinvolti nell'implementazione delle TIC nell'ambito dell'istruzione. Fornisce infatti una panoramica sui ruoli dei ministri, dei professionisti della diverse divisioni scolastiche e dei consulenti per l'implementazione della tecnologia nell'istruzione in termini di indirizzo politico e di governance efficace. Per ogni livello di governance sono stati individuati diversi ruoli, come ad esempio: Politica e direzione, Infrastrutture, Finanziamenti, Diffusione tecnologica, Apprendimento professionale, responsabilità, educazione a distanza, raccolta e analisi dei dati, gestione dei dati e delle informazioni, future thinking.

In tutte e tre le aree identificate, l'alfabetizzazione digitale rappresenta la base per lo sviluppo della stessa.

ROMANIAN VERSION

1. Intoducere

L-CLOUD este un proiect de doi ani, cofinanțat cu sprijinul Uniunii Europene - Parteneriatul strategic cheie pentru educația școlară în cadrul programului european Erasmus plus. L-CLOUD este acronimul care se referă la dezvoltarea leaderilor educațieI cloud de mâine.

Proiectul a fost cofinanțat de Agenția Națională Cipriotă: Fundația pentru Managementul Programelor Europene de Învățare pe Tot Parcursul Vieții (FMELLP) în 2018.

Proiectul a început în octombrie 2018 și va dura 24 de luni.

Cloud computing este o tehnologie inovatoare care utilizează Internetul pentru a furniza o mare varietate de servicii IT și se confruntă cu o creștere exponențială. De exemplu, produsele ce o justifica, cum ar fi aplicațiile dispozitivelor mobile, se înmulțesc, inclusiv e-mail, stocare de informații, partajarea de fișiere, instrumente de colaborare, comunicații digitale și alte servicii. În același timp, așteptările liderilor școli se schimbă, astfel încât instituțiile educaționale trebuie să dețină o poziție semnificativă de leadership pentru a aborda provocările instrumentelor și conținutului inovativ de colaborare (de exemplu, accesul 24/7 la rețele sigure, fiabile și capacitatea de a crea, conținuturi din cadrul instituțiilor).

Aplicarea Cloud Computing în educație rămâne fragmentată deoarece, în timp ce Cloud Computing oferă multe avantaje, factorii de decizie nu cunosc în mare măsură beneficiile potențiale pentru învățare, predare, administrare și management. Prin urmare, sunt necesare sisteme de instruire și suport pentru a le ajuta să se actualizeze cu mediul Cloud Computing care se schimbă rapid. Leadershipul este de asemenea necesar pentru schimbarea pedagogică, altfel educatorii vor continua paradoxul folosirii metodelor vechi de predare, dar cu noi instrumente.

Acest raport contine Ghidul pentru abilități și competențe pentru liderii de cloud în educația adaptivă. Scopul acestui raport este de a stabili linia de bază pentru construirea cadrului de calificare pentru liderii în domeniul cloud-ului educațional bazat pe abilitati și competențe.

Metodologia de elaborare a orientărilor se bazează pe cercetările privind definirea principalelor concepte, stadiul tehnicii în țările europene selectate și cele mai bune practici. În plus, liniile directoare se bazează pe rezultatele principale ale școlii privind proiectele Cloud și pe cadrele de competențe colectate la nivel național, european și internațional de partenerii proiectului.

Raportul (IO1.A4) este compus din 5 părți, fără a lua în considerare introducerea actuală:

1) Pregătirea: stadiul tehnicii și definițiile care cuprind un glosar dinamic și adaptiv referitor la terminologia și conceptele principale ale proiectului L-CLOUD, precum și la stadiul actual al profesorilor și la formarea de lideri în ceea ce privește computerele cloud, metodologia de predare inovatoare și metodologia didactică inovatoare.

2) Capitolul 1: Practici curente și inovatoare, ușor menționate ca cele mai bune practici, filtrate din rezultatele proiectului SoC Network și noile practici descoperite de partenerii proiectului. Cele mai bune practici au fost apoi prioritizate prin 6 criterii: EFICACITATEA; EFICIENŢĂ;

RELEVANŢĂ; PARTENERIAT; POTENȚIAL DE TRANSFERABILITATE ȘI SUSTENABILITATEA ETICĂ.

3) Capitolul 2: o colecție sumativa de cadre de competență și articole cu orientări de competență dezvoltate în țările partenere, la nivel european și internațional pentru pregătirea cadrelor didactice și a liderilor școlari pentru dezvoltarea viitoare a lumii (curriculum dinamic dezvoltat inclus).

4) Linii directoare pentru abilități și competențe pentru liderii cloud în educația adaptivă;

5) Anexele conțin:

- Anexa 1: Activitate: stadiul actual al liderilor cloud adaptivi în țara partenerului selectat (Cipru, Spania, România, Grecia, Belgia și Olanda și Italia);

- Anexa 2: Activitatea: Practica curentă și inovatoare a liderilor cloud-educativi adaptativi la nivel european și internațional;

- Anexa 3: Activitate: Identificarea cadrelor și a competențelor existente cu abilitatile și competențele principale pentru liderii de cloud educațional la nivel național, european și internațional;

- Anexa 4: Metodologia IO1.

Liniile directoare a abilităților și competențelor pentru liderii de cloud în educația adaptivă sunt menite să ofere o imagine de ansamblu a cartografierii privind profilul, experiența și cele mai bune practici ale liderilor Cloud Cloud Education, pe baza celor mai bune cunoștințe despre parteneri din Europa și dincolo de aceasta. Principalele concluzii ale analizei vor sprijini partenerii proiectului în modelarea mai bună a cadrului de calificare pentru liderii în domeniul cloud-ului educațional bazat pe competențe și competențe.

Principalele constatări privind modul în care Cloud Computing în educație este foarte important pentru școlile din Europa datorită puterii sale inovatoare. Chiar dacă schimbările ar putea fi lente și implementate diferit de la o țară la alta, potențialul este destul de ridicat și recunoscut la nivel mondial. În general, Cloud Computing în educație a fost utilizat în mod extensiv pentru a susține principala funcție administrativă a sistemelor educaționale, în timp ce integrarea sa în învățare și predare este mult mai fragmentată de școli sau depinde de inițiativa profesorilor unici. Într-adevăr, beneficiile potențiale de a fi lideri în CLOUD COMPUTING nu sunt legate doar de economisirea banilor la nivel managerial, ci și de transformarea modului în care profesorii predau și modul în care elevii învață.

1. Asociația EACG-Asociația Europeană a Orientării în Carieră ca coordonator de proiect (CIPRU);

2. UB – Universitatea din Barcelona (SPANIA);
3. Colegiul Național Pedagogic "Mircea Scarlat" (ROMÂNIA);
4. DOUKA EKPAIDEFTIRIA SA - PALLADION LYKEION EKFPAIDEUTHRIA DOUKA (GRECIA);
5. EUROGEO VZW - ASOCIAȚIA EUROPEANĂ A GEOGRAFILOR (BELGIA);

6. DLEARN - Rețeaua europeană de învățare digitală (ITALIA).

2. Pregatire: Stadiul tehnic si Definitii

Prezentul capitol analizează și actualizează liniile directoare și structurile / sistemele de competență existente, analizează conceptele și abordările de leadership - definește obiectivele și rezultatele dorite și va stabili stadiul actual al conceptului de Lideri Cloud Education Adaptive în Europa.

2.1 Glosar dinamic și adaptabil L-CLOUD

GLOSARUL L-CLOUD DYNAMIC și ADAPTIVE este un instrument fundamental conceput de partenerii proiectului pentru a stoca principalele concepte și definiții în raport cu proiectul. Conceptele și definițiile principale sunt stocate în ordine alfabetică și vor servi ca bază pentru proiectul general.

Glosarul dinamic și adaptiv L-CLOUD este disponibil la linkul Google Doc curent:

https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit

Cine este liderul cloud al educatiei adaptive?

Liderii cloud ai educatiei adaptive sunt experți cu scopul de a îmbunătăți calitatea educației și a sistemului educațional în sine. Adaptabilitatea liderilor îmbrățișează capacitatea de a influența și entuziasma pe ceilalți prin sustinere/protejare, viziune și conducere personala și de a accesa resurse pentru a construi o platformă solidă pentru schimbarea adaptării tehnologiilor cloud pentru a preda, învăța și gestiona sistemul școlar.

2.2 Stadiul tehnicii în țările partenere selectate în ceea ce privește liderii cloud educaționali adaptivi

2.2.1 Introducere

Stadiul tehnicii în țările selectate dorește să ofere o imagine de ansamblu generală în materie de aparatură, tehnică și domeniu științific, la cele mai bune cunoștințe ale partenerilor în ceea ce privește liderii cloud-educativi (2018/2019). Într-adevăr, partenerii proiectului se concentrează pe cercetarea metodologiilor comune din țara lor de origine în ceea ce privește profesorii, personalul educațional și directorul școlii. De asemenea, este abordată curriculum-ul în programele universitare la nivel național și regional privind pregătirea cadrelor didactice în legătură cu subiectul proiectului. Cercetările s-au axat pe concepte și abordări de leadership, obiective și rezultate; precum și tehnologiile Cloud computing și utilizarea acestora în sistemul educațional.

Intr-adevăr, scopul este de a înțelege cum funcționează diferitele sisteme și de a stabili îndrumări care iau în considerare toate județele partenere implicate în această cercetare. În general, trebuie să se considere că nu există o definiție și o strategie comună între toate țările legate de conducătorii de lideri și de norii adaptivi în Europa.

Țările selectate sunt Cipru, Spania, România, Grecia, Italia, Belgia și Olanda.

2.2.2. Constatări principale despre Cloud Computing

Fiecare stat membru care reprezintă consorțiul prezintă o strategie națională pentru implementarea strategiilor digitale.

În Italia și în Grecia, nu există o legătură directă între competențele profesorului legate de cloud computing. De fapt, în ambele țări, educația inițială pentru profesori nu include în mod explicit Cloud Computing ca disciplina.

Cloud computing-ul din Italia este menționat în planul digital național pentru a sprijini în principal sistemul de management școlar (și administrativ). În Cipru, cariera profesorului se concentrează pe alfabetizarea digitală, inclusiv pe cloud computing, și mai puțin pe partea de management (proiectul UE - 2022), care prezintă o abordare complet diferită față aceasta disciplina.

-toate țările menționează oportunitățile de dezvoltare profesională continuă pentru cadrele didactice legate de cloud computing (Spania, Olanda, Italia etc.) pentru utilizarea TIC pentru a facilita procesul de învățare, pentru a sprijini sistemul de administrare a învățământului și pentru a crea un nou mediu de învățare pentru a facilita profesia de profesor;

În Cipru, utilizarea TIC este o prioritate politică, elevii din studiile "Profesor" trebuie să treacă examenul Tehnologia educațională, Sprijinul tehnologiei informației pentru științele naturii (diferit de Spania, Italia, Grecia). În România, viitorii profesori studiază discipline precum Tehnologia informației și comunicațiilor: aplicații informatice; Pregatire asistata de calculator.

2.2.3 Constatări principale despre conceptele de leadership în Europa

Managerii, liderii și factorii de decizie joacă un rol-cheie în îndeplinirea sarcinilor și îndatoririlor în cadrul organizației lor educaționale, deoarece liderii și factorii de decizie au un rol relevant pentru a permite transformarea și schimbarea sistemului educațional.

Filtrarea rezultatelor proiectului SoC Network, există chiar și definiții diferite pentru conducerea și stilurile de leadership în mediul educațional din Europa: leadership servant, leadership tranzacțional, leadership emoțional, leadership transformator, leadership strategic, leadership distributiv, e-leadership etc. există o distincție clară între conducere și management în cadrul organizației educaționale.

Revenind, partenerii proiectului au identificat care sunt competențele pe care le-au dobândit cadrele didactice, cadrele didactice și liderul lor pe parcursul studiilor și care sunt cerințele necesare pentru a obține un loc de muncă ca profesori:

În educația inițială pentru o carieră a cadrelor didactice în Grecia, Italia, România nu există dovezi sau legături directe cu Leadershipul ca o competență pentru curricula națională. În schimb, cadrele didactice pot dobândi competențe conexe în calitate de CPD, Oportunități de Dezvoltare Profesională Continuă, pe măsură ce își doresc să își sporească competențele și abilitățile în calitate de lideri. În Cipru, viitorii lideri educaționali trebuie să participe la un curs

în Managementul și Tehnologia Educațională, dacă aceștia frecventează un masterat în științele educației - Leadership și Administrație Educațională.

În Spania, conducerea educațională este considerată a fi o prioritate politică, deoarece îi ajută pe elevi să învețe mai bine și permite legătura dintre școală și mediul înconjurător și este clar stabilită într-o lege a învățământului (LOMCE, 2013) autonomia (alegerea numărului de ore pe disciplina, metodele și conținutul pedagogic) și conducerea (competențe extinse pentru șeful școlii) ca bază a funcționării școlare. Spania subliniază importanța informațiilor educaționale pentru leadershipul educațional ca pe o "conducere comună": gândirea strategică, managementul învățării, relațiile sociale și crearea și animarea structurilor organizaționale drept competențe principale. În timp ce în Italia conceptul de leadership se referă în schimb la inovarea în domeniul educației; crearea de parteneriate cu centre de cercetare, universități și parteneri locali, precum și valorificarea bunelor practici existente în sistemul educațional.

În Belgia și Olanda, o mare varietate de oportunități este disponibilă pe web în ceea ce privește conducerea în managementul educațional. Exemplele principale se concentrează în principal pe etapele inițiale ale educației care acceptă și implementează IT în curriculum și cum să beneficieze de programe educaționale prietenoase utilizatorilor pe web. În scopul de a inova curriculum-ul în educație având în vedere bogăția enormă de oportunități în învățare sunt imense. Dar, în ultimii douăzeci de ani, acceptarea și utilizarea tuturor acestor instrumente a crescut încet comparativ cu viteza dezvoltărilor.

3. Capitolul 1: Practica curentă și inovatoare

Pentru a extrage abilitatile și competențele corecte pentru profesori și liderii lor în Europa, au fost analizate practicile actuale și inovatoare. Partenerii au colectat 17 "cele mai bune practici" în conformitate cu criteriile exprimate în Metodologie (ANEXA nr. 2).
Cea de-a 17-a categorie de bune practici [27] au fost filtrate după 6 criterii, și anume: EFICACITATEA; EFICIENŢĂ; RELEVANŢĂ; PARTENERIAT; POTENTIAL TRANSFERABIL ȘI SUSTENABILITATEA ETICĂ pe o scară de la 1 la 4, unde 1 reprezintă insuficienta și 4 excelenta.

Practicile actuale și inovatoare care au fost selectate sunt:

1. **Școala de cloud** - este un proiect care are ca scop introducerea implementării cloud computing în educație, care oferă o imagine de ansamblu cuprinzătoare a aspectelor de leadership și management legate de implementarea cloud-ului în diferitele contexte educaționale.

Punerea în aplicare a cloud-ului în sistemul școlar include viziuni, bariere, impact potențial și sugestii. Într-adevăr, examinarea viziunilor educaționale îi ajută pe lideri să ia în considerare

[27] **1** Lista completă a practicilor actuale și inovatoare, ușor de numit cele mai bune practici, este disponibilă în ANEXA 2. Cele mai bune practici n13 și n14 au fost "eliminate" deoarece articolele nu au fost considerate cele mai bune practici de utilizare, dar sunt disponibile pentru consultarea cititorilor.

rolul pe care îl poate juca Cloud-ul în contexte formale și non-formale[28].

Scorul mediu pentru cele 6 criterii: 3,416666667

Sursa : https://www.schoolonthecloud.net/

2. **Scoala digitala greaca** - Photodentro este un imens depozit al resurselor si practicilor educationale deschise care sunt legate de curriculumul national din Grecia. Proiectul este o modalitate inovatoare de a utiliza tehnologia cloud pentru a conduce eficient educația la nivel național de către Ministerul Educației și Cultelor din Grecia. Într-adevăr, este un depozit de obiecte de învățare, videoclipuri educaționale, programe educaționale și practici educaționale deschise, disponibile atât pentru profesori, cât și pentru studenți, în care utilizarea tehnologiei cloud urmărește o largă acoperire și urmărește realizarea proceselor de construire a comunității.

Scorul mediu pentru cele 6 criterii: 3,027777778

Sursa: http://www.dschool.gr/ (disponibilă numai în limba greacă)

3. **Cloud Computing for Education**: Un program de dezvoltare profesională pentru profesorii de liceu. Programul actual pentru profesori a fost acela de a explora modalitățile prin care tehnologiile Cloud Computing pot fi utilizate pentru a îmbunătăți instruirea în clasă. În acest scop, programul a fost conceput pentru a îndeplini două obiective: în primul rând, pentru a expune profesorii de liceu la conceptul de Cloud Computing și tehnologiile asociate acestuia și, în al doilea rând, pentru a ajuta profesorii să dezvolte unități de curriculum bazate pe tehnologii Cloud Computing integrate în diferite subiecte de liceu. Tehnologia Cloud oferă oportunități ample de a exploata avantajele noilor tehnologii. În plus, cursanții au oportunități suplimentare de colaborare, comunicare și manipulare a datelor.

Scorul mediu pentru cele 6 criterii: 2,916666667

Sursa: https://peer.asee.org/cloud-computing-for-education-a-professional-development-program-forhigh-school-teachers

În timp ce, câștigătorul pentru fiecare criteriu este prezentat mai jos:

1. EFICACITATEA: rezultatele trebuie să fie măsurabile. Ca set de posibile măsurabile pot fi diplome, curriculum nou, proiect de cercetare și noi cursuri create;

Cele mai votate Cele mai bune practici: Școala digitală din Grecia - Photodentro și proiectul SoC (Școala de Cloud) se leagă în primul rând.

2 . EFICIENȚA: practicile selectate trebuie să producă rezultate cu un set definit de resurse și timp;

[28] http://www.eurogeography.eu/SoC/guidelines/ileader-guidelines.html#intro

Cele mai votate Cele mai bune practici: SoC (Școala de Cloud).

3. RELEVANȚA: practicile actuale și inovatoare trebuie să fie în concordanță cu obiectivele proiectului ERASMUS PLUS și L-CLOUD;

Cele mai votate Cele mai bune practici: Cloud Computing for Education: Un program de dezvoltare profesională pentru profesorii de liceu.

4. PARTENERIAT: cele mai bune practici selectate care au fost co-create între diferitele părți interesate, cum ar fi școlile, institutele de formare, centrul de cercetare, factorii de decizie politică;

Cele mai votate Cele mai bune practici: SoC (Școala de Cloud).

5. POSIBILITATEA DE TRANSFERABILITATE/ POTENTIAL TRANSFERABIL: fiecare dintre cele mai bune practici și inițiative trebuie să fie de tip open source, astfel încât rezultatele să poată fi disponibile și consultate de toți;

Cele mai votate Cele mai bune practici: SoC (Școala privind proiectul Cloud) și Interactive School Books, care este folosit de Ministerul elen pentru a livra toate cărțile folosite în curriculumul grec K-12 prin nor pentru toți studenții din țară. Într-adevăr, toate cărțile de studiu din Grecia sunt accesibile prin orice browser în orice PC sau dispozitiv mobil pus la dispoziție prin utilizarea tehnologiei cloud.

6. SUSTENABILITATEA ETICĂ: cele mai bune practici: durabile din punct de vedere ecologic, economic și social;

Cele mai votate Cele mai bune practici: SoC (Școala de Cloud).

Înțelegerea variatelor proiecte, programe și nevoi ale diferitelor sisteme educaționale din Europa este fundamentală pentru a obține conducerea cloud-ului în sistemul educațional. În conformitate cu cele mai bune practici câștigătoare, sunt menționate următoarele linii directoare:

- *Schimbarea și disponibilitatea ca fiind capacitatea unei organizații de a inița și de a răspunde la schimbări în moduri care le creează avantaje, minimizând riscurile cu care se pot confrunta. Citirea unei organizații este crucială pentru cloud computing și managementul de top ar trebui să susțină acest lucru;*

Guvernarea/Conucerea deoarece schimbările implică guvernare. Guvernarea este modul în care instituțiile de învățământ sunt organizate și gestionate în funcție de trei perspective: conducere, proceduri de implementare și educație și învățare;

Conceperea planurilor. Principiul de guvernare este acela că o organizație trebuie să conceapă, să implementeze și să mențină un set coerent de politici, procese și sisteme pentru gestionarea riscurilor pentru activele sale informaționale, asigurând un nivel acceptabil de risc în ceea ce privește sistemul de management al securității informațiilor;

Implementarea leadership-ului. Conducerea într-o organizație educațională este un factor semnificativ care afectează eficacitatea. Conducerea tradițională este un proces în care un membru al unei organizații influențează și controlează comportamentul altora pentru a atinge obiective comune.

4. Capitolul 2: Cadrul de Competență la nivel național, european și internațional.

Acest capitol implică o colectie de abordari/instructiuni elaborate în țările partenere, în Europa și pe plan internațional pentru pregătirea cadrelor didactice și a liderilor școlari pentru viitoarea lume bazată pe TIC, inclusiv strategii pentru dezvoltarea dinamicilor curriculare.

Partenerii de proiect au colectat mai multe cadre de competență și informații referitoare la competențele legate de liderii norilor educaționali din întreaga lume. Lista de mai jos este selectarea materialelor menționate mai sus de către partenerii proiectului, pe cât posibil.

Listele cadrului de competență și articolele referitoare la liderii norilor educaționali adaptivi:

1. Cinci trăsături ale unui bun lider educațional (2014, SUA);

2. Competențele de conducere a cadrelor didactice (2014, SUA);

3. Competențe de educator și lider școlar Poate promova coerența sistemelor în educația competențelor (SUA).

4. Cadrul de Competență al Leaderului Cadrelor Didactice (2015, SUA);

5. Noua Competențe pentru Predarea Empatiei (2018, SUA);

6. Cadrul de Competență în Leadership (2014, Australia);

7. Top 10 competențe digitale pentru liderii în domeniul educației (2016, SUA);

8. Cadrul de predare Charlotte Danielson (2013, SUA);

9. Cadrul de învățare digitală pentru școlile post-primare (2015, Irlanda);

10. Cadrul de dezvoltare profesională pentru învățarea digitală (2018, Africa de Sud);

11. Cadrul tehnologic în educație: predare și învățare, operațiuni administrative, infrastructură provincială (2013, Canada);

12. CADRELE DE COMPETENȚĂ PRIVIND LEADERSHIPUL EDUCAȚIONAL (2014, Spania);

13. CADRELE DE COMPETENȚĂ PRIVIND PREDAREA DIGITALĂ (2017, Spania);

14. Catalonia: Cadrul digital - Agenda digitală 2020 (2014, Spania);

15. Catalonia: cadrul de referință (2018, Catalunya);

16. Fundația "Spania digitală" (Fundación España Digital) - (2015, Spania);

17. Cadrul de Competență în Leadership (2013, SUA);

18. Standarde pentru liderii școlari: cadrele de competență și aplicabilitatea acestora (2012, Regatul Unit);

9. Cadrul de Competență TIC al UNESCO pentru profesori (UNESCO 2011);

20. Cadrul de predare a conducerii - Competency Leadership (2016, Australia);

21. Cadrul de Competență în Leadership (Regatul Unit);

22. Competența digitală a educatorilor (2017, Luxemburg);

23. STRATEGISCH COMPETENTIE DENKEN (2018, Olanda);

24. COMPETENȚE DIN DOMENIUL SOCIETĂȚII DE ÎNVĂȚĂMÂNT ȘCOLAR (Olanda);

25. Het geheim van de innovatieve schoolleider (Olanda).

26. Waar blijft de middenmanager? Een onderzoek naar de strategische rol van team- en afdelingsleiders in het voortgezet onderwijs (Olanda).

27. De leidinggevende in het onderwijs als regisseur (Olanda).

28. Competentieontwikkeling M-decreet (Belgia).

29. Een nieuw profiel voor de leraar secundair onderwijs. Hoe worden leraren daartoe gevormd? (Belgia)

30. Cadrele de competență în domeniul educației (2016, Regatul Unit);

31. Cadrul competențelor digitale (2018, Regatul Unit);

32. Cadrul de învățare digitală profesională (2018,Regatul Unit);

33. Curriculum pentru leadership-ul educației digitale (2016, Africa de Sud);

34. Construirea cadrului digital al capabilităților (2016, Regatul Unit);

35. Cadrul de competențe de leadership în educație (2012, SUA);

36. Cadrul standardelor profesionale din Regatul Unit - UKPSF (Regatul Unit);

37. Cadrul de conducere al KIPP și modelul de competență (2016, SUA);

38. Consiliul Național al Liderilor Școlari: Cadrul de facilitare a competențelor (2017, Regatul Unit);

În domeniul educației, alfabetizării digitale și a competențelor digitale există deja numeroase articole, curriculum și cadre de competență, acestea variind de la o țară la alta.

În ceea ce privește scopul proiectului, au fost întâlnite câteva limitări, deoarece nu există un cadru de competență specific legat de liderii educaționali din domeniul cloud-ului adaptiv. În principal, articolele și cadrele de competență se referă la leadership ca un concept unic, alfabetizare digitală și competențe pentru cadrele didactice și personalul didactic. În plus, au fost identificate diferite compoziții de competențe și competențe în ceea ce privește conceptele de leadership și leadership. Nu există o definiție comună cu privire la conceptul de leadership și lideri educaționali, după cum sa raportat și anterior în acest raport. Se evidențiază nevoia de a identifica o definiție comună comună despre leadership ca o competență în legătură cu liderii educaționali din domeniul cloud-ului adaptiv.

În Cadrul de Competență referitor la Curriculumul pentru Leadership în Educația Digitală (Africa de Sud, 2016), conceptul de leadership educațional și abilități digitale nu are nicio indicație clară asupra tehnologiilor cloud. Dar oferă o privire de ansamblu interesantă, într-adevăr "*... propunem educația digitală, care vizează creșterea capacității oamenilor de a cunoaște cunoștințele digitale (și anume practicile de alfabetizare digitală bazate pe context), mai degrabă decât o abordare a competenței digitale (deoarece nu există o singură dimensiune -această metodă). Acest lucru indică, prin urmare, necesitatea ca liderii educaționali digitali să-i conducă pe alții și să promoveze alfabetizarea digitală relevantă pentru contextele individuale și locale prin: conștientizarea și sporirea accesului la resursele disponibile; dezvoltarea capacităților în rândul persoanelor, curriculum-ului și organizațiilor; luarea unor decizii adecvate în funcție de context; și cultivarea inovației sau* schimbarea de agenți în conținutul propriu ".

Leadership-ul adaptiv este un proces complex, deoarece influențează analiza la nivel diferit. De exemplu, aceasta implică potențialul de a informa factorii de decizie în ceea ce privește alegerea tehnologiilor cloud adecvate pentru diferite contexte educaționale și de a informa designul instructiv despre nevoia de noi tehnologii, inversând ceea ce consorțiul L-CLOUD a definit ca o forță tehnologică. Liderii educaționali adaptativi trebuie să fie un exemplu și sa stpaneasca tehnologiile digitale de bază.

5. Ghidul abilităților și competențelor pentru liderii cloud ai educației adaptive

Intr-o lume în continuă schimbare și interconectare, este esențial ca sistemele educaționale să ofere elevilor competențe adecvate pentru a face față realităților sociale și profesionale în secolul XXI (de exemplu OECD, 2015a, Schleicher, 2015, Wiseman și Anderson, 2014). În vremurile de informare (Castells, 2010), profesiile bazate pe cunoaștere necesită capital uman care poate coordona provocări complexe și adapta seturi de competențe pentru fluide la cerințele în schimbare (de exemplu, OCDE, 2010a, 2011). Învățământul de înaltă calitate și echitabil este o componentă cheie în achiziționarea competențelor cheie pentru învățarea pe tot parcursul vieții (Consiliul Uniunii Europene, 2006) și, astfel, o prioritate pentru guvernele

naționale și organizațiile internaționale (de exemplu, Comisia Europeană, 2010; Fullan, 2010; Kinuthia și Marshall, 2013)[29].

Conform cercetării dezvoltate de partenerii proiectului, în acest capitol au fost identificate câteva orientări care să ghideze consorțiul L-CLOUD pentru a dezvolta cadrul de calificare pentru liderii în domeniul cloud-ului educațional bazat pe abilități și competențe și pentru a dezvolta un curs de formare.

Au fost identificate trei domenii principale de competență: educația digitală, leadership-ul educațional și cloud computing pentru liderii educaționali.

În ceea ce privește primul domeniu identificat, Cadrul european pentru competențe digitale a educatorilor (DigCompEdu), un set de competențe digitale pentru educatori pentru a gestiona și a valorifica potențialul tehnologiilor digitale pentru îmbunătățirea și inovarea educației[30].

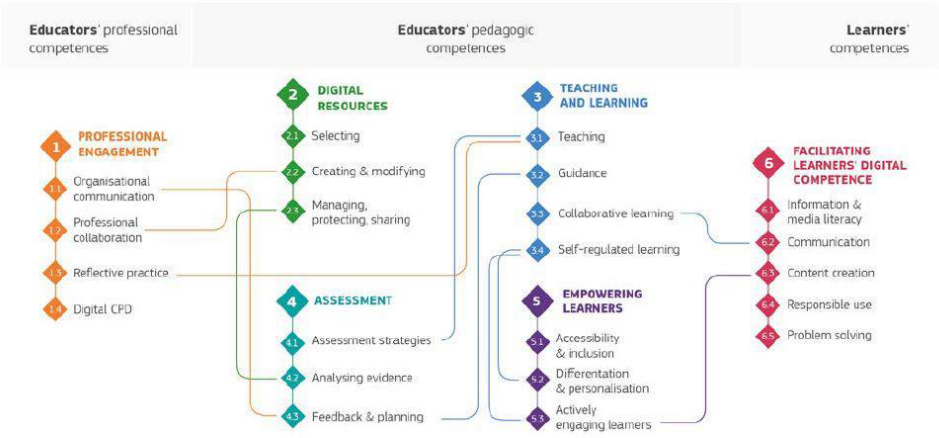


FIGURE 1: THE DIGCOMPEDU FRAMEWORK

Cadrul european pentru competențe digitale a educatorilor a fost considerat document de referință, având în vedere că scopul său este de a oferi un cadru general pentru identificarea modelului de competențe digitale specifice educatorului, deoarece nu se bazează numai pe un nivel de educație (învățământ primar și terțiar) dar este transversal pentru tot nivelul învățământului.

DigCompEdu identifică 6 domenii: 1. Dezvoltarea profesională a educatorilor în ceea ce privește dezvoltarea personală individuală și utilizarea tehnologiilor digitale pentru interacțiunea profesională; 2. În schimb, resursele digitale se concentrează asupra competențelor digitale pe care educatorii trebuie să le utilizeze, a crea și a împărtăși resursele digitale pentru învățare; 3. Predarea și învățarea, este dedicată gestionării utilizării tehnologiilor

[29] Politici educaționale digitale în Europa și în afara acesteia, 2017, JRC se alătură Centrului de Cercetare pentru Raportul de Politici

[30] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu

digitale în predare și învățare; 4. tehnologiile și evaluarea digitală;

Împuternicirea cursanților oferă o imagine de ansamblu asupra potențialului tehnologiilor digitale de creștere a strategiilor de învățare și predare către o abordare axată pe cursanți;

Facilitarea competențelor digitale ale cursanților, nu în ultimul rând, a șasea zonă se axează pe competențele pedagogice pentru a facilita competențele digitale ale elevilor.

În ceea ce privește a doua zonă identificată, au fost analizate conducerea educațională, mai multe cadre și articole privind competențele, cum ar fi Cadrul de Competență în Leadership Educațional (2014, Spania); Standarde pentru liderii școlari: cadrul de competență și aplicabilitatea acestora (2012, Regatul Unit); Învață să conducă (2014, Australia), Curriculum pentru competențe digitale cadru de competență și mult mai mult. După cum se menționează în standardele pentru liderii școlari: cadrul de competență și cadrul aplicabilității acestora, cadrele de competență și standardele profesionale pentru liderii școlari sunt acum larg răspândite, dar exprimate într-un grad diferit de detaliu, unele examinând rolul liderului în detalii fine și făcându- sau ocupațional) și competențe personale, iar dovezile trebuie să demonstreze "competența" la toate nivelurile[31].

Deoarece există diferite stiluri de conducere, este destul de dificil să se propună doar unul, în general conducerea tradițională este un proces în care un membru al unei organizații influențează și controlează comportamentul altora pentru a atinge obiectivele comune (Școala pe cloud: lideri și conducere, 2016)[32]. În concursul liderilor educaționali Cloud, principala provocare este stabilirea unui cadru pentru schimbare și împuternicirea personalului membrilor pentru a îmbrățișa oportunitățile pedagogice de a crea învățare autentică, în timp ce renunță la controlul învățării asupra liderilor înșiși. După cum se precizează în Cadrul conceptual pentru leadership educațional digital, un curriculum pentru leadership digital trebuie să implice cel puțin două părți: educația digitală și leadership în educația digitală, bazându-se atât pe educația digitală. Ipoteza de bază este că atunci când un individ devine lider al educației digitale, acel individ trebuie să demonstreze mai întâi capacitatea în practicile identificate cu educația digitală[33].

O viziune holistică asupra conducerii educației digitale este prezentată mai jos, în care alfabetizarea digitală este linia de bază pentru educația digitală și fiind lideri în domeniu[34]:

[31] http://www.schoolleadership.eu/sites/default/files/standards-school-leaders-competency-frameworks-applicability-2012_6.pdf

[32] Școala pe cloud: Linii directoare pentru conducători și management, 2016, Școala pentru proiectul cloud.

[33] Curriculum pentru educația digitală Leadership: un document de concept, Commonwealth of Learning și Universitatea din Cape Town, 2016.

[34] Curriculum for Digital Education Leadership: a concept paper, Commonwealth of Learning and University of Cape town, 2016.

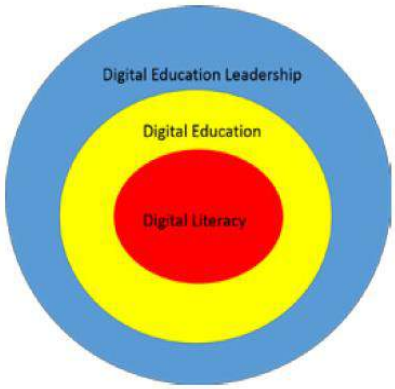


FIGURE 1. A HOLISTIC VIEW OF DIGITAL EDUCATION LEADERSHIP.

În plus, conceptul de conducere nu poate fi separat de cel al guvernării, care reprezintă modul în care instituțiile sunt organizate și gestionate formal. Într-adevăr, una dintre cele trei perspective pe care le propune proiectul Școala de Cloud este de a vedea guvernarea din perspectiva conducerii. Din această analiză rezultă că instituțiile de învățământ trebuie să fie pregătite să implementeze cloud computing ca impactul serviciilor cloud asupra tuturor proceselor, făcând guvernarea critică pentru a înțelege și controla eficient riscurile[35]. Conform aceleiași analize, liderii ar trebui să poată stabili dacă managerii iau măsurile necesare pentru a asigura un bun sistem de guvernare care să facă distincția între liderii educaționali școlare și managerii.

Cel de-al treilea domeniu de competență identificat este legat de Cloud Computing pentru educație și adaptarea sa la liderii norilor educaționali. După cum sa văzut anterior, diferite țări au abordat cloud computing în moduri diferite: de la gestionarea și administrarea sistemului școlar într-un mod mai eficient (și din punct de vedere financiar), alții au început deja să înțeleagă potențialul pedagogic din spatele implementării unui mediu inovativ de învățare și schimbarea școlii de comunicare strategie.

Datorită schimbării rapide pe care o aduce tehnologia și limitării financiare pentru a investi în tehnologia potrivită, trebuie să avem o viziune clară asupra rolului liderilor educaționali. După cum sa sugerat în Cadrul UNESCO pentru Competența TIC, este important să existe o abordare transsectorială prin intermediul TIC în educație (de exemplu, competențe ale profesorilor, materiale de învățare, echipament TIC etc.). Cadrul nu menționează în mod specific Cloud Computing, ci oferă un cadru cu trei abordări didactice: alfabetizare tehnologică, aprofundarea cunoștințelor și construirea de cunoștințe pentru structurile de competență ale cadrelor didactice în domeniul TIC:

[35] Școala de cloud: Linii directoare pentru conducători și management, 2016, Școala pentru proiectul cloud.

THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS			
	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

CADRUL COMPETENTELOR TIC UNESCO AL PROFESORILOR

	ALFABETIZAREA TEHNOLOGICA	APROFUNDAREA CUNOSTINTELOR	CREAREA CUNOSTINTELOR
INTELEGEREA TIC IN EDUCATIE	POLITICILE DE CONSTIENTIZARE	POLITICILE DE INTELEGERE	POLITICI DE INOVARE
CURRICULUM SI EVALUARE	CUNOSTINTE DE BAZA	APLICAREA CUNOSTINTELOR	CUNOASTEREA ABILITATILOR SOCIETATII
PEDAGOGIE	TEHNOLOGIA INTEGRATA	REZOLVAREA COMPLEXA A PROBLEMELOR	AUTO-GESTIONARE
TIC	INSTRUMENTE DE BAZA	INSTRUMENTE COMPLEXE	INSTRUMENTE UNIVERSALE
ORGANIZARE SI ADMINISTRARE	CLASA STANDARD	GRUPURI COLABORATIVE	INVATAREA ORGANIZATIILOR
INVATAREA PROFESIONALA A PROFESORULUI	ALFABETIZAREA DIGITALA	MANAGERIERE SI GHIDARE	PROFESORUL CA MODEL DE CURSANT

Cadrul nu doar divide în cele trei domenii, ci și structurarea activității cadrelor didactice în șase aspecte principale: înțelegerea TIC în educație, curriculum și evaluare, pedagogie, TIC, organizare și administrație, învățarea profesională a cadrelor didactice. Chiar dacă nu se referă la liderii educaționali, cadrul oferă o abordare valabilă pentru cloud computing în educație.

În cadrul tehnologiei în învățământ: învățarea și învățarea, operațiunile administrative, infrastructura provizorie este o structură a rolului și sunt prezentate responsabilitățile diferiților actori implicați în implementarea TIC în educație. Acesta oferă o imagine de ansamblu asupra rolurilor miniștrilor, profesioniștilor din cadrul diviziei școlare și grupurilor consultative pentru implementarea tehnologiei în educație în ceea ce privește orientarea politicilor și guvernarea eficientă. Pentru fiecare nivel de guvernare au fost identificate mai multe roluri, cum ar fi: Politica și direcția, Infrastructură, Finanțare, Infuzie tehnologică, Învățare profesională, responsabilitate, educație la distanță, colectare și analiză de date, managementul datelor și informațiilor, gândirea viitoare.

În toate cele trei domenii identificate, alfabetizarea digitală reprezintă linia de bază pentru dezvoltarea zonei.

SPANISH VERSION

1. Introducción

L-CLOUD es un proyecto de dos años, cofinanciado por la Unión Europea - Key Strategic Partnership for School Education en el marco del Programa Europeo Erasmus +; y por la Agencia Nacional de Chipre: Fundación para la Gestión de los Programas Europeos de Aprendizaje Permanente (FMELLP) en 2018.

L-CLOUD es el acrónimo de Developing Tomorrow's Cloud Education Leaders. El proyecto se inició en octubre de 2018 y tendrá una duración de 24 meses.

La computación en la nube (cloud computing) es una tecnología innovadora que utiliza Internet para ofrecer una amplia variedad de servicios de TI y está experimentando un crecimiento exponencial. Por ejemplo, los productos de apoyo como las aplicaciones de dispositivos móviles se están multiplicando, incluyendo el correo electrónico, el almacenamiento de información, el intercambio de archivos, las herramientas de colaboración, las comunicaciones digitales y otros servicios. Al mismo tiempo, las expectativas de los líderes escolares están cambiando, de modo que las instituciones educativas deben mostrar un liderazgo significativo para aceptar los desafíos de las herramientas y contenidos colaborativos innovadores (por ejemplo, acceso ininterrumpido a redes seguras y fiables y la capacidad de crear, entregar y compartir contenidos entre instituciones).

La adopción del Cloud Computing en la enseñanza sigue estando fragmentada porque, si bien el Cloud Computing ofrece muchas ventajas, los responsables de la toma de decisiones desconocen en gran medida los beneficios potenciales para el aprendizaje, la enseñanza, la administración y la gestión. Por lo tanto, se necesitan sistemas de formación y soporte que les ayuden a mantenerse al día con los rápidos cambios del entorno del Cloud Computing. También se necesita liderazgo para el cambio pedagógico, de lo contrario los educadores continuarán la paradoja de utilizar los viejos métodos de enseñanza, pero con nuevas herramientas.

Este informe presenta las **Directrices sobre habilidades y competencias para líderes en Educación Adaptativa en la nube**. El objetivo de este informe es establecer la línea de base para la construcción de un Marco de Calificación para Líderes en Educación en la nube, basado en habilidades y competencias.

La metodología para desarrollar estas directrices se basa en las investigaciones sobre la definición de conceptos claves, el estado del arte en países europeos seleccionados y las mejores prácticas. Además, las Directrices se basan en los principales resultados del proyecto de la Escuela en la Nube y en los marcos de competencias recogidos a nivel nacional, europeo e internacional por los socios del proyecto.

El informe (IO1.A4) consta de 5 partes:

1. Preparación: Estado del arte y definiciones que comprenden **un glosario dinámico y adaptativo** sobre la terminología y los conceptos principales del proyecto L-CLOUD y **el estado del arte de la formación de los profesores y sus líderes en materia de cloud computer, liderazgo y metodología de enseñanza innovadora**.
2. Capítulo 1: **Prácticas actuales e innovadoras**, fáciles de “describir” como mejores prácticas, seleccionadas a partir de los resultados del **proyecto SoC Network** y de **nuevas prácticas aportadas por los socios del proyecto**. Estas prácticas han sido escogidas teniendo en cuenta 6 criterios: EFICACIA, EFICIENCIA, RELEVANCIA, COLABORACIÓN, TRASFERABILIDAD POTENCIAL Y SOSTENIBILIDAD ÉTICA.

3. Capítulo 2: una colección acumulativa de marcos de competencias y artículos con directrices sobre competencias desarrolladas en los países socios, a nivel europeo e internacional, para preparar a los profesores y a los directores de centros escolares para un mundo futuro basado en las TIC (incluido el currículo dinámico desarrollado).
4. Directrices sobre habilidades y competencias para Líderes en Educación Adaptativa en la nube.
5. Anexos, compuestos por:
   - Anexo 1: Estado del arte de los Líderes en Educación Adaptativa en la Nube de los países socios (Chipre, España, Rumania, Grecia, Bélgica e Italia).
   - Anexo 2: Prácticas actuales e innovadoras de los Líderes en Educación Adaptativa en la nube a nivel europeo e internacional.
   - Anexo 3: Identificar los marcos de competencias y artículos existentes con las principales habilidades y competencias de los líderes de la nube educativa a nivel nacional, europeo e internacional.
   - Anexo 4: Metodología IO1.

Las directrices sobre Habilidades y Competencias para Líderes en Educación Adaptativa en la nube tienen por objeto proporcionar una visión general del perfil profesional, la experiencia y las mejores prácticas de los líderes de la nube de la Educación Adaptativa en el mejor de los conocimientos de los socios en Europa y fuera de ella. Las principales conclusiones del análisis ayudarán a los socios del proyecto a dar mejor forma al marco de cualificación para los líderes de la nube de la educación basado en las habilidades y la competencia.

Las principales conclusiones sobre el Cloud Computing en educación son relevantes para las escuelas de Europa gracias a su carácter innovador. Incluso si los cambios son lentos y aplicados de forma diferente de un país a otro, el potencial es bastante alto y se reconoce en todo el mundo. En general, el Cloud Computing en educación se ha utilizado ampliamente para apoyar la principal función administrativa de los sistemas educativos, mientras que su integración en el aprendizaje y la enseñanza está mucho más fragmentada por las escuelas o depende de la iniciativa de profesores individuales. De hecho, los beneficios potenciales de ser líderes en CLOUD COMPUTING no sólo se relacionan con el ahorro de dinero a nivel gerencial, sino también con la transformación de la forma en que los profesores enseñan y los estudiantes aprenden.

Los socios que participan en la elaboración del informe son:

1. EACG - European Association of Career Guidance, como coordinador del proyecto (CHIPRE).
2. UB – Universidad de Barcelona (ESPAÑA).
3. Colegiul National Pedagogic "Mircea Scarlat" (RUMANIA).
4. DOUKA EKPAIDEFTIRIA AE - PALLADION LYKEION EKFPAIDEUTHRIA DOUKA (GRECIA).
5. EUROGEO VZW - EUROPEAN ASSOCIATION OF GEOGRAPHERS (BÉLGICA).
6. DLEARN - European Digital Learning Network (ITALIA).

2. Preparación: estado del arte y definiciones

Este capítulo presenta una revisión y análisis de las directrices y estructuras/sistemas de competencias existentes, se aproxima a los conceptos y enfoques de liderazgo, define los objetivos y los resultados deseados y establece el estado actual del **concepto de Líderes en educación adaptativa en la nube** en Europa.

2.1. L-CLOUD Glosario dinámico y adaptativo

El GLOSARIO DINÁMICO Y ADAPTATIVO L-CLOUD es una herramienta fundamental diseñada por los socios del proyecto para recopilar los principales conceptos y definiciones en relación con el proyecto. Los conceptos y definiciones principales se recogen en orden alfabético y servirán de base para todo el proyecto.

El glosario dinámico y adaptativo L-CLOUD está disponible en el siguiente enlace de Google Doc.:

https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit

¿Cómo es un líder en educación adaptativa en la nube?

Los líderes de la nube educativa adaptativa son expertos cuyo objetivo es el de mejorar la calidad de la educación y del propio sistema educativo. La adaptabilidad de los líderes abarca la capacidad de influir y entusiasmar a los demás a través del apoyo personal, la visión y la dirección, y de acceder a los recursos para construir una plataforma sólida para el cambio, adaptando las tecnologías de la nube para enseñar, aprender y gestionar el sistema escolar.

2.2. Estado del arte sobre los Líderes en Educación Adaptativa en la Nube

2.2.1. Introducción

El estado del arte en los países seleccionados quiere proporcionar una visión general en términos de dispositivo, técnica y campo científico basado en los conocimientos de los socios en relación con los Líderes de la nube educativa (2018/2019). De hecho, los socios del proyecto se centran en la investigación de las metodologías comunes en sus países de origen en relación con los profesores, el personal educativo y el director. También se aborda los programas docentes universitarios a nivel nacional y regional en relación con la preparación de los profesores sobre el tema del proyecto. Las investigaciones se han centrado en conceptos, enfoques, objetivos y resultados en temas de liderazgo, así como en tecnologías en Cloud Computing y su uso en el sistema educativo.

De hecho, el objetivo es comprender cómo funcionan los diferentes sistemas y establecer orientaciones que tengan en cuenta a todos los socios implicados en esta investigación. En general, hay que tener en cuenta que no existe una definición y estrategia común entre todos los países relacionados con el liderazgo y los líderes de la nube adaptativa en Europa.

Los países seleccionados son Chipre, España, Rumania, Grecia, Italia, Bélgica y los Países Bajos.

2.2.2. Principales hallazgos sobre Computación en la nube

Cada país miembro que representa al consorcio presenta una **visión nacional** de la implementación de **estrategias digitales**.

- En Italia y Grecia, no existe un vínculo directo entre las competencias del profesorado relacionadas con el cloud computing. En ambos países, la formación inicial del profesorado no incluye explícitamente el Cloud Computing como asignatura.
- En Italia, en relación a **la computación en nube**, el plan digital nacional apoya principalmente el sistema de gestión (y administrativo) de la escuela. Mientras que en Chipre el enfoque de la profesión docente se centra en la alfabetización digital, incluyendo la computación en nube; pero no tanto en la gestión (proyecto de la UE - 2022), lo que muestra un enfoque completamente diferente al resto.
- Todos los países menciona el Desarrollo Profesional Continuo (CPD) [36] para profesores relacionados con el cloud computing, por el hecho de utilizar las TIC para facilitar el proceso de aprendizaje, apoyar el sistema de administración educativa y crear un nuevo entorno de aprendizaje que facilite la profesión docente.
- En Chipre el uso de las TIC es una prioridad política, los alumnos de los estudios para "Profesorado" deben aprobar el examen de Tecnología Educativa, Apoyo de la Tecnología de la Información para las Ciencias Naturales (diferente a España, Italia y Grecia). En Rumania, los futuros profesores estudian disciplinas como las tecnologías de la información y la comunicación: Aplicación informática; formación asistida por ordenador.

2.2.3. Principales hallazgos sobre Liderazgo en Europa

Los gestores, directores, líderes y responsables políticos juegan un papel clave en el desempeño de las tareas y deberes de su organización educativa, ya que tienen un rol relevante para posibilitar la transformación y el cambio del sistema educativo.

Filtrando los resultados del proyecto School on the Cloud (SoC) Network, hay incluso **diferentes definiciones sobre liderazgo y estilos de liderazgo en los entornos educativos en Europa**: de servicio, transaccional, emocional, transformacional, estratégico, distributivo, digital, etc., mientras que existe una clara distinción entre **liderazgo y gestión en la organización educativa.**

Previamente, los socios del proyecto identificaron cuáles son las competencias que el personal educativo, los profesores y su líder adquirieron durante los estudios y cuáles son los requisitos necesarios para conseguir trabajo como profesores:

- En la educación inicial, en **Grecia, Italia y Rumania** no hay evidencia o vínculo directo con el Liderazgo como competencia en los planes de estudio nacionales. En cambio, los profesores pueden adquirir competencias relacionadas con el **Desarrollo Profesional Continuo** (CPD), en relación al interés en aumentar sus competencias y habilidades como líderes. En **Chipre**, los futuros líderes en educación deben asistir a un curso de Gestión y Tecnología Educativas si cursan una maestría en ciencias de la educación - Liderazgo y Administración Educativa.

[36] Por siglas en inglés *Continual Professional Development*

- En **España**, el **liderazgo educativo** se podría considerar como una prioridad política, ya que ayuda a los alumnos a aprender mejor y permite vincular la escuela con su entorno. Además, está establecido por la **Ley de Educación** (LOMCE, 2013) en términos de **autonomía** de los centros (selección del número de horas por asignatura, métodos y contenidos pedagógicos) y el **liderazgo** (competencias ampliadas para el director de la escuela) como base del funcionamiento de la institución educativa. España destaca la importancia de la inteligencia educativa para el liderazgo educativo como "liderazgo compartido": pensamiento estratégico, gestión del aprendizaje, relaciones sociales y creación y animación de estructuras organizativas como competencias principales. Mientras que en Italia el concepto de liderazgo se refiere a la innovación en el campo de la educación, la creación de colaboración con centros de investigación, universidades y socios locales, así como la valorización de las buenas prácticas existentes en el sistema educativo.

- En **Bélgica y los Países Bajos**, existe una gran variedad de oportunidades disponibles en la web en lo que se refiere a la toma de iniciativa en la gestión educativa. Los ejemplos básicos se centran principalmente en las etapas iniciales de la educación en las que se aceptan e implementan las tecnologías de la información en el plan de estudios y en cómo beneficiarse de programas educativos fáciles de usar en la web. Con el fin de innovar el currículo en la educación, existe una gran riqueza de oportunidades de aprendizaje. Sin embargo, los últimos veinte años, la aceptación y el uso de todas estas herramientas ha crecido lentamente en comparación con la velocidad de los desarrollos.

3. Capítulo 1: prácticas actuales e innovadoras

Con el fin de extraer las habilidades y competencias adecuadas para los profesores y sus líderes en Europa, se han analizado 17 prácticas actuales e innovadoras seleccionadas por los socios del proyecto, y de acuerdo a las directrices que se recogen en el Anexo 2[37]. Estas “mejores prácticas” han tenido en cuenta los criterios de: eficacia, eficiencia, relevancia, colaboración, transferencia potencial y sostenibilidad ética; en una escala del 1 al 4, donde 1 es insuficiente y 4 excelente.

Estos criterios presentan las siguientes características:

1. **EFICACIA**: Los resultados deben ser cuantificables. A modo de ejemplo: las titulaciones, los planes de estudios, el proyecto de investigación y los nuevos cursos creados. Las prácticas más votadas son: **Greek Digital School - Photodentro** y el **proyecto School on the Cloud** (SoC).

2. **EFICIENCIA**: Genera resultados teniendo en cuenta un número definido de recursos y tiempo. La más votada siguiendo este criterio ha sido: el **proyecto SoC.**

3. **RELEVANCIA**: Las prácticas actuales e innovadoras deben estar en consonancia con las prioridades del programa ERASMUS + y los objetivos del proyecto L-CLOUD. La más votada: **Cloud Computing en educación: Un Programa de Desarrollo Profesional para Maestros de Escuela Secundaria.**

[37] Las prácticas 13 y 14 han sido "eliminadas" ya que se tratan de artículos, y como tal no han sido considerados como mejores prácticas a utilizar, aunque se encuentran disponibles en el anexo 2 para la consulta de los lectores.

4. **COLABORACIÓN**: Las prácticas han sido creadas conjuntamente entre diferentes participantes - agentes, tales como: escuelas, institutos de formación, centros de investigación y responsables políticos. La más votada siguiendo este criterio ha sido: el **proyecto SoC.**

5. **TRANSFERIBILIDAD POTENCIAL**: Las prácticas tienen que disponer de código abierto para que los resultados estén disponibles y sean consultados por todos. Las más votadas son: **SoC** e **Interactive School Books**. Este último, el Ministerio griego entrega a todos los estudiantes, a través de la nube, los libros que se utilizan en el currículo griego de K-12. De hecho, todos los libros escolares griegos son accesibles en cualquier navegador disponible en el ordenador o en el dispositivo móvil que se haya puesto a disposición mediante el uso de la tecnología de la nube.

6. **SOSTENIBILIDAD ÉTICA**: Las prácticas tienen que ser sostenibles desde el punto de vista medioambiental, económico y social. La más votada siguiendo este criterio ha sido: el **proyecto SoC.**

Teniendo en cuenta la puntuación media de los 6 criterios establecidos, las cuatro mejores prácticas que han sido seleccionadas son:

1. **School on the Cloud** (https://www.schoolonthecloud.net/): Es un proyecto destinado a introducir la implementación del Cloud Computing en educación. Proporciona una visión global de los aspectos de liderazgo y gestión relacionados con la implementación de la nube en los diferentes contextos educativos.

   La implementación de la nube en el sistema escolar incluye visiones, barreras, impacto potencial y sugerencias. De hecho, examinar las visiones educativas ayuda a los líderes a considerar el papel que puede desempeñar la Nube en contextos formales y no formales.

   La puntuación media: 3,416666667

2. **Escuela Digital Griega – Photodentro** (http://www.dschool.gr): Es un **repositorio de recursos y prácticas educativas abiertas** que están relacionadas con el currículo nacional griego. El proyecto presenta una manera innovadora de utilizar la tecnología de la nube para dirigir eficazmente la educación a nivel nacional por parte del Ministerio de Educación y Asuntos Religiosos de Grecia. De hecho, es un repositorio de objetos de aprendizaje, vídeos educativos, software educativo y prácticas educativas abiertas disponibles tanto para profesores como para estudiantes, donde el uso de la tecnología en la nube apunta a un amplio alcance y a lograr procesos de consolidación de la comunidad.

   La puntuación media: 3,027777778

3. **Cloud Computing en educación: Un Programa de Desarrollo Profesional para Maestros de Escuela Secundaria** (https://peer.asee.org/cloud-computing-for-education-a-professional-development-program-forhigh-school-teachers)**:** El programa pretendía explorar las formas en que las tecnologías de Cloud Computing pueden ser utilizadas para mejorar la instrucción en el aula. Con ese propósito, fue diseñado para cumplir con dos objetivos: exponer a los profesores de Secundaria el concepto de Cloud Computing y las tecnologías asociadas; y ayudarles a desarrollar unidades curriculares basadas en tecnologías de Cloud Computing que puedan ser integradas en diferentes asignaturas. La tecnología "Cloud" ofrece amplias oportunidades de aprovechar las ventajas de las nuevas tecnologías. Además, el estudiantado tiene más oportunidades de colaboración, comunicación y manejo de datos.

Puntuación media para los 6 criterios: 2,916666667

Para lograr el liderazgo de la nube en educación, es fundamental entender la variedad de proyectos, programas y necesidades de los diferentes sistemas educativos en Europa. De acuerdo con las prácticas analizadas, se exponen las siguientes pautas:

- ***El cambio y la preparación*** como la capacidad de una organización para iniciar y responder al cambio de manera que se percibe como una ventaja, minimizando los riesgos a los que puedan enfrentarse. La visión de una organización es crucial para la computación en la nube, y por ello, la dirección debería apoyarlo.
- El cambio implica ***gobernabilidad***. La gobernanza es la forma en que se organizan y gestionan las instituciones educativas de acuerdo a tres aspectos: liderazgo, procedimientos de ejecución, y educación y aprendizaje.
- ***Planificar***. El principio rector de una organización es diseñar, aplicar y mantener un conjunto coherente de políticas, procesos y sistemas para gestionar y garantizar un nivel aceptable de riesgo en términos de sistema de gestión de la seguridad de la información.
- ***Desempeño del liderazgo***. El liderazgo en una organización educativa es un factor significativo que afecta a la eficacia. Desde una perspectiva tradicional, se concibe como un proceso en el que un miembro de una institución influye y controla el comportamiento de los demás para lograr objetivos comunes.

4. Capítulo 2: marco de competencia a nivel nacional, europeo e internacional

Este capítulo contiene la recopilación de directrices y marcos de competencias identificados por los países socios a nivel local, nacional e internacional, para preparar al profesorado y a los directores educativos en tecnologías, competencias digitales, estrategias para el desarrollo dinámico de los planes de estudio y los estándares de los líderes escolares.

La siguiente lista es una selección de documentos proporcionados por los socios del proyecto y pueden tener relación con los líderes en educación en la nube:

1. Five Traits of a Good Educational Leader (2014, USA).
2. The Teacher Leadership Competencies (2014, USA).
3. Educator and School Leader Competencies Can promote systems coherence in Competency Education (USA).
4. Teacher Leader Competency Framework (2015, USA).
5. Nine Competencies for Teaching Empathy (2018, USA).
6. Leadership Competence Framework (2014, Australia).
7. Top 10 Digital Skills for Education Leaders (2016, USA);
8. Charlotte Danielson's Framework for Teaching (2013, USA).
9. Digital Learning Framework for Post-Primary Schools (2015, Ireland)

10. Professional Development Framework for Digital Learning (2018, South Africa).
11. Technology in Education Framework: Teaching and Learning, Administrative Operations, Provincial Infrastructure (2013, Canada).
12. Marco de competencias para el liderazgo educativo (2014, España).
13. Marco común de competencia digital docente (2017, España).
14. L'Agenda Digital per a Catalunya 2020 (2014, España).
15. Competencia digital del profesorado de Cataluña (2018, España).
16. Fundación España Digital (2015, España).
17. Leadership Competency Framework (2013, USA).
18. Standards for school leaders: competency frameworks and their applicability (2012, United Kingdom).
19. UNESCO ICT Competency Framework for Teachers (UNESCO, 2011).
20. Teach to Lead – Leadership Competency Framework (2016, Australia).
21. Leadership Competency Framework (United Kingdom).
22. Digital Competence of Educators (2017, Luxemburg).
23. Strategisch Competentie Denken (2018, The Netherlands).
24. SCHOOLLEIDERSREGISTER PO BASISCOMPETENTIES (The Netherlands).
25. Het geheim van de innovatieve schoolleider (2013, The Netherlands).
26. Waar blijft de middenmanager? Een onderzoek naar de strategische rol van team- en afdelingsleiders in het voortgezet onderwijs (2018, The Netherlands).
27. De leidinggevende in het onderwijs als regisseur (2016, The Netherlands).
28. Competentieontwikkeling M-decreet (Belgium).
29. Een nieuw profiel voor de leraar secundair onderwijs. Hoe worden leraren daartoe gevormd? (2008, Belgium).
30. Education competency frameworks (2016, UK).
31. Digital Skills competency framework (2018, UK).
32. Professional Digital Learning Framework (2018, UK).
33. Curriculum for Digital Education Leadership (2016, South Africa).
34. Building digital capabilities framework (2016, UK).
35. Leadership competency framework in education (2012, USA).
36. UK Professional Standards Framework – UKPSF (UK);
37. KIPP leadership framework and competency model (2016, USA).
38. National Council of School Leaders: Facilitation competency framework (2017, UK).

Existen numerosos artículos, planes de estudio y marcos de competencias en los ámbitos de la educación, la alfabetización digital y las competencias digitales, que varían de un país a otro.

En cuanto al propósito del proyecto, se han encontrado algunas limitaciones, ya que no existe un marco de competencias específico relacionado con los líderes en educación adaptativa en la nube. Principalmente, los artículos y los marcos de competencias hacen referencia al liderazgo, como un concepto único, a la alfabetización digital y a las competencias del profesorado y del personal educativo. Asimismo, se han identificado diferentes composiciones de habilidades y competencias en relación con el liderazgo y los conceptos de liderazgo. De la misma manera, se observa que no existe una definición compartida sobre el concepto de liderazgo y de líderes educativos. Es por ello, que surge la necesidad de identificar una definición común compartida sobre el liderazgo como competencia en relación con los líderes en educación adaptativa en la nube.

En el Marco de Competencias relacionado con el Currículum para el Liderazgo en Educación Digital (Brown, Czerniewicz, Huang, & Mayisela, 2016) se refiere al concepto de liderazgo educativo y habilidades digitales sin una clara indicación de que las tecnologías de la nube sean el centro de atención. Pero proporciona una visión general interesante:

> ...proponemos la educación digital, que consiste en aumentar la capacidad de las personas para la alfabetización digital (es decir, las prácticas de alfabetización digital basadas en el contexto), en lugar de un enfoque basado en la competencia digital (porque no existe un método único que se adapte a todos los casos). Esto indica, por lo tanto, la necesidad de líderes en educación digital que puedan liderar a otros y fomentar la alfabetización digital relevante para los contextos individuales y locales mediante: la creación de conciencia y la mejora del acceso a los recursos disponibles; el desarrollo de capacidades en los individuos, los planes de estudio y las organizaciones; la toma de decisiones informadas y adecuadas al contexto; y el cultivo de la innovación o el ser agentes de cambio en sus propios contenidos. (p. 7)[38]

El liderazgo adaptativo es un proceso complejo ya que influye en el análisis a diferentes niveles. Por ejemplo, implica la posibilidad de informar a los responsables de la toma de decisiones sobre la elección de las tecnologías de la nube adecuadas para los diferentes contextos educativos, y de informar al diseño de la enseñanza sobre la necesidad de nuevas tecnologías, invirtiendo lo que el consorcio L-CLOUD ha definido como el "impulso tecnológico". Los líderes de la educación adaptativa deben predicar con el ejemplo y dominar las tecnologías digitales.

5. Directrices sobre habilidades y competencias para líderes en educación adaptativa en la nube

En un mundo en cambio e interconectado, es esencial que los sistemas educativos proporcionen a los estudiantes las competencias adecuadas para hacer frente las realidades sociales y profesionales del siglo XXI (OCDE, 2015a; Schleicher, 2015; Wiseman y Anderson, 2014). En la era de la información (Castells, 2010), las profesiones basadas en el conocimiento requieren un capital humano que pueda coordinar retos complejos y adaptar conjuntos de habilidades fluidas a las demandas cambiantes

[38] Traducción propia. Extraído de: Brown, B. Czerniewicz,L., Huang, C.W. & Mayisela, T. (2016). *Curriculum for Digital Education Leadership: A Concept Paper.* Burnaby, British Columbia Canada: Commonwealth of Learning.

(OCDE, 2010a, 2011). Una educación de alta calidad y equitativa es un componente clave en la adquisición de las competencias clave para el aprendizaje permanente (Consejo de la Unión Europea, 2006) y, por lo tanto, una prioridad entre los gobiernos nacionales y las organizaciones internacionales (Comisión Europea, 2010; Fullan, 2010; Kinuthia y Marshall, 2013), tal y como se recoge en Digital Education Policies in Europe and Beyond (Conrads, Rasmussen, Winters, Geniet & Langer, 2017) [39].

De acuerdo con el análisis desarrollado por los socios del proyecto, a continuación se han identificado algunas directrices para guiar al consorcio L-CLOUD en el desarrollo del Marco de Calificación para Líderes de Educación Adaptativa en la Nube basado en Habilidades y Competencias y, posteriormente, desarrollar un curso de formación. Para ello, se han definido tres áreas de competencia principales: educación digital, liderazgo educativo y computación en nube para líderes educativos.

En la primera, el Marco Europeo para la competencia digital del profesorado (DigCompEdu, figura 1) desarrolla un conjunto de competencias digitales para que los educadores gestionen y aprovechen el potencial de las tecnologías digitales para mejorar e innovar en la educación.

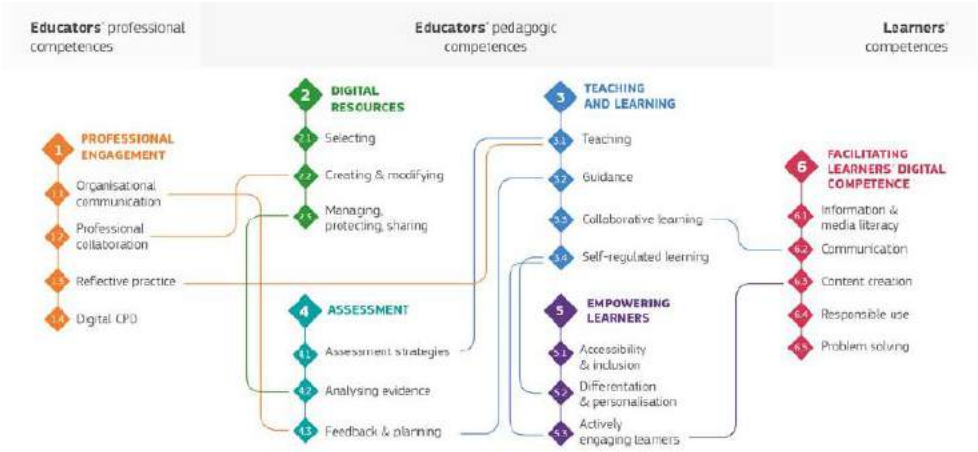


Figura 1: Marco Europeo para la competencia digital del profesorado (DigCompEdu) (Fuente: European Comission, 2017)[40]

Este marco ha sido tomado como documento de referencia, ya que su objetivo es proporcionar un marco general para identificar el modelo específico de competencias digitales del profesorado en todos los niveles de la educación: infantil, primaria, secundaria, superior, de adultos, profesional; y en contextos no formales.

El DigCompEdu identifica 6 áreas.

1. **Entorno profesional:** El desarrollo profesional del profesorado en relación al desarrollo personal - individual y el uso de las tecnologías digitales para la interacción profesional.
2. **Recursos digitales:** Se centra en las competencias digitales para identificar, seleccionar, crear y compartir recursos digitales para el aprendizaje.

[39]Conrads, J., Rasmussen, M., Winters, N., Geniet, A., Langer, L., (2017). Digital Education Policies in Europe and Beyond: Key Design Principles for More Effective Policies. Redecker, C., P. Kampylis, M. Bacigalupo, Y.Punie(ed.), EUR 29000 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-77246-7, doi:10.2760/462941, JRC109311

[40] Extraído de: https://ec.europa.eu/jrc/sites/jrcsh/files/digcompedu_leaflet_es-nov2017pdf.pdf

3. **Pedagogía digital:** Se dedica gestionar y guiar el uso de las tecnologías digitales en la enseñanza y el aprendizaje, y fomentar y mejorar el aprendizaje colaborativo y el auto-dirigido.
4. **Evaluación y retroalimentación:** Se utilizan herramientas digitales para la evaluación utilizando diferentes formatos y enfoques, y para la retroalimentación al estudiantado.
5. **Empoderamiento del estudiantado:** Se facilita las herramientas digitales para responder a las expectativas, atenderá las necesidades de aprendizaje y fomentar el compromiso activo y creativo del estudiantado.
6. **Facilitar las competencias digitales del estudiantado:** Incorporar actividades y tareas de aprendizaje que requieran de la búsqueda de información, el uso de recursos en entornos digitales, creen contenidos digitales y resuelvan problemas de manera creativa.

En cuanto a la segunda área identificada, el liderazgo educativo, se han analizado varios marcos de competencias y artículos como el Marco de Competencias de Liderazgo Educativo (2014, España); Standards for school leaders: competency framework and their applicability (2012, Reino Unido); Teach to Lead – Leadership Competency Framework (2016, Australia), Curriculum for Digital Educational Leadership (2016, South Africa), etc. En Standards for school leaders: competency framework and their applicability (2012, Reino Unido) se identifican diferentes estilos de liderazgo, y el papel que juega lo líderes, haciendo una distinción entre competencias funcionales (u ocupacionales) y personales, y la necesidad de demostrar una "competencia" en todos los niveles[41]. Es por ello, que se podría afirmar que "*hay diferentes estilos de liderazgo, es bastante difícil proponer uno solo, en general el liderazgo tradicional es un proceso en el que un miembro de una organización influye y controla el comportamiento de los demás para lograr objetivos comunes"* (SoC, 2016)[42].

En relación a la formación de los líderes en la nube educativa, el principal desafío es establecer un marco para el cambio, y capacitar a los miembros del equipo para que aprovechen las oportunidades pedagógicas y así crear un aprendizaje auténtico, al mismo tiempo que se renuncia al control del aprendizaje por parte de los propios líderes. El supuesto fundamental es que "cuando un individuo se convierte en un líder de la educación digital, ese individuo debe demostrar primero su capacidad en las prácticas identificadas con la educación digital" (Brown et al., 2016, p. 12)[43].

A continuación (figura 2) se ofrece una visión holística del liderazgo educativo digital, donde la alfabetización digital es la base para la educación digital y para ser líderes en este campo:

[41]Early, P. (2012). *Standards for school leaders: competency framework and their applicability* Recuperado en: http://www.schoolleadership.eu/sites/default/files/standards-school-leaders-competency-frameworks-applicability-2012_6.pdf

[42] Traducción propia. Extraído de: *School on the Cloud: Guidelines for leaders and management*.

[43] Traducción propia. Extraído de: Brown, B. Czerniewicz,L., Huang, C.W. & Mayisela, T. (2016). *Curriculum for Digital Education Leadership: A Concept Paper.* Burnaby, British Columbia Canada: Commonwealth of Learning.

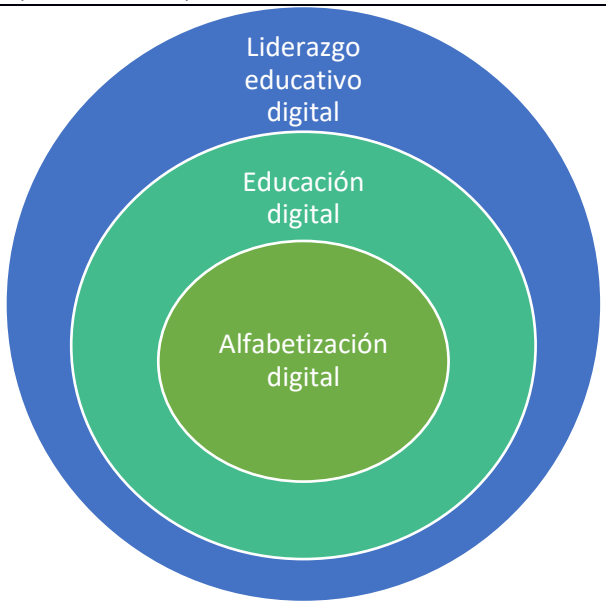


Figura 2: Visión holística del liderazgo educativo digital (Fuente: Brown, Czerniewicz, Huang & Mayisela, 2016, p. 10) [44]

Asimismo, el concepto de liderazgo no puede separarse del de gobernabilidad, que representa la forma en que las instituciones están formalmente organizadas y gestionadas. De hecho, una de las tres perspectivas que el proyecto School on the Cloud propone es ver la gobernanza desde la perspectiva del liderazgo. De este análisis se desprende que las instituciones educativas deben estar preparadas para implementar la computación en nube, ya que los servicios en a nube tienen un impacto en todos los procesos, lo que hace que la gobernabilidad sea crítica para comprender y controlar los riesgos de manera efectiva[45]. De acuerdo con el mismo análisis, los líderes deben ser capaces de determinar si los gerentes están tomando las medidas necesarias para asegurar que exista un buen sistema de gobierno, haciendo una distinción entre los líderes educativos de la escuela y los directivos.

La tercera área identificada está relacionada con el Cloud Computing en educación y su adaptación a los líderes educativos en la nube. Los diferentes países han abordado el concepto de cloud computing de diversas maneras: desde la gestión y administración más eficiente del sistema escolar (también en términos financieros), comprendiendo el potencial pedagógico que hay detrás de él, hasta la implementación de un entorno de aprendizaje innovador y el cambio de la estrategia de comunicación de la escuela.

Dado las rápidas transformaciones que trae consigo la tecnología y el límite de financiación para invertir en la tecnología adecuada, surge la necesidad de tener una visión clara sobre el papel de los líderes educativos. Como se sugiere en el Marco de Competencias en TIC de la UNESCO (2011), es importante adoptar un enfoque intersectorial a través de las TIC en la educación (por ejemplo, las competencias de los docentes, el material didáctico, el equipo tecnológico, etc.). El documento no menciona específicamente el Cloud Computing, pero ofrece un marco con tres enfoques de enseñanza: alfabetización tecnológica, profundización del conocimiento y creación del conocimiento para estructurar el marco de competencias TIC para los profesores. Además también se estructura el seis

[44] Ídib, p. 10.
[45] School on the Cloud: Guidelines for leaders and management, 2016, School on the cloud project.

aspectos principales: comprensión de las TIC en la educación, Currículo y Evaluación, Pedagogía, TIC, Organización y Administración, y aprendizaje profesional del profesorado (tabla 1). Aunque el marco no se centre en líderes educativos, sí que ofrece un enfoque válido para la adaptarlo en Cloud Computing en educación.

Tabla 1: Marco de competencias en TIC para docentes según la UNESCO

	Alfabetización tecnológica	Profundización del conocimiento	Creación del conocimiento
Comprensión de las TIC en Educación	Sensibilidad sobre políticas	Comprensión de las políticas	Innovación en políticas
Currículum y Evaluación	Conocimiento básico	Aplicación del conocimiento	Habilidades del Siglo XXI
Pedagogía	Integración de tecnología	Solución de problemas complejos	Autogestión
TIC	Herramientas básicas	Herramientas complejas	Herramientas omnipresentes
Organización y Administración	Salón de clase convencional	Grupos colaborativos	Organizaciones de aprendizaje
Aprendizaje profesional del docente	Alfabetización digital	Administrar y guiar	Docente como aprendiz modelo

Fuente: UNESCO (2011, p. 3).

En el Marco de la Tecnología en la Educación: enseñanza y aprendizaje, operaciones administrativas, infraestructura provisional (2013), se presenta una estructura sobre el papel y las responsabilidades de los diferentes actores involucrados en la implementación de las TIC en la educación.

Ofrece una visión general de las funciones de los ministros, los profesionales de las áreas escolares y los grupos asesores para la implementación de la tecnología en la educación en términos de dirección de políticas y gobernabilidad efectiva. Para cada nivel de gobernanza se han identificado varios roles, tales como: política y dirección, infraestructura, financiación, inserción de tecnología, aprendizaje profesional, responsabilidad, educación a distancia, recopilación y análisis de datos, gestión de datos e información y pensamiento futuro.

En las tres áreas identificadas, la alfabetización digital representa la base para el desarrollo del área.

6. Annexes

Annex 1: State of the art of Adaptive Cloud Leaders in selected partner's country

Annex 1.1

ICT in the Cyprus School Educational System

The policy of use of ICT in the Cyprus Education System is based on the following basic goals:

1. Using ICT as educational means in the learning process.
2. Learning/ including ICT as a topic in the curriculum aiming at developing skills related to the topic either for developing ICT knowledge, skills and competencies or related to the development of skills and competencies for handling issues in other subject areas.
3. Using ICT in order to support educational administration.

In order to achieve these goals, the appropriate authorities proceeded in actions that cover the following aspects:

- Provisions for the infrastructure of the schools and the centres that provide support and guidance to the schools (Laboratories, Hardware, Software etc) including arrangements for the supplies and services that are needed for connectedness and communication (internet, virtualization etc).
- Development or adaptation of curricula in order to support the achievement of Goals 1 and 2 above.
- Provisions for steering documents, instructions, recommendations or suggestions and support to the users needed for ICT applications in the learning process. These include instructions covering ICT software and hardware areas, computers, projectors or beamers, DVDs, videos, TV, cameras, and smartboards, as well as recommendations or suggestions on virtual learning environments.
- Provisions for development or use of Software and other material needed for the learning process both for the achievement of Goal 1 and for Goal 2 (including LMS systems).
- Arrangements for the training of teaching and other personnel.
- Provisions for assessment and certification of the acquired skills (these include the assessment and certification in the context of the ECDL (European Computer Driving Licence) system).
- Activities for the development of a school management system.

In the context of the above actions there are clear elements that reflect the ideas of the **Cloud Computing**. In addition to the implicit use of Cloud Computing techniques through the use of Internet, development of school webpages etc, there are explicit areas that refer to the constituents of Cloud Computing. These are parts of two basic courses that are offered in the High School (Lyceum) Curriculum. These courses are:

1. **Computers Networks**, following the programme CCNA Routing and Switching of the Cisco Networks Academy
2. Applications of **Informatics,** with a whole section on Cloud Computing services and topics

The majority of the above actions have been materialised to a very satisfactory level. What is actually under way at this stage is the materialisation of the development of a school management system.

The activities for the development of a school management system are on the process of current implementation in the context of a project the is expected to cost 9 million euro. The project includes the design and implementation of the School Management System (SMS). The project aims to provide an electronic information management system able to computerize all processes and procedures for the administration of each school and also the communication, cooperation and interaction between the schools and the Ministry of Education and Culture. The project will involve all educational levels (Primary, Secondary General, Secondary Technical and Vocational) as well as the administrative procedures of the Ministry of Education and Culture. It is approved and subsidized by the European Union.

The main stages of the project involve:

- Consultancy Services for the design of the project and the follow up of the implementation
- The implementation of the School Unit System involving the automation of all processes needed at a school level for the administration of each school
- The implementation of all relevant Ministry of Education and Culture administrative procedures
- The implementation of a Human Resources and Asset Management System
- The implementation of a portal and web application systems
- The implementation of the Data Centre that will hold centrally all the information/data of the system
- The implementation of a user management system (SSO) including the interoperability and interface with other external systems
- The digitization and data entry services to manage all the manual data that now exists in both schools and Ministry of Education and Culture
- Purchase of necessary ICT equipment needed for the school units to facilitate the use of the system

The project is scheduled to finish by 2023.

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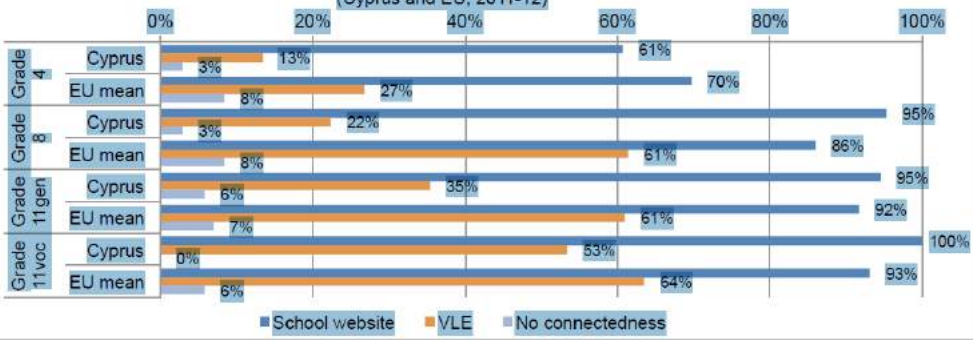
APPENDIX

According to a report of the European Schoolnet in 2012 the situation of the infrastructure concerning connectedness in Cyprus's schools was as following:

'CONNECTEDNESS'

Percentages of students in schools that have 'connected' characteristics, e.g. having a website or a virtual learning environment (VLE), as well as those with none of these items, are shown in fig. 2.5, In Cyprus, the percentage of students in schools with a website is above the EU mean at all grades except 4. The percentage of students in schools with a virtual learning environment is notably lower at all grades. Percentages of students in 'unconnected' schools are below the EU average at all grades with none at grade 11 vocational.

Fig. 2.5: Percentage of students in schools with website, virtual learning environment, no 'connectedness'
(Cyprus and EU, 2011-12)



ICT in the Cyprus University Educational System

Information and Communication technologies (ICT) skills are taught in Universities in Cyprus to Future's Education Cloud Leaders. Below you can see which ICT skills are offered by the Universities in Cyprus:

1. Open University of Cyprus
   a. For master studies on "Information and Communications systems", students among others are having courses on Technologies and Methodologies, Educational Technology, and Designing Educational Software.
   b. A student who studies to get a degree on "Management, Technology and Quality" needs to take a course on Technology Management and Information Systems.

2. University of Nicosia
   a. A course on Educational Management and Technology is needed for someone who studies for a master on "Education Sciences – Educational Leadership and Administration.
   b. Students who study "Primary Education" have to take class on Educational Technology in order to get the degree.
   c. For a master on "Educational Sciences – Didactics of Mathematics and Natural Sciences", students are taught Technology in the Teaching of Mathematics and Natural Sciences.
   d. Future's Cloud Leaders need to have a class on Educational Management and Technology in order to have a master on "Educational Sciences – Educational Leadership and Management".
   e. The courses of New Technologies in Learning, Technology in the Teaching of Mathematics and Natural Sciences, and Technology and Literacy are required to get a master degree on "Educational Sciences – Educational Technology"

3. University of Cyprus
    a. Students on “Teacher” studies, in order to have their bachelor degree they need to have classes on Educational Technology, Information Technology Support for Natural Sciences at Primary School, and Education, Technology and Society.

4. European University of Cyprus
    a. For the master degree on “Technologies of Learning and Communication, students need to have courses on Theories of Learning in New Technologies, New Learning and Communication Technologies, E-Learning and distance learning, Technology and Social Jutice, Program Development and New Technologies, and Modern Topics in Learning and Communication Technologies.

ICT in the Educational Technology Department in Cyprus

Cyprus Ministry of Education and Culture through the Department of Educational Technologies offers programmes of continuing professional development in the areas of Information and Communication Technologies (ICT) research and practice, proposes new educational implementations and promotes innovations related to the use of new technologies in education. At the same time, it provides pedagogical and technical support facilitating the effective use of ICT.

The Educational Technology Department project includes:

- Seminars and workshops on:
    a. basic and specific skills in the use of Information and Communication Technologies (ICT),
    b. the integration of Information and Communication Technologies in the teaching and learning process,
    c. the design and production of educational films.
- Support of teacher coaches in the school unit for the use of ICT in the learning process.
- Online learning environments (synchronous and asynchronous)
- Educational software repository
- Learning Design and Educational material with the use of ICT in learning
- Case studies on the integration of ICT in the learning process
- Organisation of conferences, workshops and conventions to inform on the integration of ICT in education
- Web portals with educational material
- Safe Internet use
- Online environment for e-teachers’ enrolment in the various programmes organised by the C.P.I.
- Provision of modern ICT equipment
- Provision of educational and technical support to participants in the programmes organised by the C.P.I.

Annex 1.2

1. Leadership concept and approaches, goals and outcomes

School leadership is considered to be a political priority in Spain, as it helps students to learn better, and allows for linking the school to its environment (Pont, Nusche & Moorman, 2009). Furthermore, an effective school leadership is indispensable for improving the efficiency and equity of education.

Spain aims to follow the lines highlighted by the OCDE (2009) in relation to leadership functions that influence teaching-learning, i.e.:

- Support, evaluation and quality development of teachers;
- Goal setting, evaluation and accountability;
- Strategic resource management;
- Leadership beyond school boundaries.

Furthermore, Álvarez (2010) highlights the importance of emotional intelligence for educational leadership, and refers to "shared leadership", as featured by the following competences:

- Strategic thinking;
- Learning management;
- Social relationships;
- Creation and animation of organizational structures.

The Spanish general law of education (LOMCE, 2013) claims schools' autonomy (selection of number of hours per subject, pedagogical methods and contents) and leadership (extended competences for the head of school) as a basis for school functioning. Nevertheless, the law states that heads of school need to be certified by the government, in order to develop specific competences related to educational management.

As an example, at an institutional level, the University of Barcelona provides postgraduate courses for heads of schools, in coordination with the regional government[46].

2. Cloud computing technologies and their use into the educational system

The current Spanish education policies are featured by a greater systematization of digital teacher competence. For example, the Ministry established a Common Framework of Digital Teacher Competence (INTEF, 2017). The UNESCO (2004) highlights four key points related to the integration of technologies in teacher education, i.e., context and culture, leadership, lifelong learning, and planning of integration of ICT in educational contexts.

In Catalonia, the Catalan Law Education highlights the importance of preparing digitally competent citizens. In this line, the ACTIC certificate (Accreditation of Competences in Information and Communication Technologies) indicates the intention to have a standard for training and evaluating digital teaching competence (Secretaria de Telecomunicacions i Societat de la Informació, 2013). In addition, all schools have a written plan for the integration of ICT, as well as an ICT coordinator.

Looking at cloud computing, Salinas (2013) provides an overview of the educational opportunities offered by networking and cloud computing. To the author, such technologies allow for generating new educational spaces, and encouraging formal, non-formal and informal learning.

In Galicia, a pilot experience of cloud computing (Malmierca, 2018) was conducted in a small rural school network by Galicia Supercomputing Center. This study constituted a promising exploration

[46] https://www.ub.edu/portal/web/educacion/masteres-universitarios/-/ensenyament/detallEnsenyament/1060349

of the use of cloud computing to benefit isolated and rural schools learning and networking possibilities.

In Catalonia, the Consorci de Serveis Universitaris de Catalunya (CSUC) developed and applied a cloud computing system, called UNIDisc, which allows the university and research community in Catalonia to easily, securely and reliably store, synchronize and share files in the cloud. In addition, some primary schools use Google Classroom as a sharing and organizing tool.

Looking at training programmes, various courses (masters and degrees) include cloud computing components, but not as applied to primary / secondary education. For example, a teacher course (http://odissea.xtec.cat/) from the Catalan Education Department addresses digital technology, the use of the computer and the operating system, as well as Cloud computing and its advantages for the educational community. Additionally, some private companies provide cloud computing courses specifically related to their own services (e.g. Google).

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Annex 1.3

Year 2000 is the year in which the Romanian Ministry of Education has the first strategy to develop the initial and continuing training system for teachers and managers in pre-university education. Initial teacher education for pre-primary and primary school teachers, but also for secondary and high school teachers is organized differently.

The teaching profession in Romania is a profession regulated by law. Consequently, for a given educational level, teachers work in similar conditions throughout the country, and variations from one job to another are rather minor.

According to the provisions of the National Education Law no.1 / 2011, with the subsequent modifications and completions, the initial training for the occupation of the teaching staff in the pre-university education includes:

- initial, theoretical, specialized training, realized through universities, within programs accredited according to the law
- 2 year old teacher
- practical training for a school year, carried out in an educational unit, under the coordination of a mentor teacher.

Also, the pre-school education staff for teachers / teachers is formed both through pedagogical high schools and universities, with the specialization of Pedagogy of Preschool and Primary Education.

The initial theoretical training programs in specialty and psycho pedagogy are accredited and evaluated periodically by the Ministry of National Education and Scientific Research, through ARACIS or other authorized bodies, according to the law.

In the curricula of the universities to the pedagogical specialization of the preschool and primary education, the future teachers are studying disciplines such as Computer typing techniques in the education sciences, Computer Assisted Training, Information and Communication Technologies: Computer Applications

SOURCE: https://www.upit.ro/_document/11512/plan_de_invatamant_2016-2017_pipp.pdf

SOURCE : http://dppd.ubbcluj.ro/

In Romania, the continuous training of the teaching staff is a right that is achieved mainly through professional development and conversion.

The career progression of the teaching staff in the pre-university education is achieved by passing the final exams in education and obtaining the didactic degrees II and I.

In correlation with the regulations specific to adult education and permanent education, the training of the teachers is achieved through compulsory training stages. Continuous training courses ensure the professional development of the teaching staff and enter into the system of evaluation / equivalence through transferable professional credits, the obligation consisting in accumulation by the teaching staff of 90 credits in a period of 5 years.

The continuing education programs of the teaching staff are organized modularly in the following main areas: specialty, pedagogy, education psychology, specialty didactics, ICT, educational management.

Continuous training ensures the updating and development of teachers' competences, including the acquisition of new competencies, in line with developments in the educational needs and educational curriculum as well as the requirements for adapting the teaching staff competences to the changes in the structures / processes education.

STANDARDS OF TRAINING CONTINUE

Continuous training of teaching, leadership, mentoring and control staff and professional retraining is based on professional standards for teaching, quality standards and professional skills. Continuous training standards for leadership, mentoring and control functions (general school inspector, deputy general school inspector, school inspector, director of the Teaching Staff House, director of the education unit, palaces director and pupils' clubs) are approved by OMECTS no. 3638 / 27.03.2012.

Standards of in-service training for pre-university teaching staff (teacher, teacher / teacher for primary education, educator / teacher for pre-school education, master-instructor) are approved by the OM. no. 5560/2004.

In 2011, the Ministry of National Education is the National Body of Experts in Educational Management, which is a national register of teachers who can take on leadership, guidance and control functions in Romanian education: school managers, school inspectors and general school inspectors. The National Body of Experts in Educational Management is constituted by national selection and the selection can be attended by teachers who cumulatively fulfill the following conditions:

- has accumulated 60 transferable credits in accredited programs in the field of educational management
- has earned the FB rating in the last 4 years
- loading of documents in the IT application

At the level of the Ministry of National Education in Romania through the Continuing Training Department, the National Register of Accredited Training Programs has been set up with the target group teachers, school managers, school inspectors. The Register contains over 30 accredited training programs in the topic of educational leadership, management, entrepreneurship and leadership, programs with a maximum of 30-60 transferable professional credits. The training programs are accredited by accredited and acknowledged suppliers of MEN in Romania, such as the Teaching Staff House, the Trade Unions, Universities.

Source: https://www.edu.ro/sites/default/files/_fi%C8%99iere/Invatamant-Preuniversitar/2017/resurse%20umane/formare%20continua/Registrul%20national%20al%20programelor%20de%20formare%20continua%20acreditate.xlsx

In September 2014, the National Strategy on the Digital Agenda for Romania was launched, which included the priorities set by the European Commission and adopted by Romania, interventions

that started to be implemented in the field of ICT education and were organized in 3 categories, according to the specificity of the learning process:

1. Education through curricular activity based on ICT

This type of education is mainly based on OER (Open Educational Resources or Open Educational Resources) resources and Web 2.0 on project-based learning and assessment and e-Portfolio of learner or student results and the creation of original digital content and interactions . At national level, a similar exercise has been implemented to develop the ICT level in the education of disadvantaged communities in Romania, identified and supervised under the Knowledge Based Economy program. Other models of good practice developed and successfully implemented in Romania: the POSDRU project "ICT Key Competences in School Curriculum", the INSAM (Digital Instrument for Improvement of Evaluation Quality in Pre-University Education) project "Restructuring the School Curriculum in High School Education".

2. Education through extracurricular ICT-based activity

The resources used in this project are ICT to support extracurricular activities (creation camps, experience exchanges, international study visits and the e-Vacancy project).

3. Continuing Vocational Training - Life-Long Learning with ICT

The objective of continuing vocational training is to acquire the necessary knowledge and skills of adults for life, for personal or professional benefit. Thus, special attention should be paid to the formation of a policy in the field, based on the national consensus obtained through the social dialogue.

-Adservio – Software Educational Technology

web: https://www.adservio.ro/

Adservio, an educational management platform, helps you organize your activities effortlessly and get the results you want.

Adservio is more than a digital catalog. Adversio offers access to complex school information, whether you are in Romania or abroad, whether you are using a desktop, laptop, tablet, or mobile phone.

Adversio has an intuitive interface and unlimited storage that allows you to quickly create groups and classes, allocate and correct themes, schedule control papers and theses, and track student progress.

Adversio celebrated in 2018 years the Adservio period in which it helped digitize Romanian education. Together with Telekom Romania, it created the Smart Education Division by which it plans to complete the digitization of over 50% of Romanian schools by 2020. The process involves access to the Adservio platform, the latest internet-connected devices and teacher training for using technology at the classroom. Adservio has expanded this year to schools in 26 counties. He participated in the SuperTeach conferences with Telekom Romania and shared with thousands of teachers the role of technology in education.

Adversio presented at the Digital Cities Challenge in Thessaloniki, 2018, as a digitization model for schools in Romnaia and the case study "Alba Iulia - Smart School".

https://www.adservio.ro/

http://www.elearning.ro/adservio-instrument-impotriva-absenteismului-si-abandonului-scolar

http://blog.adservio.ro/

http://infois.ro/?p=13369

https://www.adservio.ro/despre-adservio

-The Integrated Education Information System in Romania provides full service management of the activities of the pre-university education system from an operational, technical, administrative and strategic point of view.

SIIIR addresses both the needs of users at the central level (mainly related to decision-making based on performance indicators analysis, but also to ensuring transparency of investment processes, human resource management, composition and exploitation) as well as needs identified at the level local (management of activities, processes and flows at the level of the educational unit).

SIIIR has the following architecture divided into modules

School Network Module - Instructions for Users

The module manages the school network of schools and deals with the collection of features that allow the identification of each unit. The totality of the educational units and the hierarchical relationships established between them form the national school network.

The information on the educational units is collected at the level of the County School Inspectorates (ISJ) and the School Inspectorate of the City of Bucharest (ISMB).

Source:

https://www.siiir.edu.ro/siiir/login.jsp;jsessionid=BD2C50F2D211365D677B977E0330921F.siiirNode5

-Project EXTENSION OF INFORMED EDUCATION

Permanent learning opportunities have been created as close as possible to the home and beneficiaries' interests, supported by multimedia systems and data networks.

In this respect, an important investment program has been launched to ensure:

1. Minimal equipment with computer technology for any educational institution in Romania;

2. Internet access for each educational institution;

3. Preparing teachers for computer use;

4. Development and use of educational software;

5. Multiplying communication channels and new forms of socialization;

6. Development of management informatics in school administration.

I'm in progress:

- introduction of the computer assisted education system in pre-university education;

- development of educational software for pre-university education;
- introduction of computer assisted management in pre-university education - SMART Program;
- Development of software for computerized bookkeeping of students and teachers, based on evidence with SMART CARDS;
- the development of the RoEduNet educational network at level 0 and level 1;
- training of human resources in the field of ICT;
- introduction of electronic textbooks in pre-university education;
- introducing Video on Demand education system into pre-university education;
- developing a DATA CENTER for Romanian education;
- realization of INFO- KIOSK project;
- Establishing pilot networks for educational establishments located in deprived areas.

Annex 1.4

POLICY MAKING AND ADMINISTRATION STRUCTURE OF THE PRIMARY & SECONDARY GREEK EDUCATION SYSTEM

The majority of primary and secondary schools in Greece are public and are under the jurisdiction of the Greek Ministry of Education, Research and Religious Affairs.

The structure of the school governance between the Ministry and the schools are complicated having both vertical and horizontal structures.

There are two axes that the entities of the structure between the Ministry of Education and the schools belong to, vertical and parallel (without direct involvement in the school governance but involved in policies and or frameworks) relevant to their relation with the schools. The two axes of the structure are named Regional Administration Structures for the Educational Support of Primary and Secondary Education.

Decentralised Primary and Secondary Education Services of the Ministry of Education, Research and Religious Affairs:

- Regional Administrations of Education
- Regional Centers of Educational Planning (PE.KE.S)
- Centers of Educational and Counseling Support (K.E.S.Y.)
- Educational Centers for the Sustainability (K.E.A.)
- Laboratory Center of Natural Sciences (E.K.F.E.)
- Laboratory Centers (E.K.)

All the above entities are the ones responsible to form the policies and the framework for the Greek Primary and Secondary Education on behalf of the Ministry. They guide the school leaders (principals) and make sure they appropriately comply with the national educational policies and with the national law but they also have a consulting role since they support the school operations, each one according to its area of responsibility. The staff of these entities are more often former school principals and/or experienced educators and they apply for the job the same way the principals do for theirs.

Any guidelines for skills and competences are indirectly related to the processes of becoming a teacher or a principal.

COMPULSORY PROCESSES TO BECOME A TEACHER OR A PRINCIPAL AND THEIR RELATIONS TO SKILLS AND COMPETENCES FOR ADAPTIVE EDUCATION CLOUD LEADERS

The only way to become a teacher in a Greek public school is through a national qualification process named ASEP. ASEP is The Supreme Council for Civil Personnel Selection and was established by Law 2190/1994 (Official government Gazette Issue No. 28/3.3.1994) as an independent authority responsible for securing the faithful implementation of the provisions on public sector staff recruitment. The aforementioned law defines every aspect of the Council's activities and processes. The role of ASEP has been further enhanced under the 2001 Constitution amendment, as the institutional guardian of the principles of transparency, publicity, objectivity and meritocracy in the civil personnel selection (article 101A of constitution). ASEP contest for primary and secondary teachers takes place every two or three years and is organised by the Ministry of Education, Research and Religious Affairs. It is divided in two main thematic section. Section A has to do with the cognitive subject and the second one with the educational aspect (general teaching, specialised teaching, lesson modules, etc.). Someone that succeeds in the ASEP contest is awarded a per-

manent appointment as a teacher in the public sector in the subject area of the contester (educators are divided into categories according to subject areas, e.g. IT, physical education, primary school educators, Mathematicians, etc.).

At this first stage of a teacher's career there is no evidence of any required competence that is directly linked either with leadership or with Cloud technologies (except IT teachers that are tested for their knowledge in Cloud Technologies as part of their ASEP subject curriculum.

For any school leader at the level of teachers, therefore, it is not required, neither, evaluated if they have any competences that has been related, by the authority in charge, with leadership or the Cloud.

To become a primary or secondary school principal, one has to go through a selection process that begins by applying for the position and having to justify some prerequisites. These prerequisites are directly linked to a position considered to be within the school leadership level thus it is crucial to investigate if they form any kind of competence framework related either to being a leader, an adaptive leader or a leader on the Cloud.

The prerequisites for applying for a primary or secondary principal position are:
- Grade A and certified knowledge of ICTs (A level), IT category teachers do not need to provide certification for this prerequisite
- Educators that have at least 12 years of educational service and have taught at least 10 years in public schools and only for a principal position at the same school level (primary or secondary)
- Out of the at least 10 years of teaching at a public school at least 8 must be at the school level they apply for with at least 3 at the type of school applying for (e.g. general secondary school or technical secondary school)
- Other prerequisites that refer to the teacher subject-based categorisation

Competence wise, there is no obvious link with leadership or adaptive leadership other than possibly implying that the experience-based prerequisites guarantee the necessary and appropriate competences needed for the position of principal.

As for competences linked to the Cloud, the certification of ICT level A described as a prerequisite refers to several certification processes and centers that have been recognised and approved as a Certification of Informatics or Use of Computer by the National Organisation of Qualifications Certification and Professional Guidance (E.O.P.P.E.P) former Organisation of Professional Education and Development (O.E.E.K.).

Annex 1.5

Cloud Education leader concepts in Europe

There are many different leadership approaches methods and styles (concepts) used in education and training. Several of them have been applied to the application of new technologies in education.

According to the Edvocate (2015), four major styles of leadership apply in educational settings. These are described as servant leadership, transactional leadership and emotional leadership and transformational leadership.

Servant Leadership takes its focus from the end goal of the people being led. There is no sense of self-interest on the part of the leader, who steps back and supports only the interests of the staff. Guidance, empowerment and a culture of trust are hallmarks of this style of leadership. A servant leader puts complete trust in the process and in his or her followers. Servant leadership is based entirely upon the needs of the people within the organization, rather than the needs of the organization itself.

Transactional Leadership has a give and take, business-like transaction at its core. For instance, employers need work done and employees do that work in exchange for money.

Emotional leadership is concerned with the feelings and motivations of people. It requires that leaders are themselves emotionally intelligent and they motivate their staff through the use of that emotional intelligence. With emotional leadership, the leader taps into their emotional centre in order to find the most suitable approach to guiding their staff.

Transformational leadership focuses on multiple aspects and takes a broad view of the issues surrounding leadership and then uses those as a driving force for meeting the overall goals of the organisation. It uses different leadership styles and encourages a feeling of empowerment in all those involved. People are intellectually stimulated and constantly challenged to be open-minded. Thise who feel heard and valued will be much more engaged in change processes.

The Edvocate, (2015), 4 Major Types of Educational Leadership, http://www.theedadvocate.org/4-major-types-of-educational-leadership

Other models include:

Strategic leadership involves considering broader core issues and themes for development in the organisation as a framework to set future directions and action. It involves decision-making that shapes the direction and purpose of the organisation. Creating and implementing a strategy usually takes a lot of time because strategic processes have to be established that create forces for change. The interaction of these processes creates the policies leading to change.

Garrison, G., Kim, S. and Wakefield, R.L., 2012. Success factors for deploying cloud computing. Communications of the ACM, 55(9), pp.62-68.

Distributive leadership involves the leadership tasks being undertaken collectively by all members of the organisation, in a way that strengthens the whole organisation, creating a sense of empowerment, commitment and collective responsibility. This makes tasks more manageable.

Dunaway, D.M., 2013. Creating Virtual Collaborative Learning Experiences for Aspiring Teachers. In Teacher Education Programs and Online Learning Tools: Innovations in Teacher Preparation (pp. 167-180). IGI Global.

e-leadership e-leadership is defined by Avolio et al. (2014) as a social influence process embedded in both proximal and distal contexts mediated by Advanced Information Technology (AIT) that can produce a change in attitudes, feelings, thinking, behavior, and performance.

Arnold and Sangra (2018) describe the extent to which the concept of e-leadership has taken off in higher education. They use the TEL e-leadership framework concept map developed by Jameson (Figure 1) as the basis for conducting a trend analysis of research between 2013 and 2017. They identify theoretical analyses, which often propose models that have not been tested empirically, are the most popular forms of research about e-leadership in higher education (33%), followed by opinion pieces (12%). The main leadership theories cited in the research were transformational leadership, distributed leadership and e-leadership.

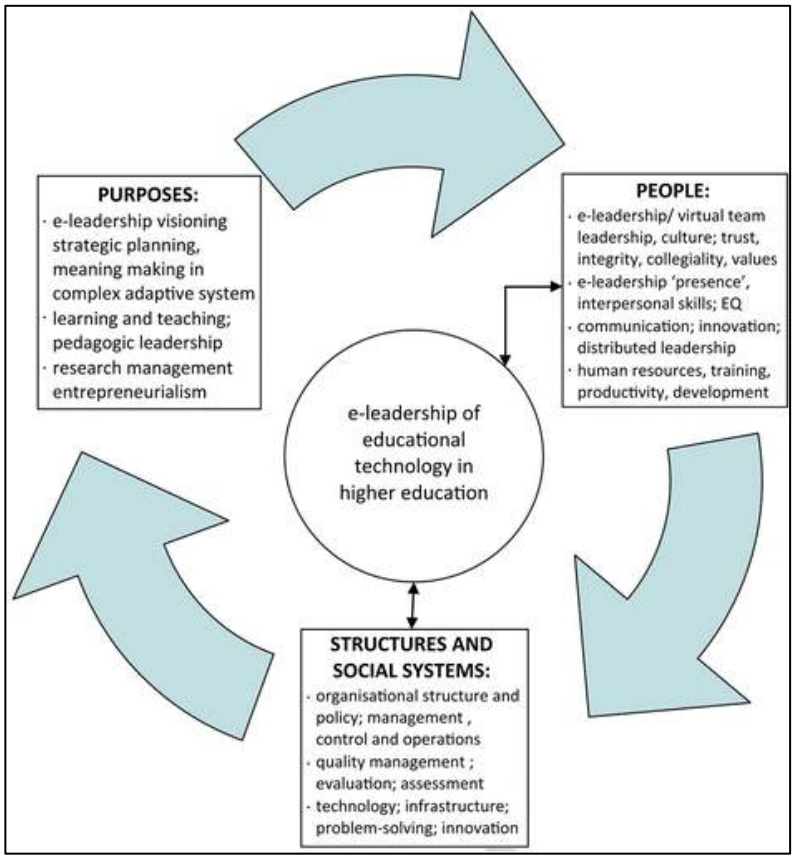


Figure 1: e-leadership concept map (Jameson, 2013)

Figure 2 shows the frequency of occurrence of each of these theories and concepts according to the type of result. Their analysis shows there is a distinct lack of empirical research in e-leadership in higher education.

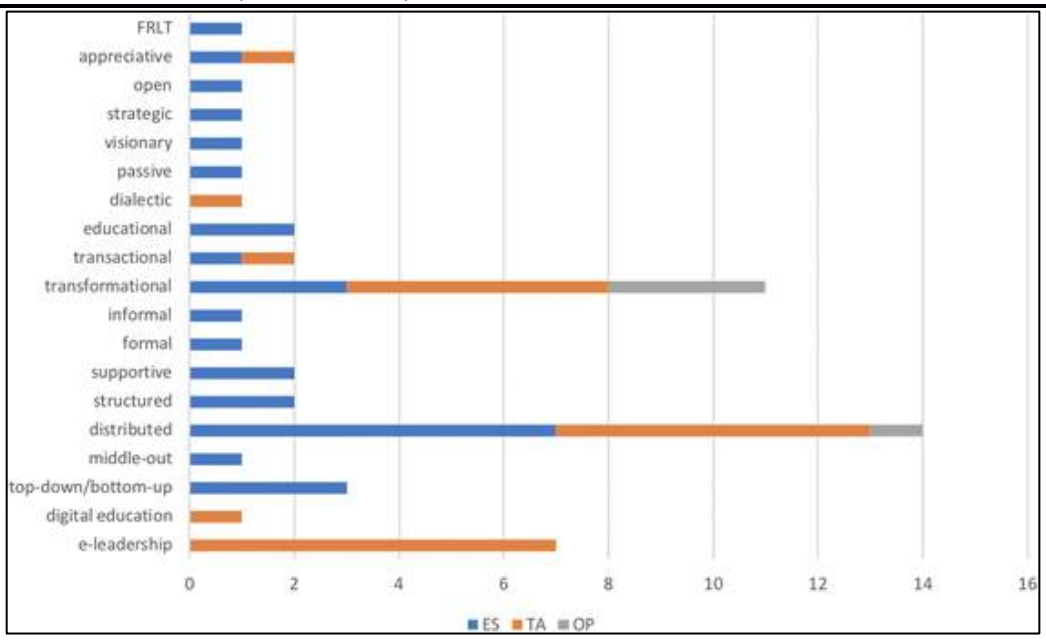


Figure 2: Number of research articles relating to a particular leadership concept (2013-2017)

Jameson's (2013) framework is structured around three major dimensions: Purpose, People and Structures & Social Systems. In the "Purpose" dimension, e-Leadership visioning, Strategic planning and Learning & Teaching are the three most cited themes among the results in this study of research published between 2013 and 2017. For the "People" dimension, we find Collaboration and collegiality; Values, behaviour and culture; Interpersonal skills; Training and Continuous Professional Development. Finally, for the "Structures & Social Systems" dimension, the three most cited themes are Distributed leadership, Change management and Resource allocation.

Arnold, D. and Sangrà, A., 2018. Dawn or dusk of the 5th age of research in educational technology? A literature review on (e-)leadership for technology-enhanced learning in higher education (2013-2017). International Journal of Educational Technology in Higher Education, 15(1), p.24.

Jameson, J., 2013. e-Leadership in higher education: The fifth "age" of educational technology research. British Journal of Educational Technology, 44(6), pp.889-915.

Traditional leadership is described as a process in which one member of an organization influences and controls the behaviours of others in order to achieve common goals.

Yong, N.I.E., Shirahada, K. and Kosaka, M., 2013. Value Co-creation Oriented Leadership for Promoting Service-Centric Business. Intercultural Communication Studies, 22(1).

Leader as conductor Wallin (2006) relates leadership to business orchestration, which has four dimensions: conductor, architect, auctioneer and promoter. The leader is seen as a conductor who is able to ensure ongoing activities of the organization are timed correctly and performed in the proper sequence to achieve the desired results. An orchestrating leader has to live with a constant pressure for efficiency and sustained good performance. At the same time the leader has to nurture creativity, build trust, and inspire professionals. When doing this, the orchestrator often has to conciliate between different stakeholders with alternative opinions.

Wallin, J. (2006). Business Orchestration: Strategic Leadership in the Era of Digital Convergence. West Sussex: John Wiley & Sons

Bytheway et al. (2015) conducted research with leaders and managers into the implementation of information technology and information systems in education. He found the following agreed positions:

1. The Cloud is seen as an investment, but investments in ICT and information systems in education are not delivering the expected benefits, and there has been little research that deals with this at the managerial level.
2. Value can be delivered, access to be more immediate, publication of resources can be instantaneous, learning can be driven more by learners than teachers, and the assessment of learning can be better managed – these are valuable outcomes but they require significant change.
3. Managed change is possible, change can be achieved progressively, by recognising that early benefits are concerned with efficiency and later benefits are concerned with more challenging issues like effectiveness, adding to the need for change management capability.
4. Innovation is for the few not the many, some individuals manage change on their own, without much support and with few resources. When individuals do succeed and are able to demonstrate the legitimacy of their ideas and approaches, processes need to be in place that help them to promote and institutionalise those ideas for the benefit of all. Issues associated with people are possibly the most challenging ones.
5. Implementation can be difficult. New systems have to be appealing to users and the Cloud is not just about e-learning.

Bytheway, A.J., Whyte, G. and Venter, I., 2015. Understanding IT management in Higher Education, http://bit.ly/2SPlSOr

Wylde (2017) suggests IT leaders should recognize that there are eight fundamental elements vital in enabling Cloud Computing concept and for the Cloud model to work in the public or private sector (Figure 3).

He says Cloud users must have near-ubiquitous access to the internet, which is fair and nondiscriminatory. The cloud must function at levels equal to or better than non-Cloud systems and interoperability and movement between Cloud platforms must be enabled. Users' data must be safe and secure and their rights to their data must be clearly defined and protected. There should be economic value in using the Cloud, where tangible savings and benefits are enabled. Finally, the Cloud must raise energy efficiency and reduce the ecological impact of technology.

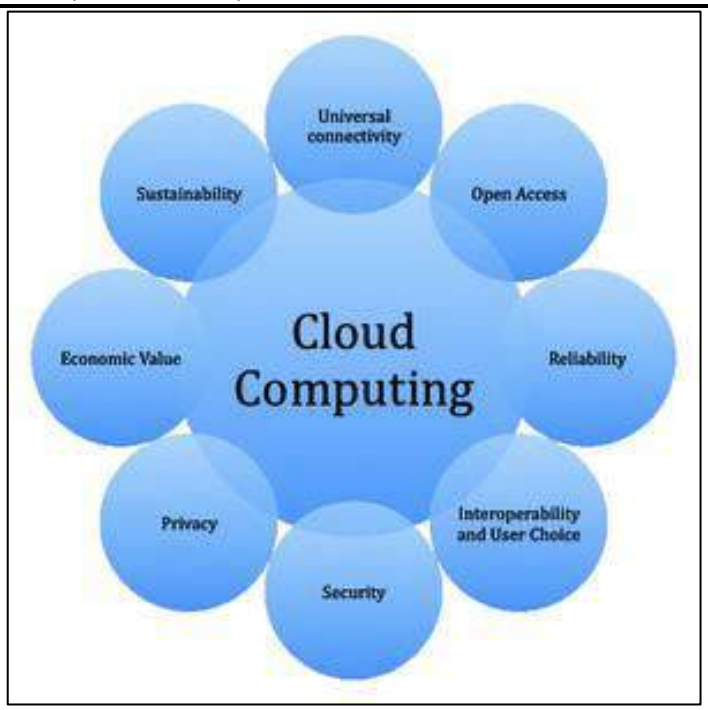


Figure 3: Elements of Cloud Computing implementation (Wylde, 2017)

Wyld, D.C., 2017. A global look at cloud computing. Language. http://www.tcworld.info/e-magazine/content-strategies/article/a-global-look-at-cloud-computing/

Entrepreneurial leadership Lawrence and Chang (2018) describe enterprise development opportunities are solidly embodied in Cloud Computing. They look at how entrepreneurial innovation and creativity can become a primary catalyst in the development and implantation of Cloud systems in a wide variety of decision making environments. They confirm that Cloud computing represents an entrepreneurial opportunity for businesses, individuals, not for profits, community groups, educators, professionals and those in a position of leadership to make a sea change in how we can better manage our lives and our responsibilities.

Lawrence, W.J. and Chang, M.J.K., 2018. Cloud computing and Virtualization: the "Entrepreneur without Borders" Workbench for 21st century Enterprise development. GSTF Journal on Computing (JoC), 1(1).

Murasse et al. (2018) examine e-readiness for innovation in governmental agencies, considering the gap between the demand for and supply of e-services to organisations. They conclude readiness indicators are by and large accepted and are useful to evaluate the predictors and outputs of initiatives. The indicators which measure outputs are have the greatest potential as enablers of future innovation.

Murasse, C.M., Queiroz, J.V., da Silva, C.L. and do Rocio Strauhs, F., 2018. Innovation Opportunities from e-Government Readiness Benchmark. European Scientific Journal, ESJ, 14(14).

Altharti et al. (2017) catalogue how leading IT companies like Microsoft, Google, Amazon and IBM, have developed initiatives to support education institutions with the Cloud-based learning tools and education encourage leaders to transform their organisations. They suggest the importance of both technological and organisational Critical Success Factors (CSFs) as enablers that should guarantee successful migration of traditional ICT educational services to the cloud based services (Figure 4).

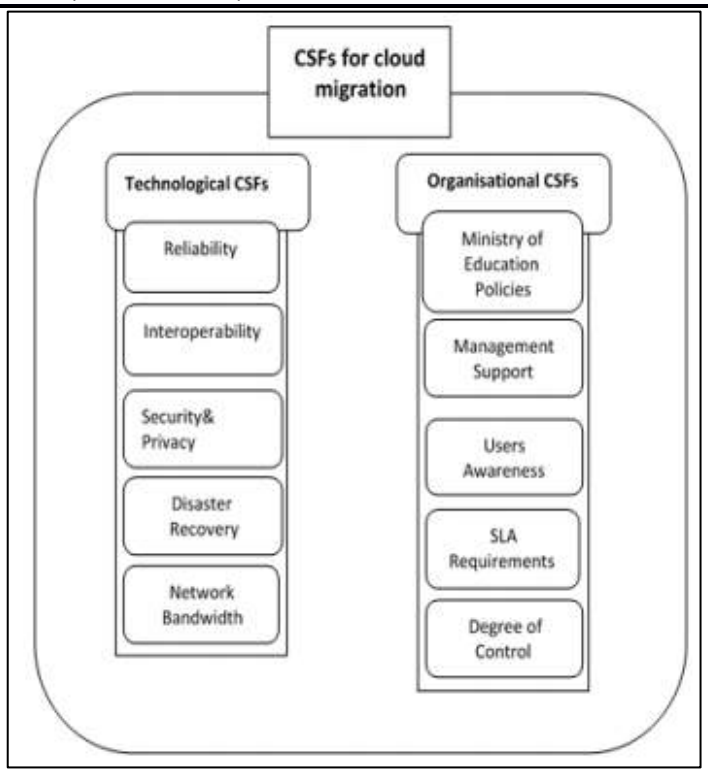


Figure 4: Critical success factors for Cloud Computing implementation (Alharti et al., 2017)

Alharthi, A., Wills, G., Alassafi, M., Walters, R. and Alzahrani, A., 2017. Critical success factors for cloud migration in higher education institutions: a conceptual framework. Int. J. Intell. Comput. Res.(IJICR), 8(1), pp.817-825.

Annex 1.6

BELGIUM & THE NETHERLANDS

Wide variety

A wide variety of opportunities is available on the web as far as taking the lead in educational management is concerned. Core examples focus mainly on initial stages of education accepting and implementing IT in the curriculum and how to benefit from userfriendly educational programs on the web. In order to innovate the curriculum in education taking into account the enormous wealth of opportunities in learning are immense. But during the last twenty years it is clear that accepting and using all these tools has grown slowly compared tot he speed of the developments. Exploring the web shows examples like:

- Closing the gap: how to overcome the huge digital abyss in education that leads to large inequalities in opportunities is learning and advancing in knowledge. (Cator)
- What has to be expected from School Boards and Schoolleaders in appraoching this sensitive matter?
- What role is there for suppliers and goverment officials?

Even before leadership is in focus we are still looking at issues like:

- digital literacy
- civic education and IT
- educational logistics in IT
- security and safety
- digitizing learning facilities

Another important focus has the name of “Four in Balance”. Four key-concepts will definitely help schools forward if “in balance” which means that all four are evenly well developed. The concepts are:

- digital literacy: what skills are necessary for teachers and students in order to thrive in citizenship and narrow the digital gap?
- Learning situation: what opportunities are available? Which didactics and tools are available fora n optimal learning environment?
- Professionalisation: what policies are needed, are used for an effective IT use? As well on an individual basis as collective?
- Organisational management: What is offered in order to realise a consistent uniform policy according or following the educational government rules/policies?

Tools

- Entree
- Edustandaard
- Eduterm
- Edurep
- Linked Data
- OSO
- Edu-K
- Nummervoorziening
- Onderwijsbegrippenkader
- Mediawijzer
- Handboek Digitale Geletterdheid
- Educational Linkedscape
- Linked Open Data

The names above all refer to tools/websites that open up a wide variety of educational information focused on usable data for teaching, learning and educational management. Other valuable tools are more focused on educational management than learning. Like:

- SaaS
- mobile device management
- cloud office
- virtual assistents
- conversational UI
- learning analytics

Educational Leadership Online

The Dutch organisation "Kennisnet" www.kennisnet.nl offers schoolboardmembers and school-management (heads and directors) a showcase of technologies that are important when realising their vision on education. These leaders should be informed well and uptodate as far as trends and developments are concerned. Focus hereby is on IT! The impact of technology on education is enormous. Awareness of that is crucial!

Finally the Academy for Secondary Education in The Netherlands, in order to improve the quality and the number of schoolleaders and their leadership presents the following topics on-line. These are courses or incentives for development and/or learning in educational leadership:

- Questions for leaders
- The Cloud and then?
- Leadership Academy
- Leadership- scan
- Digital tool for Leadership-scan
- Professional Profile
- Professional Profile leadership secondary education
- Building the Scan
- Book a trainer

All information above is derived from the web. The "Supplement for ANNEX I by Eurogeo" shows a list of consulted DUTCH websites.

Annex 1.7

Cloud computing initial training and the teaching profession in Italy.
In Italy the professionals working in the field of education have a different Initial Education for Teachers path depending if the person wants to work in Early Childhood and School Education or second level.

Teaching at the pre-primary and primary levels, requires a second-cycle qualification (*Laurea magistrale*) obtained after completion of a specific single-cycle course organised by the faculties of educational sciences, or other faculties upon authorization of the Ministry of education. While the access to initial education for secondary teachers requires a second-cycle qualification released by a university or by an institution of the High level arts, music and dance education system (Afam), called *Laurea magistrale* and second-level *Diploma Accademico*, respectively.
In order to become a secondary level teacher in a public school, teachers need to pass a competitive exam. The requirements to access the exam is: first, holding a second-cycle university degree (as mentioned above) and, secondly get 24 CFU/CFA credits acquired in the sector psychology, pedagogy and teaching methodology. At least 6 of the 24 credits must be acquired for each of three among the following four sectors: pedagogy, special pedagogy and inclusion; psychology; anthropology; teaching methods.

In the first case, for teachers in primary school, the only subject which could contain information regarding cloud computing and its use in the class is educational technologies (as indicated below). The exact content of each topic is decided by school, so we cannot say that cloud computing as subject is indicated from national curricula for teachers.

12) *musica*: elementi di cultura musicale.
13) *letteratura per l'infanzia*: testi e percorsi di letteratura per l'infanzia.
14) *pedagogia*: pedagogia generale; pedagogia interculturale; pedagogia dell'infanzia.
15) *storia della pedagogia*: storia dell'educazione; storia della scuola.
16) *didattica*: didattica generale; pedagogia e didattica del gioco; didattica della lettura e della scrittura; tecnologie educative; il gruppo nella didattica.
17) *pedagogia speciale*: pedagogia speciale; didattica speciale.

Educational technologies.

While in the case of secondary school teachers, it depends on the second-cycle qualification they chose. As general consideration, what can be checked are the compulsory subjects (24 CFU) that secondary teachers have to study as requirements to access the national public exam. As for the initial training for teachers dealing with Early Childhood and Primary school education, it's not mentioned cloud computing as compulsory subject. Teachers may study some topics related instead to Methodological and technological approaches for teaching, Educational technologies, Digital technologies, E- learning, Social media education and Educational technologies for inclusive education. By the fact that teachers may choose 24 CFU among psicology, pedagogy and anthropology is also possible that they will not have access to the abovementioned subject which could entail contents related to cloud computing.
Quite different is instead the situation, when we do actually consider CPD – Continual Professional Development opportunities for teachers offered by accredited institutes of the MIUR (Minister of Education and Research).

Leadership of the teaching profession in Italy
In the national Plan, Piano per la formazione dei docenti – MIUR («La Buona Scuola») – 2016 / 2019, the TOPIC 8: Increase the quality of teaching trainging in Italy provides a specification regarding the concept of training and Educational Leadership.

The reform and the concept of leadership mainly refers to:

1) Innovation in the field of education and training;
2) Create partnership with Research Center, Universities and local partners;
3) Indentification and valorization of already existing good practices at national level in the education system;

Actions (all the material needs to be OPEN EDUCATIONAL RESOURCES):

1) Innovative teaching and training project and initiatives;
2) Promotion and valorization of educational leadership;
3) Collaboration with research center and institutions.

Creation of AVANGUARDIE EDUCATIVE : «Online library of excellence in education» http://innovazione.indire.it/avanguardieeducative/

Cloud computing in the italian school sytem, a top down approach.

According to the Piano nazionale scuola digitale – Buona Scuola Iniciatives, cloud computing is mentioned in the following initiatives:

1) *With the objective of introducing savings in the administrative costs related to student enrolment, student transfers, and to the production of certificates, the so called "spending review" (decree law 95/2012, art. 7 cc. 27-32, converted into law 135/2012) requires that, starting with the school year 2012/13, families enroll their children in schools using online forms exclusively; schools communicate end-of-term reports electronically; and schools adopt electronic registry applications and activate electronic communication modes with pupils and families;*

2) *During the current school-year (2012/13) schools thus have to equip themselves with richer school management systems to meet these requirements: applications that handle student attendance, family-school communications, end-of-term reports and certificates electronically. The ministry has imposed interoperability standards to the industry, so that all data are transferable to the central longitudinal information system (Anagrafe studenti);*

3) *Scuola in chiaro ("school uncoded") policy, an e-government initiative whereby school-level information is shared with families using the online tool cerca la tua scuola:*
the standard information includes the level of ICT equipment;
information on students enrolment by year of study, average class size by year of study, percentage of grade repetition, school transfers and school dropout compared to regional and national averages); information on teaching and non-teaching personnel (breakdown by gender, age categories, and contract type, turnover rate and teacher absenteeism by cause, compared to regional and national averages); school budget information.

References:

EACEA. 2018. Initial Education for Teachers Working in Early Childhood and School Education. [https://eacea.ec.europa.eu/national-policies/eurydice/content/initial-education-teachers-working-early-childhood-and-school-education-38_en]. Date of access 14/11/2018.
INDIRE. 2018. Avanguardie educative [http://innovazione.indire.it/avanguardieeducative/]. Date of access. 14/11/2018.
MIUR. La buona scuola. 2016. PIANO PER LA FORMAZIONE DEI DOCENTI 2016-2019. Volume: pag. 88.
MIUR. 2018. Piano nazionale Scuola digitale. Volume: pag.140.

Annex 2: Current and Innovative practice of Adaptive Educational Cloud Leaders

Annex 2.1

Title of the activity/project/initiative/course:	Cloud Computing for Education: A Professional Development Program for High School Teachers
Authors:	Dr. Reza Curtmola New Jersey Institute of Technology Dr. John D. Carpinelli New Jersey Institute of Technology Dr. Linda S. Hirsch New Jersey Institute of Technology Dr. Howard S. Kimmel New Jersey Institute of Technology Ms. Levelle Burr-Alexander New Jersey Institute of Technology
Sources (Research Publication, Report etc.):	Report/ Paper Presentation of Research at the 2014 ASEE (Amercan Society for Engineering Education) Annual Conference & Exposition
Data/where:	New Jersey Institute of Technology, USA
Duration (if applicable):	2 workshops (1 for 3 days and the 2nd for 1 day) plus implementation work in high school classes.
Target Group:	Sixteen high-school teachers participated in the program. The participants' teaching areas spanned a wide array of subjects ranging from Computer Technology, Math, Physics and Chemistry, to Human Anatomy, Biology, Environmental Science, and even Spanish.
Partnership involved:	New Jersey Institute of Technology
Objective of the current and innovative practice:	The goal of the program was to explore ways in which Cloud Computing technologies can be used to improve classroom instruction. To this end, the program was designed to meet two objectives: first, to expose high school teachers to the concept of Cloud Computing and the technologies associated with it, and second, to help teachers develop curriculum units based on Cloud Computing technologies that can be integrated into different high-school subjects.
Description of the current and innovative practice:	The Cloud technology provides ample opportunities of exploiting the advantages of the new technologies. Furthermore learners have further opportunities for collaboration, communication and handling data.
Methodology:	The teachers were trained in three stages: Stage 1: Exposing the teachers in a 3day workshop in order to become acquainted with the Cloud Technology as an educational tool Stage 2: The teachers implemented what the learn in the school for a 3-months period . Stage 3: A 1 day workshop was organised for feedback and discussion

Evaluation/Validation/Assessment	Both at stage 1 and at stage 3 the teachers were given pre-evaluation and post-evaluation questionnaires for assessing their opinions. Also the material used during stage 2 was reviewed and discussed.
Knowledge, Skills and Competences detected for adaptive cloud leaders:	The program was not designed for cloud leaders but for teachers aiming to use cloud technology as teaching means in a high school. As these elements are immediately connected to the abilities of educational leaders with the expected extensions and adaptions for leadership and management in secondary education, the program provides suggestions for such a framework. Thus the knowledge, skills and competencies identified in the program are indicative of what is to be investigated or promoted in the context of the L-Cloud project. In the context of the program under consideration there were expectations to: Learn about Cloud Computing Technology (CCT), become knowledgeable about them and stay abreast of the latest technological developments in order to: • Enhance instruction • Make my colleagues aware about CC • Expose students to the latest technologies Incorporate CCT in the curriculum in order to: • To enhance instruction • To learn some technical notions about CCT itself • To enhance the delivery of educational programs and to empower students to be better • problem solvers Learn how to use CCT to: • Allow real-time collaboration between students, between teachers, and between students • and teachers • Make it easier to share course materials between teachers • Store and share data Furthermore there were expectations to fit CCT in the curriculum in order to: Use CC technologies to enhance instruction and develop lessons about CCT that will allow the user to: • Personalize lessons for students • Offer instant feedback to students • Use the storage and communication capabilities of CCT to enhance anytime, anywhere • learning • Disseminate lessons and material to students by developing skills to: Create, store, and share clips with lectures and problem solving tips for students (create a library of clips and provide students easy access to it)

	Use the Cloud as a centralized resource for CAD programs, GIS databases Enable better management of information so that: • Students can store and share data • Manage and move around massive files (e.g., files created by AutoCAD software) • Some subjects involve a lot of data collection and manipulation (such as "Electronics Technology") Enable better collaboration: • Real-time collaboration between teachers as they progress with their lessons, assessments and projects • Real-time collaboration to manage and share information (e.g., sorting and sharing experimental data) • Real-time sharing of information between students • Help students collaborate without the limitations that may exist within their own computing environment • Students can form groups; students can collaborate in projects that require collaboration among group members • Better collaboration between students and teachers that work in a lab group (facilitate the process of data collection and data sharing) • Facilitate group work and information sharing in student projects Educate students about the security and privacy aspects of CCT (data storage, manipulation, and sharing using the Cloud) Educate students about technical aspects of CCT (integrate these topics into upper level computer technology, computer programming, computer science classes) aiming at : • Virtualization • Web services • Programming models, algorithms and scientific computing enabled by CCT
Open Educational Resource:	
Technical infrastructure needed: (please list in bullet points)	• Overview of Cloud Services • Storing and Sharing Data in the Cloud • Clouds in Education and Cloud-based Tools for Real-time Collaboration • Course Management using Piazza • Standards-based Lesson Planning • Using Public Data Sets Available in Amazon's Cloud
Link to the initiative of pdf/website:	https://peer.asee.org/cloud-computing-for-education-a-professional-development-program-forhigh-school-teachers
Additional information:	

Annex 2.2

Title of the activity/project/initiative/course:	EducaMadrid
Authors:	Department of Education and Research of the Community of Madrid
Sources (Research Publication, Report etc.):	http://www.comunidad.madrid/gobierno/espacios-profesionales/educamadrid
Data/where:	Community of Madrid (Spain)
Duration (if applicable):	N/A
Target Group:	Madrid's educational community (teachers, students, families and schools)
Partnership involved:	Department of Education and Research of the Community of Madrid
Objective of the current and innovative practice:	• Provide schools with access to services based on free and open software; • Encourage the use of diverse technologies to facilitate students' technological independence; • Promote the respect and care for the privacy of student and teacher data; • Encourage the use of environments conducive to creative and collaborative work; • Provide a legally secure environment for the teacher.
Description of the current and innovative practice:	EducaMadrid is the Educational Technology Platform of the Community of Madrid that provides teachers, students, families and schools with a wide range of web services (including cloud computing services), educational tools, resources and virtual scenarios for teaching and learning.
Methodology:	In relation to cloud computing, EducaMadrid provides a virtual space or hard disk for users, intended to store files and documents, share them and access them from anywhere.
Evaluation/Validation/Assessment	N/A
Knowledge, Skills and Competences detected for adaptive cloud leaders:	The values of EducaMadrid are: free, self-employed, collaborative, privacy, no publicity, supervised by the teacher. Related competences: • Promotion of teamwork; • Digital literacy / technological autonomy of the users; • Interaction and collaboration; • Management of digital identity.
Open Educational Resource:	N/A
Technical infrastructure needed: (please list in bullet points)	• MAX (Madrid Linux) free operating system
Link to the initiative of pdf/website:	• https://www.educa2.madrid.org/educamadrid/ • https://cloud.educa.madrid.org/index.php/login
Additional information:	N/A

Annex 2.3

Title of the activity/project/initiative/course:	Projects related to cloud computing in rural education: • Escuelas en la Nube (Schools in the Cloud) • Rural School Cloud (Comenius)
Authors:	Balidea Consulting & Programming, CESGA (Galician Supercomputing Centre) and rural centres' groups (CRA).
Sources (Research Publication, Report etc.):	• https://www.researchgate.net/publication/284726647_Teaching_and_Learning_in_the_Cloud • https://www.igi-global.com/chapter/cloud-computing-for-rural-and-isolated-schools/195283
Data/where:	Spanish and European levels
Duration (if applicable):	• Escuelas en la Nube (Schools in the Cloud): 2012-2013 • Rural School Cloud: 2014-2015
Target Group:	Schools: students, teachers and families
Partnership involved:	• Balidea – Spain • Board of Galicia - Department of Culture, Education and University Planning • Universidade de Santiago de Compostela – Spain • AKETH (Developmental Center of Thessaly) – Greece • Provincia di Parma – Italy • VIA University College – Denmark • Macedonian Institute for Integration – FYROM • Devon Learning and Development Partnership – UK
Objective of the current and innovative practice:	Escuelas en la Nube aimed to design and validate a high quality and low cost technological product to improve collaboration among rural schools, on the basis of cloud computing solutions and free software. More specifically, the project's goals were the following: • Foster coordination and collaboration among rural schools; • Integrate geographically isolated areas and encourage the participation of families in education. • Offer visibility of the school's activities and foster a culture of collaboration. • Achieve the acquisition of technological skills by rural children. • Establish a greater degree of contact and joint work between the children within and among rural centres' groups. • Offer resources and contents accessible through the Internet that serve as educational reinforcement at home. The Rural School Cloud project aimed to improve the quality of teaching and learning in rural schools in Europe by exploring, adapting and improving innovative methodologies based on cloud solutions.
Description of the current and innovative practice:	Escuelas en la Nube was a project developped by Balidea and CESGA. It provided infrastructure and methodologies based on cloud computing at the service of teaching and schools' collaboration among. It supported the creation of a network of schools aiming to share educational experiences, materials and learning.

	Rural School Cloud designed a cloud computing environment adapted to the needs and characteristics of EU educational rural contexts. It aimed to promote collaboration among rural teachers, students and schools, as well as to enhance processes of co-creation of learning resources. The cloud environment has been used within 17 rural schools from five different countries (Denmark, Greece, UK, Italy and Spain) in the context of two implementation stages, i.e. a three-months pilot phase (conducted from October to December, 2014) served as a first contact with the platform and helped to detect possible improvements and adjustments; the platform was adapted and improved accordingly, and a longer six-months phase of implementation took place (from January to June, 2015).
Methodology:	Escuelas en la Nube provided a web application useful for different digital environments, e.g., PCs, interactive whiteboards, tablet. It was developed in collaboration with the educational community; indeed, teachers and students were actively involved in the definition of the application's functionalities. Rural School Cloud: After having developed an in-depth analysis of the educational and technical conditions of EU rural schools, the RSC consortium designed a pedagogical and technical solution adapted to the specific needs and characteristics of EU educational rural contexts. The solution consists of a cloud computing environment based on flexible cost-effective hardware, cloud computing software and Open Source Standards. The consortium provided a set of resources and web 2.0 tools to facilitate teachers' and students' understanding of the possibilities offered by the platform. In addition, partners proposed four main topics (implemented on four different clouds) on which schools could collaboratively work, namely News, Nature, Maths and Traditions. Teachers were asked for their preferences and suggestions to create pedagogical projects around these four topics. As a result, 10 different pedagogical projects were created.
Evaluation/Validation/Assessment	Rural School Cloud evaluation addressed three different focuses, i.e. (a) the project and its global development (evaluation of the project meetings, management, work packages, cooperation, etc.); (b) the pilot experimentation (attitude, teaching-learning procedures using Information and Communication Technologies - ICT-, communication, collaboration and work dynamics during the application of the cloud computing solution to educational processes in rural schools); and (c) the cloud computing solution created (users' experience and the ICT solution, i.e. the cloud environment and contents). The RSC platform proved to be a powerful tool to fulfil the goals of the project, i.e. providing a functional and usable technical educational resource for EU rural schools, allowing for temporal and spatial flexibility in teachers' and students' interactions, and providing a tool adapted to the different characteristics, needs and interests rural schools. The cloud solution provided in the RSC project offers opportunities to improve the quality of learning and teaching and enhance pedagogical innovation in EU rural schools education.

Knowledge, Skills and Competences detected for adaptive cloud leaders:	• Participation of the educational community. • Promotion of a culture of collaboration and participation. • Sharing the philosophy of learning and social collaboration of the cloud. • Digital literacy.
Open Educational Resource:	N/A
Technical infrastructure needed: (please list in bullet points)	• Software-as-aService (SaaS), Platform-as-a-Service (PaaS) • Open Source solutions such as Oneye, Openmeetings, Xen and Nuba. • The Rural School Cloud software contains a fully operational virtual machine (VM) ready to be deployed on any platform (MV-ware, Open Nebule, Open Stack, Cloud Stack, etc).
Link to the initiative of pdf/website:	• https://balidea.com/es/portfolio/escuelas-en-la-nube • https://e-learning.cesga.es/rsc/
Additional information:	--

Annex 2.4

Title of the activity/project/initiative/course:	Kids & Clouds
Authors:	Kids&Clouds
Sources (Research Publication, Report etc.):	Not available
Data/where:	Spain
Duration (if applicable):	From 2012
Target Group:	Schools, students and directors of kindergartens
Partnership involved:	N/A
Objective of the current and innovative practice:	Kids&Clouds is a Digital Agenda and Management System designed specifically for kindergartens and schools with early childhood education.
Description of the current and innovative practice:	It is a computerized management system designed for Early Childhood Education institutions. Its cost is 1,3 € per month per child. It is based on the principle of reducing and facilitating management tasks, so to devote more time to educational tasks. It consists of a complete system hosted in the cloud. It allows for establishing a better communication between educational centres and families (by sharing images with parents, creating warnings and notifications, organizing calls and videoconferences). Advantages:

	• Involving families; • Saving time and costs; • Motivating teachers.
Methodology:	Kids&Clouds mainly commercializes two products: • A COMMUNICATION SYSTEM BETWEEN SCHOOLS AND FAMILIES, which includes a customizable electronic agenda and an advanced messaging system. • A MANAGEMENT SYSTEM TO HELP THE DIRECTOR to carry his work with more control and in less time. We highlight three main points: • Communication between families and educational centres; • Comprehensive and personal management; • Marketing: web positioning.
Evaluation/Validation/Assessment	N/A
Knowledge, Skills and Competences detected for adaptive cloud leaders:	• Administrative management. • Communication and collaboration within the educational community (teachers and parents). • Digital marketing and web postioning.
Open Educational Resource:	N/A
Technical infrastructure needed: (please list in bullet points)	Kids & Clouds app is configurable so to adapt to all centres and their particular educational projects. https://play.google.com/store/apps/details?id=com.ionicframework.kidsnclouds
Link to the initiative of pdf/website:	• Website: https://www.kidsnclouds.es/ • Blog: https://www.kidsnclouds.es/educamos/ • Facebook page: https://www.facebook.com/kidsnclouds/
Additional information:	At the Web Awards 2018, Kids&Clouds was finalist in the category of best app.

Annex 2.5

Title of the activity/project/initiative/course:	UNIDisc
Authors:	Consortium of University Services of Catalonia - Consorci de Serveis Universitaris de Catalunya (CSUC)
Sources (Research Publication, Report etc.):	Not available
Data/where:	Catalonia (Spain)
Duration (if applicable):	N/A
Target Group:	• The Catalan education and research community. • It has been implemented in 10 Catalan universities (UB, UAB, UPC, UPF, UdL, UdG, URV, UOC, URL and UVic-UCC).

Partnership involved:	• University of Pompeu Fabra • University of Lleida • Consorci de Serveis Universitaris de Catalunya
Objective of the current and innovative practice:	• To promote collaboration in the education and research community. • To use tablets and smartphones optimally.
Description of the current and innovative practice:	UNIDisc is a cloud storage service for the Catalan education and research community, offering users an easy way to store, synchronize and share files in a secure and reliable community cloud.
Methodology:	Funcionalities of UNIDisc: • Great storage capacity (100 GB/user). • Offline synchronization. • Online editing. • Control and security. • Optimized for smartphone and/or tablet use. • High level of security thanks to anti Ransomware protection. • Ability to add additional private disk (Amazon S3, Google Drive, etc.). • Easy and secure file sharing within the education and research community thanks to the support of CloudMesh. • Allows for the creation of work groups from different institutions. • Encourages transversal work.
Evaluation/Validation/Assessment	N/A
Knowledge, Skills and Competences detected for adaptive cloud leaders:	• Digital safety. • Sharing of academic knowledge. • Collaboration
Open Educational Resource:	N/A
Technical infrastructure needed: (please list in bullet points)	can verify the integrity of the desktop clients in the following Checksum: • Windows Client: SHA256: b2c1fad1dbc6c77918df5bc4ca95eb052a9132469e74b25616b979da1cc8cf58 unidisc-2.4.0.1277-setup.exe • Mac Client: SHA256: 7142d712ac49747312a149f4356309e177bce201def26a5c759f6815f928e345 unidisc-2.4.0.2009.pkg
Link to the initiative of pdf/website:	https://www.csuc.cat/ca/hpc-i-cloud/disc-al-nuvol-unidisc
Additional information:	Users can easily access UNIDisc by logging into UNIFICAT, the identity federation for the Catalan university and research community. In this way, users access to their data via their own institutional login account.

Annex 2.6

Title of the activity/project/initiative/course:	FUN (Foro de Universidades en la Nube) – Forum of Universities in the Cloud
Authors:	Spanish Universities and Google
Sources (Research Publication, Report etc.):	https://www.marketingdirecto.com/digital-general/mobile-marketing/13-universidades-espanolas-se-suben-a-la-nube-de-google-apps https://www.abc.es/20111115/sociedad/abci-google-universidades-201111151709.html
Data/where:	Spain
Duration (if applicable):	From 2011
Target Group:	University Community (teachers, students and administrations and service)
Partnership involved:	Google App for Education
Objective of the current and innovative practice:	The aim of the Forum is to create a space in which all member universities can share ideas, good practices, collaborate and communicate in a fun and simple way.
Description of the current and innovative practice:	The Forum of Universities in the Cloud (FUN) includes 13 Spanish universities: IE University, Alfonso X el Sabio University, Catholic University of Murcia, Complutense University of Madrid, University of Deusto, University of Extremadura, University of La Laguna, University of León, University of Navarra, Miguel Hernández University of Elche, Pompeu Fabra University, Autonomous University of Barcelona and Jaume I University. At the University of Malaga, teachers, students and some research groups use cloud computing to access and store a wide range of resources. They also have a storage space, greater computing capacity, ram memory and Internet connectivity.
Methodology:	Google app aims for better communication, smarter collaboration, security and stability.
Evaluation/Validation/Assessment	N/A
Knowledge, Skills and Competences detected for adaptive cloud leaders:	• Digital Competences for teachers and students. • Digital communication and collaboration. • Sharing, developing information and digital content. • Innovative and creative use of digital technologies.
Open Educational Resource:	N/A
Technical infrastructure needed: (please list in bullet points)	Google App
Link to the initiative of pdf/website:	https://www.uma.es/adabyron/cms/menu/servicios-y-soporte/computacion-cloud/?set_language=en
Additional information:	--

Annex 2.7

Title of the activity/project/initiative/course:	SCHOOL IN CLOUD-School365
Authors:	Alina Nitu
Sources (Research Publication, Report etc.):	https://www.scoala365.com/
Data/where:	2009 in Italy 2018 in Romania
Duration (if applicable):	from 2009 to present
Target Group:	Students, teachers, parents, school administration
Partnership involved:	Google, Microsoft
Objective of the current and innovative practice:	School365 is a platform that aims to improve the entire organizational structure of schools, providing all reasonable means for students, teachers, administrative staff and family! The purpose of the School365 platform is to support innovation in schools and raise the level of education. Facilitates student learning, teachers teaching process as well as the administrative functions of all school staff
Description of the current and innovative practice:	A single platform that integrates all school roles facilitates student learning, teacher teaching and the administrative functions of all school staff. ROSETTA STONE (Language Learning Software, Benefits of Learning a Foreign Language for Elementary and Gymnasium Students) Code.org Programming Lessons for Students and Guides on Teaching Methods for Teachers G-Suite Suite for Education: Gmail, Calendar, Google Docs Online, Excel Online Direct and Integrated Access – Wikipedia
Methodology:	A new educational method with online lessons and a quick communication with teachers and colleagues The most useful method of organizing your work, using creative resources in a creative way and making your time more efficient Chromebooks are classrooms. They have extraordinary potential.

Evaluation/Validation/Assessment	
Knowledge, Skills and Competences detected for adaptive cloud leaders:	Cloud architectural skills Build an inspiring vision
Open Educational Resource:	https://www.scoala365.com/pages/3a6b7958-e108-11e8-8d1e-373bd50aa05a
Technical infrastructure needed: (please list in bullet points)	Internet Network Infrastructure IT resources Cloud applications
Link to the initiative of pdf/website:	https://lookaside.fbsbx.com/file/prezentare%20Scoala365.pdf?token=AWyCVaF61VBI88hNzASx_kOrOylqmo978jMtmdS1FeLW8tFKHnqrL3TU3Qme28dGaYKoQaNutm-UcBUdwDdfdBOnmQ8Zo_beO6Pm7J9-QCm_LAKz5Bdle8WrW8us7Gw3F71i7TRQnKMe5pQfrN0hpbN4XQqJXK6EX9kMSTe6VzxqQQ
Additional information:	

Annex 2.8

Title of the activity/project/initiative/course:	ADSERVIO – SOFTWARE EDUCATIONAL TECHNOLOGY
Authors:	Alexandru Holicov
Sources (Research Publication, Report etc.):	https://www.adservio.ro/ http://www.elearning.ro/adservio-instrument-impotriva-absenteismului-si-abandonului-scolar http://blog.adservio.ro/ http://infois.ro/?p=13369 https://www.adservio.ro/despre-adservio
Data/where:	2008
Duration (if applicable):	-
Target Group:	Teachers, educators, parents, students, directors, secretaries and school inspectorates
Partnership involved:	Adservio has entered into a partnership with Telekom Romania, where several schools have been equipped with 4G tablets and internet.
Objective of the current and innovative practice:	- Improving school results and reducing school absenteeism - Facilitation of collaboration and communication between pupils and teachers, pupils and students, parents and school; - Improving and empowering parents, teachers and pupils in the education process; Some schools had up to 63% fewer absences after only one year of use; Increased average per unit by 1 point; Improved results on national testing are recorded; Users have file sharing modules and themes and projects; Students can make IQ keys and self-knowledge to find out what kind of profession they fit.

Description of the current and innovative practice:	Adservio provides you with teacher activity reports, allows you to view catalogs in electronic format, generate reports to the Inspectorate and the Ministry of Education and Scientific Research and gives you up-to-date information about any activity in the school. In other words, directors have access to any information, absolutely anywhere. Adservio ensures the security of all data, whether it's school situations or communication with teachers or other parents • Integrated messaging Communicates and exchanges views with other parents or contacts the teachers and school leadership • Share Files Share documents or even whole files with your teachers or students directly from your account • Library With over 200 free, specialist and fiction books, which you can download electronically • News and information from the educational environment or tips that can help you as a parent • SMS notifications You receive SMS notifications at the end of the day with the pupil's school situation • Extracurricular Easily and transparently manage your activities outside your classroom • User manual It helps you better understand the functionality of the platform for maxi-mum benefits
Methodology:	The Adservio platform offers multi-level use, giving parents a tool to monitor the child's educational performance, teachers - a simple and effective management tool with an advanced teaching methodology, and a more creative and enjoyable learning experience for students .
Evaluation/Validation/Assessment	

Knowledge, Skills and Competences detected for adaptive cloud leaders:	• Cloud architectural skills • Build an inspiring vision • To create a cloud infrastructure
Open Educational Resource:	
Technical infrastructure needed: (please list in bullet points)	• Adservio provides access to the digital catalog, complex school information, allowing home and foreign users to access the platform on any device: desktop, laptop, tablet or mobile phone. • Any device connected to the Internet, based on a user and a password, directly on the dedicated website. The platform is compatible with iOS, Android and Windows operating systems.
Link to the initiative of pdf/website:	
Additional information:	Alba Iulia Protocol - Component Description for a Smart City - Phase 1 Intelligent Education The Electronic Catalog solution proposed by Telekom Romania Communications S.A. https://extranet.apulum.ro/registratura/Fileo.aspx?id_registratura=1&registru=HOT&nr=7478&an=an&id_fisier=1452

Annex 2.9

Title of the activity/project/initiative/course:	Greek Digital School – Photodentro
Authors:	Greek Ministry of Education and Religious Affairs
Sources (Research Publication, Report etc.):	http://www.dschool.gr/
Data/where:	on the cloud
Duration (if applicable):	2007 – on going
Target Group:	All Greek school teachers and students
Partnership involved:	Greek Ministry of Education and Religious Affairs, European Union, ESPA, Greek digital school, Diofantos Institute,
Objective of the current and innovative practice:	A repository of learning objects, educational videos, educational software and open educational practices
Description of the current and innovative practice:	Digital School is a huge repository of open educational resources and practices that are related to the Greek national curriculum
Methodology:	Use of cloud technology for a broad reach and to achieve community building
Evaluation/Validation/Assessment	
Knowledge, Skills and Competences detected for adaptive cloud leaders:	Innovative ways to use cloud technology in an effort to efficiently lead education on a national level
Open Educational Resource:	All Greek school book
Technical infrastructure needed: (please list in bullet points)	• Internet connection • A device able to access the internet • An e-pub reader add-on
Link to the initiative of pdf/website:	http://www.dschool.gr/
Additional information:	

Annex 2.10

Title of the activity/project/initiative/course:	Interactive School Books
Authors:	Greek Ministry of Education and Religious Affairs
Sources (Research Publication, Report etc.):	http://ebooks.edu.gr/new/
Data/where:	on the cloud
Duration (if applicable):	2007 – on going
Target Group:	All Greek school students
Partnership involved:	Greek Ministry of Education and Religious Affairs, European Union, ESPA, Greek digital school, Diofantos Institute,
Objective of the current and innovative practice:	Deliver all books used in the Greek K-12 curriculum through the cloud to all students around Greece
Description of the current and innovative practice:	All Greek school books are accessible through any browser in any pc or mobile device made available through the use of cloud technology
Methodology:	
Evaluation/Validation/Assessment	
Knowledge, Skills and Competences detected for adaptive cloud leaders:	Innovative ways to use cloud technology in an effort to efficiently lead education on a national level
Open Educational Resource:	All Greek school book
Technical infrastructure needed: (please list in bullet points)	• Internet connection • A device able to access the internet • An e-pub reader add-on
Link to the initiative of pdf/website:	http://ebooks.edu.gr/new/
Additional information:	

Annex 2.11

Title of the activity/project/initiative/course:	School on the Cloud
Authors:	Karl Donert
Sources (Research Publication, Report etc.):	Internet resources
Data/where:	Online – project website
Duration (if applicable):	
Target Group:	Head teachers
Partnership involved:	87 partners
Objective of the current and innovative practice:	Create guidelines for leaders
Description of the current and innovative practice:	Workshop guidance and activities on leading in the Cloud
Methodology:	Use of open access resources to support leaders
Evaluation/Validation/Assessment	n/a
Knowledge, Skills and Competences detected for adaptive cloud leaders:	The resource offers the following issues for leaders Visions Impacts Barriers Recommendations
Open Educational Resource:	Yes
Technical infrastructure needed: (please list in bullet points)	None, Internet
Link to the initiative of pdf/website:	http://www.eurogeography.eu/SoC/guidelines/ileader-guidelines.html
Additional information:	Detailed resource with lots of things to see and do. Developed in 2017.

Annex 2.12

Title of the activity/project/initiative/course:	European Guidelines and Quality Labels for new Curricula Fostering e-Leadership Skills
Authors:	EC, eSkills, Empirica
Sources (Research Publication, Report etc.):	report
Data/where:	??
Duration (if applicable):	??
Target Group:	Business leaders
Partnership involved:	EC, eSkills, Empirica
Objective of the current and innovative practice:	A European Commission initiative that aims to support the development of e-leadership skills through the strong practical instrument of a curriculum profile and the development of quality criteria that evaluate the programmes provided by higher educational institutions matched to curriculum profiles and demonstrate these at different business schools and universities in Europe – established in 2013
Description of the current and innovative practice:	This should lead to encouraging the development of attractive, adapted, up-to-date educational offers able to increase the supply to the economy of experienced and highly qualified leaders in ICT-based innovation
Methodology:	
Evaluation/Validation/Assessment	eSkills framework
Knowledge, Skills and Competences detected for adaptive cloud leaders:	See http://eskills-guide.eu/fileadmin/promote/documents/eleadership_digital_skills_fin.pdf
Open Educational Resource:	Curriculum introduction
Technical infrastructure needed: (please list in bullet points)	Web
Link to the initiative of pdf/website:	https://www.efmd.org/projects-test?download=14:17-eleadership-brochure http://www.eskills-guide.eu/home.html
Additional information:	Responding to the inadequacies in the skills market flagged by stake-holders across the EU, the European Commission has begun commis-sioning studies and launching initiatives designed to foster a full range of skills relating to ICT, “e-skills”, in Europe, the most recent focus and initiative is on the skills gap in the ‘e-leadership’ domain.

Annex 2.13

Title of the activity/project/initiative/course:	NIVOZ Leadership in Education: from value to action (PART ONE) *"Nederlands Instituut vioor Onderwijs en Opvoedingszaken"* Dutch Institute for Education and Pedagogy
Authors:	The Nivoz Institute
Sources (Research Publication, Report etc.):	DUTCH publication on leadership on the web
Data/where:	homepage www.nivoz.nl
Duration (if applicable):	Not applicable
Target Group:	Any taking the role of leadership in education
Partnership involved:	Available to anyone
Objective of the current and innovative practice:	*In depth analysis where to focus on in order to grow in educational leadership.*
Description of the current and innovative practice:	Workshop guidance and activities on leadership
Methodology:	open source to support leaders
Evaluation/Validation/Assessment	n/a
Knowledge, Skills and Competences detected for adaptive cloud leaders:	Focus on pedagogical leadership
Open Educational Resource:	Yes
Technical infrastructure needed: (please list in bullet points)	None, Internet
Link to the initiative of pdf/website:	https://nivoz.nl/nl/nro/leiderschap-in-onderwijs-1-from-value-to-action
Additional information:	Detailed resource with lots of things to see and do. Developed in 2017.

Annex 2.14

Title of the activity/project/initiative/course:	NIVOZ Leadership in Education: the courage to create (PART TWO) *"Nederlands Instituut vioor Onderwijs en Opvoedingszaken"* Dutch Institute for Education and Pedagogy
Authors:	The Nivoz Institute
Sources (Research Publication, Report etc.):	DUTCH publication on leadership on the web
Data/where:	homepage www.nivoz.nl
Duration (if applicable):	Not applicable
Target Group:	Any taking the role of leadership in education
Partnership involved:	Available to anyone
Objective of the current and innovative practice:	*Focus on the interaction between teacher and student as a subject-subject relation.*
Description of the current and innovative practice:	Workshop guidance and activities on leading in th Cloud
Methodology:	open source to support leaders
Evaluation/Validation/Assessment	n/a
Knowledge, Skills and Competences detected for adaptive cloud leaders:	Focus on pedagogical leadership
Open Educational Resource:	Yes
Technical infrastructure needed: (please list in bullet points)	None, Internet
Link to the initiative of pdf/website:	https://nivoz.nl/nl/nro/leiderschap-in-onderwijs-2-de-moed-om-te-cre-ren
Additional information:	The instate offers a lot in the field of educational leadership.

Annex 2.15

Title of the activity/project/initiative/course:	EN translation: Headmaster, a leader for education. Course: Il Dirigente Scolastico, un leader per l'educazione.
Authors:	University LUMSA
Sources (Research Publication, Report etc.):	University Website: https://www.lumsa.it/index.php?q=corsi_altri_corsi_formazione_docenti_dirigente_scolastico
Data/where:	Academic year: 2017/2018
Duration (if applicable):	45 hours
Target Group:	School headmasters
Partnership involved:	N/A
Objective of the current and innovative practice:	The objective of the course is to train headmaster not only to be administrative managers of their schools, but school leaders and leaders of innovation. The course is divided into 3 parts: 1) 12 lessons related to: school administration, Management, Education and Innovation, school rights etc.; 2) A section related to leadership: Leadership for service (La scuola del Service Learning), Leadership for global learning (La scuola senza zaino), Leadership for community (La scuola aperta), Leadership for inclusion (La scuola inclusiva), Leadership for digital innovation (La scuola digitale). 3) Scientific articles related to course subject.
Description of the current and innovative practice:	The practice is quite innovative by the fact that is directed to headmaster to be trained as leaders of their schools. One of the topics which differentiate the course is also the fact that the headmasters are trained to leaders of a digital schools and of the digital transformation.
Methodology:	Blended learning methodology: online course and offline.
Evaluation/Validation/Assessment	N/A
Knowledge, Skills and Competences detected for adaptive cloud leaders:	N/A
Open Educational Resource:	NO
Technical infrastructure needed: (please list in bullet points)	LAPTOP AND ACCESS TO THE COURSE
Link to the initiative of pdf/website:	https://www.lumsa.it/index.php?q=corsi_altri_corsi_formazione_docenti_dirigente_scolastico
Additional information:	N/A

Annex 2.16

Title of the activity/project/initiative/course:	EN: CLOUD COMPUTING IN SCHOOL EDUCATION Il cloud computing nella formazione e nella scuola L'esperienza innovativa dell'Istituto Ettore Majorana
Authors:	Dunia Pepe e Marta Palombi
Sources (Research Publication, Report etc.):	Article
Data/where:	http://isfoloa.isfol.it/
Duration (if applicable):	NA
Target Group:	Secondary schools
Partnership involved:	http://www.majoranabrindisi.it/ and ISFOL
Objective of the current and innovative practice:	Understand the role of cloud computing in the class according to its innovative potential after the ICT sector after the introduction of Computer technology and the personal computer.
Description of the current and innovative practice:	The school has been developing: 1) BOOK IN PROGRESS: since 2008 in the institute there are no anymore book texts, but online shared material produced by the teachers of the same school; Resources are available at: www.bookinprogress.org/ 2) Net in Progress is the development of the book in progress system. Indeed, here students can have access to the books created by their teachers thanks to a pen drive and a Laptop provided by the school to the different students. The cloud Bpos – business productivity online suite - allows the students to collaborate online through social media and to experiment distance learning. The school use also system like MimioVote to assess the student performance using an online system through an e-learning platform.
Methodology:	
Evaluation/Validation/Assessment	• MimioVote, an online system;
Knowledge, Skills and Competences detected for adaptive cloud leaders:	NA
Open Educational Resource:	www.bookinprogress.org/
Technical infrastructure needed: (please list in bullet points)	LAPTOP; WIFI / PEN DRIVE; ACCESS TO THE LEARNING MATERIAL and SOFTWARE used by the school
Link to the initiative of pdf/website:	

Additional information:	http://isfoloa.isfol.it/handle/123456789/1055 www.bookinprogress.org/ http://www.majoranabrindisi.it

Annex 2.17

Title of the activity/project/initiative/course:	EN Translation: "Teaching through the cloud" Course: "Corsi di didattica con il cloud"
Authors:	Politecnico di Milano
Sources (Research Publication, Report etc.):	University course
Data/where:	
Duration (if applicable):	20 learning blocks – online
Target Group:	School Headmasters and teachers
Partnership involved:	Politecnico di Milano and DOL Milano
Objective of the current and innovative practice:	The course offers innovative learning content concerning the educational technology and its application in class with a specific focus on TPACK: Technology, Pedagogy and Content Knowledge.
Description of the current and innovative practice:	The course offers specific modules concerning CLOUD application in class for beginners and advance and both for teachers and headmasters.
Methodology:	Online learning and collaborative learning through the DOL platform.
Evaluation/Validation/Assessment	NA
Knowledge, Skills and Competences detected for adaptive cloud leaders:	
Open Educational Resource:	Only the syllabus
Technical infrastructure needed: (please list in bullet points)	Laptop, wifi connection and access to the course topics
Link to the initiative of pdf/website:	http://dolmodular.polimi.it/wp-content/uploads/2016/06/Corsi_Cloud.pdf
Additional information:	Syllabus of the course available at: http://dolmodular.polimi.it/contenuti/

Annex 3: Identify existing competence framework at national, European and International level.

Annex 3.1

Title of the existing competence framework:	Five Traits of a Good Educational Leader
Authors:	The Room 241 Team
Year of Publication:	2012
Country of Publication:	USA
Target Group:	Education Leaders
Short description of the document:	Traits of a Good Educational Leader
Key Competence identified:	1. Self-aware 2. Excellent communication skills 3. Resourceful 4. Lead by example 5. Power of teaching and learning
Short description of the key competence identified:	1. A good educational leader needs a solid understanding of oneself and should also have confidence. When you believe in yourself, you can accomplish so much more. 2. The best educational leaders are excellent communicators and know how to reach a variety of people in many different ways. 3. To be an effective leader, you need to be resourceful and open to new ideas. Especially during tough economic times, technology helps to change classrooms, and you need to be open to new ideas that will improve the way students absorb and retain information. You also need to know how to use the resources you have to the best of your ability 4. The best leaders in the educational system make it a point to lead by example, and not simply by words. 5. It's vital to believe in what your school is trying to accomplish each and every day, and to convey your enthusiasm for change, your own motivation to make things better, and your confidence in those around you. Your words and actions directly impact morale—show others your passion for education, and they'll feel it too.
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Foundation
Link to the initiative of pdf:	https://education.cu-portland.edu/blog/leaders-link/five-traits-of-a-good-educational-leader/
Additional information:	

Annex 3.2

Title of the existing competence framework:	The Teacher Leadership Competencies
Authors:	Center for Teaching Quality, National Board for Professional Teaching Standards, and the National Education Associatio
Year of Publication:	2014
Country of Publication:	USA
Target Group:	School Leaders
Short description of the document:	This documents describes the competences that teacher leaders needs to have and categorize them in 4 groups: Overarching Competencies, Instructional Leadership, Policy Leadership, Association Leadership
Key Competence identified:	Reflective Practice Personal Effectiveness Interpersonal Effectiveness Communication Continuing Learning Group Processes Adult Learning Technological Facility Coaching/Mentoring Collaborative Relationships Community Implementation Advocacy Policy Making Engagement Leading with Vision Leading with Skill Organizing/Advocacy Building Capacity Community/Culture
Short description of the key competence identified:	<u>Reflective Practice</u> Mindful and deeply aware of who he or she is as a teacher leader, and aware of areas of possible growth into further leadership <u>Personal Effectiveness</u> Understands his or her own personal strengths, leadership style, and passions; and sees the role these play in developing trust and credibility with peers <u>Interpersonal Effectiveness</u> Becomes familiar with the skills needed to support colleagues <u>Communication</u>

	Sees the needs and challenges to student growth, successful teaching and learning, and systemic effectiveness, and feels ready and able to address them <u>Continuing Learning</u> Creates meaningful professional learning goals, and finds resources to meet those goals <u>Group Processes</u> Actively participates in group meetings, events, and learning opportunities, and understands the roles of these opportunities in teacher leadership <u>Adult Learning</u> Understands the differences in the ways in which adults learn and grow professionally, respecting their expertise and valuing the direct impact adult learning has on student success <u>Technological Facility</u> Uses technology as a tool for communicating beyond teaching and learning and into leadership applications <u>Coaching/Mentoring</u> Values the importance of self and professional improvement and development for the benefit of students <u>Collaborative Relationships</u> Understands the importance of a collaborative culture, articulates the need for such a culture, and works with colleagues to create a productive environment <u>Community</u> Recognizes the unique needs, culture, and context of students and advocates for their learning and well-being <u>Implementation</u> Demonstrates awareness that policy impacts the school environment, and engages in inquiry to learn and understand what policies are at play, and the effects they have on school communities <u>Advocacy</u> Researches and understands the scope of various policies <u>Policy Making</u> Demonstrates awareness of the process of creating policy, including familiarity with key stakeholders and influencers <u>Engagement</u> Prepares himself or herself to speak to the current issues regarding education. Knows the names, roles, alignments, and functions of various policymakers

	Leading with Vision Understands the association's mission, vision, and values and uses them to guide his or her influence when working with colleagues and the community Leading with Skill Recognizes the need for leaders to exercise skilful stewardship of the association's vision and resources Organizing/Advocacy Recognizes the role of partnerships and their power as a tool to pursue desired outcomes for children, schools, and the teaching profession Building Capacity Understands the range of skills and styles of leadership and communication that individuals may possess and is familiar with her or his own strengths and limitations Community/Culture Recognizes the important role of contracts and policies in either facilitating or interfering with creating, sustaining, and expanding positive environments for teaching and learning
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Advanced
Link to the initiative of pdf:	https://www.nbpts.org/wp-content/uploads/teacher_leadership_competencies_final.pdf
Additional information:	

Annex 3.3

Title of the existing competence framework:	Educator and School Leader Competencies Can Promote Systems Coherence in Competency Education
Authors:	Maria Worthen, Natalie Truong, Susan Patrick
Year of Publication:	2018
Country of Publication:	USA
Target Group:	Educators and School Leaders
Short description of the document:	This articles talks about how educators and school leaders' competences can help to succeed in student-centered learning environments
Key Competence identified:	No competences identified
Short description of the key competence identified:	
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	
Link to the initiative of pdf:	https://www.inacol.org/news/educator-and-school-leader-competencies-can-promote-systems-coherence-in-competency-education/
Additional information:	

Annex 3.4

Title of the existing competence framework:	Teacher Leader Competency Framework
Authors:	Leading Educators
Year of Publication:	2015
Country of Publication:	USA
Target Group:	Teacher leaders
Short description of the document:	This articles presents a Teacher Leadership Competency Framework with 4 pillars and the components necessary for effective teacher leadership. Each pillar/competency is broken down into essential behaviors, which provide targets for teacher leaders to extend their impact on their team and on students
Key Competence identified:	Self-Awareness Self-Management, Social Awareness Relationship Management Vision, Plan Act Assess Coaching Relationship Listening Powerful Questioning Facilitative and Directive Coaching Styles Reflection Action Planning Implementation Team Culture Team Communication Team Structures Team Goals Long-Term Planning Assessment Professional Development and Meeting Design Session Delivery
Short description of the key competence identified:	Self-Awareness a. Reflects on values to improve self-knowledge and effectiveness b. Demonstrates self-confidence and assurance in abilities and values without arrogance c. Reflects on strengths and weaknesses to improve self-knowledge and effectiveness d. Reflects on work style and preferences to improve self-knowledge and effectiveness e. Reflects on the way actions impact colleagues f. Systematically seeks personal feedback from others

	Self-Management a. Identifies emotional triggers and manages reactions to conflict and stressful situations b. Creates and follows through on a plan to manage tasks based on areas of strength and growth c. Practices new strategies and behaviors to manage stress and renew energy d. Systematically organizes time and resources to maximize personal effectiveness e. Seeks out new strategies and behaviors to maximize effectiveness f. Analyzes and adjusts how time is spent to ensure all responsibilities are met Social Awareness a. Accurately senses and seeks to understand colleagues' preferences, emotions, and perspectives b. Discerns the social networks in the school in order to navigate politics c. Examines and reflects on cultural frame of reference in order to overcome personal biases d. Seeks to understand and empower the cultures represented in the school community when communicating and making decisions Relationship Management a. Builds trust and openness with colleagues by respectfully and appropriately sharing personal and professional stories b. Asks for feedback and routinely checks in on the health of working relationships c. Adjusts behaviors to respect colleagues' preferences, emotions, and perspectives d. Appropriately matches leadership styles to individual and contextual needs by identifying the skill level and motivation of colleagues <u>Vision</u> a. Incorporates the needs of students, community members, school leaders, and colleagues in defining a vision of success for students and teachers b. Researches and seeks out opportunities to develop expertise to define a vision of success for students and teachers c. Clearly communicates vision of success for students and teachers d. Demonstrates strong change management by creating a sense of urgency around priorities, ensuring team members see the need for change and the importance of immediate action Plan a. Analyzes context to identify the highest-need annual and interim priorities with clear links to vision of success for students and teachers b. Establishes clearly-defined, measurable, and ambitious goals for student achievement, culture, and teacher practice c. Analyzes short- and long-term consequences for students and colleagues before making decisions

	d. Makes decisions to drive high-quality results while respecting the values and capacity of teammates and school e. Adopts or develops clear metrics and tools to monitor student achievement data against benchmarks towards end of year goals f. Adopts or develops clear metrics and tools to monitor teacher practice against instructional priorities and standards of excellence Act a. Thoroughly follows through with implementation of interventions in priority areas b. Invites key stakeholders (considering students, community members, school leaders, and colleagues) to provide input on and participate in project planning and implementation c. Reinforces successful interventions to ensure they become new practices Assess a. Analyzes and reflects on student achievement data against benchmarks towards end of year goals b. Analyzes and reflects on teacher practice against instructional priorities and standards of excellence c. Sets and adjusts new goals based on student achievement and teacher practice data d. Adjusts existing interventions or designs new interventions based on data e. Adjusts existing supports for team members or designs new supports based on data f. Holds teammates accountable to interventions based on student achievement and teacher practice data g. Celebrates small wins to maintain momentum of change initiatives h. Updates key stakeholders (students, community members, school leaders, and colleagues) on the progress of initiatives Coaching Relationship a. Celebrates coachee's successes and empathizes with challenges b. Establishes and maintains a coaching agreement to clarify norms of frequency, confidentiality, and a coaching relationship focused on improving student success c. Sets and maintains focus on short- and long-term goals linked to an aligned vision of excellent instruction and/or student culture d. Creates a coach organization system to track notes, action steps, and progress towards goals Listening a. Paraphrases, summarizes, and mirrors coachee's words and gestures to demonstrate and clarify understanding b. Makes connections to the learning from previous coaching visits in order to communicate and deepen understanding c. Helps coachee unpack fuzzy or emotionally-laden thinking Powerful Questioning

	a. Asks open-ended and solution oriented questions b. Asks questions that create new awareness and new action to accomplish goals Facilitative and Directive Coaching Styles a. Encourages coachee to reflect and create plans that honor their background, experience, and best thinking b. Prompts coachee to take the lead in determining the content and direction of the coaching visit c. Identifies if the coachee requires additional or urgent support before taking a lead on the content and/or direction of the coaching visit d. Asks for permission to direct the coaching conversation e. Directs the coaching session by sharing coach's expertise or resources Reflection a. Offers genuine praise, building confidence and awareness in coachee b. Prompts coachee to analyze data to examine the current reality, including strengths, challenges, relationships, or underlying dynamics c. Provides feedback using concrete evidence and/or data tied to the instructional framework and goals of coachee Action Planning a. Identifies a clear goal for the coaching session that is connected to short- and longterm goals and current needs b. Helps coachee to brainstorm and create a plan for action steps that are high leverage, based on student goals and growth, and achievable for the coachee c. Uses co-planning to help coachee clarify instructional content and outcomes when appropriate d. Models high leverage bite-sized actions for teacher to observe and repeat when appropriate e. Creates opportunities for coachee to master action steps through targeted practice and feedback f. Creates clear plan for follow up including timeline, future observations, and deliverables Implementation a. During an observation, collects concrete evidence tied to the instructional framework and coachee's goals b. Records data and information from observations and modeling to inform reflections and assessments Team Culture a. Creates and reinforces clear mission, vision, and values to guide team's work towards student success b. Acknowledges team strengths to foster authentic, trusting relationships c. Models vulnerability and apologizes when appropriate to foster authentic, trusting relationships d. Seeks knowledge about individual team members both as people

	and as learners in order to collaborate more effectively Team Communication a. Pushes conversations to be lively, inclusive, and equitable, with participation from all team members b. Encourages unfiltered discussion to explore differing opinions and reach shared decisions Team Structures a. Creates and reinforces norms with team to maximize collaboration and impact in each meeting b. Clarifies next steps (who, what, by when) in each meeting and follows up to ensure tasks are completed Team Goals a. Establishes and reinforces an aligned vision of excellent instruction and/or student culture among teammates b. Involves team in crafting compelling and rigorous goals for the professional learning cycle to drive teaching practice and student achievement Long-Term Planning a. Creates a comprehensive sequence of meetings and objectives to build toward achievement of team goals b. Schedules additional meeting time if needed to achieve team goals c. Adjusts meeting sequence when gaps are identified or opportunities become available d. Leverages skills and interests of team members in creating meeting sequence e. Identifies resources outside of the team as needed to achieve team goals Assessment a. Assesses the degree to which objectives are mastered for each meeting or professional development session b. Gathers evidence of how learning is transferred to practice and uses evidence to guide future planning c. Collects and shares feedback with team to adjust future planning d. Analyzes student achievement data and other evidence towards goals with team, celebrating success and making adjustments as needed Professional Development and Meeting Design a. Writes measurable objectives that drive towards team priorities and can be achieved in a single meeting or professional development session b. Links content based on current research and best practices to the differing needs of participants c. Designs complete agendas (including objectives, roles, timing, and activities) and shares them in advance of meetings d. Selects high-leverage instructional and/or cultural topics so at least 80% of time is spent focused on adult and student learning instead of

	on logistics e. Creates high quality materials for meetings and professional development (agendas, handouts, slideshows, etc.) that are clear, logical, and visually appealing f. Designs concrete experiences that spark participant learning g. Designs time for reflection to step back from the task, identify confusions, and articulate new understandings h. Designs opportunities for participants to generalize specific experiences into transferable principles i. Designs opportunities for practice and application to build mastery and receive feedback Session Delivery a. Connects with participants using a positive, warm, and respectful tone b. Creates brisk, engaging "illusion of speed" through well-managed transitions and clear directions c. Holds participants accountable for sticking to established norms for the session d. Provides clear and concise directions and explanations, and highlights key points e. Limits facilitator talk to less than 30% of a session f. Ensures balanced participation during discussion g. Asks open-ended, non-rhetorical questions and includes think time to push participants to do the work h. Challenges low expectations, misconceptions, and excuses i. Builds in checks for understanding to ensure participants are mastering material j. Adjusts the plan if participants need additional support or master material quickly
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Intermediate
Link to the initiative of pdf:	https://static1.squarespace.com/static/56b547861bbee07c38617729/t/56cf78ad86db433cc6becc1f/1456437421600/LE_Teacher_Leader_Competency_Framework_CCBYNC4_2015.pdf
Additional information:	

Annex 3.5

Title of the existing competence framework:	Nine Competencies for Teaching Empathy
Authors:	Michele Borba
Year of Publication:	2018
Country of Publication:	USA
Target Group:	School leaders
Short description of the document:	After a research that American teens are 40% less empathetic compared to 3 decades ago, this article presents Empathy as the core of everything that makes a school caring and a teacher responsible. It describes which practices enhance empathy and how principals will know that teachers implement them effectively.
Key Competence identified:	Emotional Literacy Moral Identity Perspective Taking Moral Imagination Self-Regulation Practicing Kindness Collaboration Moral Courage Growing Changemakers
Short description of the key competence identified:	Emotional Literacy Empathy thrives in environments that prioritize face-to-face connections, so a key step for school leaders is to help teachers create classrooms that nurture meaningful interaction and engagement. Moral Identity A child's inner value system, or moral identity, can inspire empathy, shape character, and motivate compassion. A key step is helping students define themselves as people who value others. Kids are more likely to learn moral identity when adults model, instruct, and expect them to care about others. Perspective Taking Perspective taking is the cognitive side of empathy and is crucial for today's students. Stepping into another's shoes (literally or cognitively) helps kids understand others. Moral Imagination Educators intuitively know that books can transport students to other worlds, but now science proves it. Emotionally charged films and images can prompt empathetic feelings and even encourage charitable giving Self-Regulation

	Self-regulation allows kids to keep their emotions in check and recognize others' feelings, empathize, and then calmly think of how to help. It also boosts academic performance: Managing emotions is a better predictor of academic achievement than IQ. Practicing Kindness Being kind is what helps children tune in to other people's feelings and needs, trust more, and become more "we" oriented and less "me" oriented. Each kind act nudges kids to notice others ("I see how you feel"), care ("I'm concerned about you"), empathize ("I feel with you"), and help and comfort them ("Let me ease your pain"). Practicing kindness can also change children's self-image and behavior. If a child sees herself as kind, she is more likely to act kindly. Kindness is strengthened by seeing, hearing, and practicing kindness. Collaboration Empathy is never a solitary act: It's only when we let go of our self-centeredness and feel with others that our hearts open. Working together on common goals can help students make that crucial shift from "me" to "we." These cooperative experiences sensitize students to those who may be different or have conflicting interests. This competency also broadens students' social spheres, preparing them for a diverse world. Teamwork projects can strengthen students' abilities to encourage others, resolve conflicts, and disagree respectfully—important aspects of empathy. Moral Courage Moral courage is the inner strength that motivates children to act on their empathetic urges and help others despite the potential consequences. Demonstrating moral courage is not always easy, but children who do so stick their necks out for justice and compassion. They are upstanders—the empathetic elite—who stand up for others because they know deep down it's the right thing to do. Acting courageously increases students' resilience, creativity, confidence, willpower, and school engagement—and is teachable. Mobilizing moral courage may be our best hope to stop cruelty and violence in schools. When kids intervene, it stops bullying more than half the time and within 10 seconds (Hawkins, Pepler, & Craig, 2001). Train your staff to teach upstander strategies so students learn how to safely assist bullied peers or those treated unfairly. Then create opportunities for kids to practice those strategies so they become habits. Growing Changemakers Encouraging students to help others can activate empathy and help them see themselves as changemakers: individuals who make positive changes and inspire others to follow. Giving—not receiving—is what makes kids happier, healthier, less stressed, and feel better about themselves (Luks & Payne, 2001). Every student, regardless of zip code, has the potential to make the world a better place, if we provide the

	right experiences. School service projects, whether bringing toys to a community shelter or delivering books to a senior home, can help children see the world through others' eyes. And they can be valuable learning experiences. This helps children understand they can improve their world by taking action. And they do so not for trophies or to look good on résumés, but because they are driven by the passion of their hearts. These are the graduates we need, and it starts with empathy.
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Intermediate
Link to the initiative of pdf:	http://www.ascd.org/publications/educational-leadership/oct18/vol76/num02/Nine-Competencies-for-Teaching-Empathy.aspx
Additional information:	

Annex 3.6

Title of the existing competence framework:	Leadership Competency Framework
Authors:	Teach For Australia
Year of Publication:	2014
Country of Publication:	Australia
Target Group:	Leaders
Short description of the document:	This articles presents why leadership is important and how it will help leaders meet their goals
Key Competence identified:	Developing Self-Awareness Managing Emotions Building Resilience Growing as a Professional
Short description of the key competence identified:	Developing Self-Awareness Makes decisions based on understanding of own strengths and limitations, as well as knowledge of one's values Strikes a balance between confidence in their own ability and humility to continuously learn Reflects on the way actions impact colleagues to improve self-knowledge and effectiveness Managing Emotions Accurately senses and seeks to understand one's own and others' thoughts, concerns, and emotions Effectively uses emotional information to guide thinking and behaviour

	Reflects on why situations arouse strong emotions in themselves and manages this appropriately Building Resilience Stays optimistic in the face of setbacks Learns from experience and feedback, and persists to achieve goals Maintains one's own wellbeing to ensure sustainability in leadership roles Growing as a Professional Identifies professional goals and creates explicit plan for professional growth Seeks out and acts on constructive criticism and learns from feedback in order to improve performance Takes on challenges and risks to further one's development and progress toward systemic change Cultivating Relationships Builds trust and openness with colleagues by seeking to understand team members as individuals and educators, as well as sharing about oneself Valuing and utilizing diverse backgrounds, personalities and perspectives Asks for feedback and routinely checks in on the health of working relationships Developing Others Demonstrates a strong understanding of individuals' strengths and development needs Gives clear and balanced feedback to encourage ongoing development and to achieve coachee's goals Determine appropriate strategies to effectively coach colleagues to achieve goals and helps colleagues improve instructional practice Maximising Team Performance Runs meetings that are prioritized, efficient and lead to specific outcomes Chairs meetings confidently and team members frequently have the opportunity to lead items on the agenda of meetings Creates safe environment for constructive debate and challenge to occur without escalating negative emotions or conflict Monitoring & Reinforcing Accountability Agrees and clearly communicates expectations and standards for performance Regularly monitors progress of others against goals using data, provides necessary supports and clearly outlines the consequences of underperformance Celebrates successes on path to ambitious goals, creating sense of efficacy

	Using Research and Evidence Uses current research and evidence of impact to guide reflection and inform actions Ensures that learning from research and schoolbased trials is systematically shared within the team Analyzing and Responding to Student Data Analyses performance of students by teaching group and discusses outcomes openly with colleagues Actively enables the team to analyse data effectively in order to monitor progress for themselves and identify next steps Ensures the team uses data to assess effectiveness of intervention and makes changes to curriculum/teaching Delivering Professional Development Creates high quality materials for meetings and professional development that are clear, engaging and drive participant learning Designs time for reflection to step back from the task, identify sources of confusion, and articulate new understandings Designs opportunities for practice and application for participants to build mastery and receive feedback Observing & Giving Feedback Structures conversation with genuine praise and opportunity to analyse evidence of practice Identifies a clear goal for coaching session that is connected to short and long term goals and current needs Helps coachee to brainstorm, plan for and practice high leverage action steps that are achievable for the coachee Creating a Shared Vision Uses the vision to help motivate team activity Regularly reviews team priorities to ensure alignment with the vision Creates a compelling vision that inspires team commitment Planning Strategically Analyses context to identify the highest-need long and short-term priorities Establishes clearly defined, measurable, and ambitious goals for students and staff Adopts or develops clear metrics and tools to monitor progress towards end of year goals Managing Change Ensures rationale for change is communicated to relevant stakeholders in the process of planning and implementing change Achieves buy-in and a sense of ownership of changes by the team and others involved Overcomes resistance to implement necessary changes Engaging Stakeholders

	Invites key stakeholders (considering students, families, community members, school leaders, and colleagues) to provide input on and participate in school improvement efforts Updates key stakeholders (students, families, community members, school leaders, and colleagues) on the progress of initiatives Considers audience, and appropriately adapts approach and level of involvement
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Intermediate
Link to the initiative of pdf:	https://teachforaustralia.org/content/uploads/2016/09/TTL-Leadership-Competency-Framework.pdf
Additional information:	

Annex 3.7

Title of the existing competence framework:	Top 10 Digital Skills for Education Leaders
Authors:	Kipp Bentley
Year of Publication:	2016
Country of Publication:	USA
Target Group:	district and school leaders
Short description of the document:	10 Digital Skills for Education Leaders
Key Competence identified:	Be proficient in using their district's data systems Know how to use the Web to efficiently find credible information and resources Know what technology tools to use to solve a particular problem or to meet a specific need Be able to evaluate quality digital instructional curricula. And also know how to successfully teach and take an online course Be proficient in accessing and working with district, school and student data Make a digital presentation that primarily uses engaging images and minimal text Be able to Skype or use other live digital video communication tools Know how to use digital collaboration tools Know how to effectively use mobile devices (laptops, tablets, smartphones, etc.) and to select the productivity tools necessary to be most efficient in the administrative aspects of one's job
Short description of the key competence identified:	leaders need to be competent users of online student information systems, learning management systems, HR and finance systems, and

	probably others Good search strategies Knowledge and possibilities To be a good instructional leader all leaders should know, at a minimum, how to access, manipulate and analyze digitally available data resources leaders need to be adept at delivering strong presentations Leaders need to be adept in setting up and using digital video communication tools for interviews, remote collaborations, etc Online collaboration tools, such as Google Docs, are a powerful resource that all leaders should be comfortable using Leaders must be proficient in using digital tools to maintain and thrive in their work: collaborative calendars, virtual note taking tools, email management and the many cloud-based tools that can help leaders stay organized, connected and sane
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Foundation
Link to the initiative of pdf:	http://www.govtech.com/education/news/digital-skills-a-top-ten-list-for-educational-leaders.html
Additional information:	

Annex 3.8

Title of the existing competence framework:	Charlotte Danielson's Framework for Teaching
Authors:	Doug Johnson
Year of Publication:	2013
Country of Publication:	USA
Target Group:	Teachers and evaluators
Short description of the document:	By using a popular framework that enables educators to describe good technology practices in terms of good teaching and to blend these practices into teacher evaluations. Organizing teacher technology competencies using this framework can move both individuals and districts down progressive instructional paths.
Key Competence identified:	1. Planning and Preparation 2. The Classroom Environment 3. Instruction 4. Professional Responsibilities
Short description of the key competence identified:	• 1. • Creates assignments appropriate to the technology abilities of his or her students. • Uses digital resources provided by the district, including online

	productivity tools, content management systems, e-textbooks, online reference sources, video-streaming sites, and learning systems in reading and math. • Designs learning activities that use available technology, including laptops, tablets, computer labs, and interactive whiteboards. • Uses digital resources to differentiate instruction, including using devices for students with special needs, such as computer activities and online materials suited to different reading abilities or learning preferences. • Assesses technology production in student work when applicable. 2. • Demonstrates a positive attitude toward educational technology during class. • Uses technology to help students "publish" their work online for other students, parents, and the public to view, following district safety and privacy rules. • Uses technology to facilitate collaborative creation and peer editing of student work. • Creates rules for technology use in the classroom, including rules regarding the use of personally owned technology devices, such as cell phones. • Monitors student technology use and responds to misuse if it occurs. • 3. • Uses the classroom sound amplification system, if available. • Uses technology to create and project visual images and video that help explain content and concepts. • Uses the interactive whiteboard in ways that engage students. These include student use of the board, gaming applications, actions based on student responses, and polling. • Encourages students to use online resources to answer questions and explore concepts during class and teaches search and information evaluation strategies. • Uses technology to help students produce their own work (writing, designing, creating) and meet the instructional goals of the lesson. • 4. • Uses an online grading and reporting system to maintain information on student completion rates and shares this information through student and parent portals in a consistent and timely manner. • Uses an online grading system portal to inform students and parents of upcoming assignments, projects, and assessments well ahead of the date due. • Provides current classroom information to students and parents on the district website. • Keeps students and parents informed using online communication tools such as e-mail, blogs, and social

	networks on a regular basis. • Uses collaborative online tools to communicate and work with colleagues.
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	• Advanced
Link to the initiative of pdf:	http://www.ascd.org/publications/educational-leadership/mar13/vol70/num06/Technology-Skills-Every-Teacher-Needs.aspx
Additional information:	

Annex 3.9

Title of the existing competence framework:	Digital Learning Framework for Post-Primary Schools
Authors:	Department of Education and Skills
Year of Publication:	
Country of Publication:	Ireland
Target Group:	Teachers, school leaders and education providers
Short description of the document:	This new Framework provides a common reference with descriptors of digital competence for teachers and school leaders promoting innovative pedagogical approaches which embed the use of digital technologies. The developed Framework holds that improving the quality of students' learning should be the main driver of teacher learning. Underpinned by constructivist principles, the Framework will support high quality education mediated by digital technologies promoting active learner participation and engagement in a wide range of learning activities.
Key Competence identified:	• The teacher has the requisite subject knowledge, pedagogical knowledge and classroom management skills • The teacher selects and uses planning, preparation and assessment practices that progress students' learning • The teacher selects and uses teaching approaches appropriate to the learning objective and to students' learning needs • Foster a commitment to inclusion, equality of opportunity and the holistic development of each student • Develop and implement a system to promote professional responsibility and accountability • Communicate the guiding vision for the school and lead its realisation • Lead the school's engagement in a continuous process of self-evaluation • Critique their practice as leaders and develop their

	understanding of effective and sustainable leadership • Promote and facilitate the development of student voice and student leadership • Build professional networks with other school leaders
Short description of the key competence identified:	Teachers use a range of digital technologies to design learning and assessment activities for their students. Teachers design or adapt learning experiences that incorporate digital technologies and make learning activities relevant and meaningful to support students' learning. Teachers use appropriate digital technologies to design learning activities that facilitate personalised and differentiated learning. Teachers use appropriate digital technologies to design complex, real-world problems and structure them in a way that incorporates key subject matter concepts. Teachers confidently, ethically and effectively use digital technologies for managing, monitoring and recording student progress. Teachers are aware of, and purposefully use, a range of digital technologies appropriate to the learning objectives and learning needs of their students when designing learning activities. Teachers use appropriate digital technologies and teaching strategies to enable the development of students' literacy and numeracy skills across the curriculum. The principal and other leaders in the school have effective systems for monitoring students' progress and development. They recognise that digital technologies can support systematic monitoring to help students reach their full potential. The school understands how access to digital technologies can create divides and how students' social and economic conditions can impact the way technology is used. The principal and other leaders in the school ensure that the effective use of digital technologies for learning, teaching and assessment is included in teachers' review of their own practice. The board of management and principal are proactive in articulating a vision for the use of digital technologies as outlined in the Digital Strategy for Schools. This vision is actively communicated internally and to the wider school community. The use of digital technology is considered and embedded where appropriate throughout the school self-evaluation process. The principal and other leaders in the school ensure that technology systems are in place to support the digital pedagogical practices within the school. They question their own practice in relation to the use of digital technologies through processes of personal reflection and identify areas of their practice that require improvement. The principal and other leaders in the school value students' views, and support students' involvement in how digital technologies are being used to support their learning. The principal and other leaders in the school engage in professional dialogue with their peers and relevant national bodies around the use of digital technologies for learning, teaching and assessment. They seek to apply what they learn to their practice.

Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	advanced
Link to the initiative of pdf:	https://www.education.ie/en/Schools-Colleges/Information/Information-Communications-Technology-ICT-in-Schools/digital-learning-framework-post-primary.pdf
Additional information:	

Annex 3.10

Title of the existing competence framework:	Professional Development Framework for Digital Learning
Authors:	Department of Basic Education, South Africa
Year of Publication:	2018
Country of Publication:	South Africa
Target Group:	Educators
Short description of the document:	The purpose of this Framework is to provide guidelines for professional development, specifically in order to ensure competent educators who "use ICTs to enhance teaching and learning" and leaders and support staff who are able to facilitate the development of educator digital learning competencies. The primary target audience of this Framework is therefore teacher trainers, school leaders and teachers, e-learning specialists and curriculum subject specialists. However, role players at all levels will be implicated in the implementation of this Framework. The main aim of the Framework is to: Define professional development for digital learning in an education system that seeks to improve access, quality, equity, redress and efficiency.
Key Competence identified:	Adopt the habit of an enquiring mind regarding the educational value of using digital tools and resources, Be reflective about challenging current digital learning and teaching practice, Understand the role of the teacher, the learner and the digital resources during digital learning, Participate in local and global professional learning communities, Select appropriate digital tools and resources when fulfilling the roles of the educator, Integrate digital tools and resources to enhance learning objectives in various learning environments, Develop learners' global awareness and understanding using digital communication and collaboration tools, Transform learning through the innovative use of digital tools and resources, Enhance class management, assessment and feedback processes through the use of digital resources, Integrate learners' skills development in terms of digital literacies with curriculum-based learning, Demonstrate commitment to the vision for digital learning in the province, district and school, Accept responsibility for planning and implementing digital

	learning at the school, Initiate peer support and collaborative, work-place learning.
Short description of the key competence identified:	Adopt the habit of an enquiring mind regarding the educational value of using digital tools and resources. Conduct self-initiated research on how technologies could help you enhance your roles as an educator. Conduct self-initiated research on how digital tools and resources can impact on teaching and learning in your subject/ phase. Be willing to explore opportunities, independently or with others, and not feel threatened by the use of digital tools and resources. Develop an informed opinion on the value of digital tools and resources for enhancing achievement of learning/lesson objectives. Be reflective about challenging current digital learning and teaching practice. Pause for thought about the effectiveness of learning after each session in which you have used digital tools and resources. Share the outcomes of your lesson reflections (successes and challenges) with others and consider their feedback. Evaluate your options if you have identified a need for a different approach. Implement ideas about new approaches to teaching and learning using digital tools and resources that you have selected. Use a variety of techniques to identify your developmental needs. Understand the role of the teacher, the learner and the digital resources during digital learning. Be aware of different approaches to teaching and learning that you could use strategically to facilitate learning. Set curriculum learning objectives before identifying media and resources, digital or not. Identifying appropriate digital tools and resources, and knowing when their use would be distracting or ineffective. Planning learner engagement that will be enhanced by the use of digital tools and resources. Participate in local and global professional learning communities. Attend workshops and conferences as much as your circumstances allow. Engage in dialogue with colleagues at your institution about the integration of digital tools and resources. Develop an online professional learning community (PLC) of people with similar educational interests. Select appropriate digital tools and resources when fulfilling the roles of the educator. Produce written documents. Process numerical data. 5.3 Deliver presentations using multimedia. Communicate and collaborate. Create, publish and share content. Design graphics.

	Design interactive learning activities. Integrate digital tools and resources to enhance learning objectives in various learning environments. Plan the strategic use of digital content resources before, during and/or after the lesson. Plan learner-centred access to digital tools and resources as and when appropriate. Address the diverse needs of all learners and providing equitable access to appropriate digital tools and resources. Afford learners the opportunity to share knowledge and skills using digital platforms Develop learners' global awareness and understanding using digital communication and collaboration tools. Design learning that addresses real-life issues aligned to the curriculum. Design learning activities that require interaction or collaboration between your learners and a local or global community. Design learning in your class in which learners use digital communication and collaboration tools. Transform learning through the innovative use of digital tools and resources. Explore new uses for established digital tools and resources Explore opportunities offered by new digital tools and resources Facilitate learning that was not possible before the introduction of digital tools and resources Understand the impact of digital tools and resources on the nature of learning. Enhance class management, assessment and feedback processes through the use of digital resources. Use digital productivity tools to create and administer tests, exams and assessment tools. Use digital communication and collaboration tools, where appropriate, to support dialogue between learners and their teacher. Use digital tools and resources to design diagnostic assessment tools. Organise and monitor learning activities using online resources similar to a blog or learning management system. Integrate learners' skills development in terms of digital literacies with curriculum-based learning. Design integrated activities that develop learners' information skills while pursuing curriculum goals. Design integrated activities that develop learners' digital literacy skills while pursuing curriculum goals. Design integrated activities that develop learners' media literacy skills while pursuing curriculum goals. Promote and model safe, legal and ethical use of digital information resources.

	Demonstrate commitment to the vision for digital learning in the province, district and school. Implement the key ideas of the Professional Development Framework for Digital Learning. Apply the provincial digital learning guidelines to your planning. Implement the school's strategy for digital learning. Accept responsibility for planning and implementing digital learning at the school. Participate in the formulation of school digital learning planning at your institution. Evaluate your role in implementing digital learning strategies at your institution. Be a leader in managing change related to learning using technologies. Build on capacity in colleagues to accept responsibility and implement digital learning. Initiate peer support and collaborative, work-place learning. Engage peers in exploratory conversations about using digital tools and resources. Support peers in their implementation of new ideas and approaches to using digital tools and resources. Share knowledge and experiences of using digital tools and resources your peers.
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	All levels are represented.
Link to the initiative of pdf:	https://www.schoolnet.org.za/wp-content/uploads/PROFESSIONAL-DEVELOPMENT-FRAMEWORK-FOR-DIGITAL-LEARNING-FINAL.pdf
Additional information:	

Annex 3.11

Title of the existing competence framework:	Technology in Education Framework: Teaching and Learning, Administrative Operations, Provincial Infrastructure
Authors:	Ministry of Education
Year of Publication:	2013
Country of Publication:	Canada
Target Group:	Students K-12 (Grades 1-12) and their teachers
Short description of the document:	Saskatchewan's PreK-12 education system fosters and promotes digital fluency1 and the infusion of technology in teaching and learning to improve outcomes for all students. Students are fluent for a digital age, handling complexity with adaptability and creativity through the use of real-world tools and processes. Educators and administrators are fluent in using and applying technology to enrich and enhance student learning and their own learning and professional growth. Educational leaders ensure the integration of technology to support productive systems for learning and administration.
Key Competence identified:	Saskatchewan's educational system promotes the development and deepening of student and educator digital fluency. Students and educators competently and readily use technologies, including applications, devices, and networks, to communicate effectively, collaborate purposefully, consume strategically, produce creatively, manage reflectively, and lead ethically for improved student achievement. Students and educators participate discerningly in a global digital society. Students have equitable access to high quality instruction through flexible approaches using technology that meet the diverse needs of students and teachers within their school division. An array of high quality digital resources is available to teachers and students to support teaching and learning in a variety of instructional settings. School division and school administrators and support staff use technologies to maximize effectiveness and efficiency in administrative operations. Staff and students benefit from a business environment that supports effective and equitable use of technologies. Administrators and support staff leverage technologies to support teaching and learning. A secure, stable, and evolving provincial educational technology infrastructure that is accessible, sustainable, and responsive to the needs of the education sector exists.
Short description of the key competence identified:	Saskatchewan's educational system promotes the development and deepening of student and educator digital fluency. Curriculum outcomes and indicators describe what students must know and be able to do to strengthen and extend digital fluency.

	Educators leverage technologies in their pedagogy for improved student understanding. Classroom practices and learning experiences are routinely shaped by and improved through the strategic and effective use of a variety of existing and emergent technologies. Educators and educational partners use technologies to collaborate, create, and share exemplary supports for learning, including pedagogical insights and approaches. Students and educators competently and readily use technologies, including applications, devices, and networks, to communicate effectively, collaborate purposefully, consume strategically, produce creatively, manage reflectively, and lead ethically for improved student achievement. Students and educators: Engage others to originate and share information, express and assess ideas, build understanding, and collaborate to produce meaningful works. Generate, collect, interrogate, and interpret data; locate, navigate through, and critically assess information and its source(s) across a variety of media; strengthen literacies; construct and represent knowledge; and share, locally and globally, their work. Devise and practise strategies to maintain, locate, and access, systematically and safely, digital information. Strengthen personal learning strategies and refine solution-seeking processes to facilitate and promote responsible, ethical, and legal uses of technologies. Students and educators participate discerningly in a global digital society. Students and educators safely engage, with others and with digital content, to: Pursue opportunities for personal, social, and economic engagement and advocacy. Explore creative self-expression and deepen their sense of self, community, and place. Achieve personal and professional goals. Engage in purposeful lifelong learning. Students have equitable access to high quality instruction through flexible approaches using technology that meet the diverse needs of students and teachers within their school division. Distance and online learning opportunities are available to students, as required. Intra- and inter-school division learning opportunities are available to students with local support provided. Distance learners have success rates that are equivalent to students in traditional classroom environments. d) Assistive technology and technical support is available to students with intensive needs and/or school personnel.

	An array of high quality digital resources is available to teachers and students to support teaching and learning in a variety of instructional settings. Resources are evaluated according to curriculum fit, effectiveness, and research-based best practices. Sharing of resources among teachers occurs in day-to-day practice. New high quality resources are developed annually, and previously developed resources are updated, as required. School division and school administrators and support staff use technologies to maximize effectiveness and efficiency in administrative operations. Data collection, analysis, and reporting processes are standardized and results used to inform decision making. Common applications are used to manage information, communication, resources, and facilities. School divisions work collaboratively with one another and the Ministry to deliver effective and efficient information technology services. Staff and students benefit from a business environment that supports effective and equitable use of technologies. Procedures are implemented to facilitate continuous improvement of technology systems, including replacement cycles. Appropriate, cost-effective technologies support the diverse needs of teachers, students, administrators, and support staff. Equitable access to technologies is provided. Administrators and support staff leverage technologies to support teaching and learning. New technologies are evaluated for their potential to support student learning. Technologies are provided for effective communication and collaboration among stakeholders. Assistive technology is provided to support student learning. A secure, stable, and evolving provincial educational technology infrastructure that is accessible, sustainable, and responsive to the needs of the education sector exists. Students and teachers have safe, reasonable, and equitable access to one another and to the world. Teachers and students have access to appropriate networks, technologies, applications, and digital resources. Policies and guidelines ensure compatibility of technologies. A robust infrastructure for technology is implemented and maintained, including integrated interoperable technology systems to support management, administrative operations, and teaching and learning.
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Intermediate

Link to the initiative of pdf:	http://publications.gov.sk.ca/documents/11/85655-Technology-in-Education-Framework.pdf
Additional information:	

Annex 3.12

Title of the existing competence framework:	EDUCATIONAL LEADERSHIP COMPETENCE FRAMEWORKS LOMCE (Organic Law)
Authors:	Ministry of Education and Vocational Training
Year of Publication:	2014
Country of Publication:	Spain
Link the PDF/website:	http://www.educacionyfp.gob.es/educacion/mc/lomce/autonomia-centros/direccion-centros/curso-directores.html
Short description of the document:	The organic law establishes specific requirements for educational managers. They suggest a training course related to the development of the managerial function to access management positions in public educational establishments.
AREA of the Key Competence identified:	General competences: • Leadership and promotion of teamwork; • Information management and decision making; • Communication; • Conflict management and coexistence; • Organization, management and coordination of an educational centre; • Strategic management: planning, implementation and evaluation of plans and projects; • Control and supervision; • Management of change and innovation.
Key Competences identified:	Specific competences: • Application of the regulatory framework; • Use of Information and Communication Technologies; • Administrative and economic management; • Direction and management of human resources; • Management of institutional documents; • Organization of time and spaces; • Participation of the educational community and the promotion of the external image; • Institutional management; • Evaluation, improvement plans and promotion of the quality of the center.
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	N/A
Additional information:	General characteristics of training courses and updating of managerial

	skills: • Provided by the Ministry of Education, Culture and Sport and Autonomous Communities. • Aimed at acquiring the skills necessary to perform the functions of the post of director or director of public educational centres. • Valid throughout the national territory. • Valid for eight years. Need to update. • Minimum duration of training courses will be 120 hours.

Annex 3.13

Title of the existing competence framework:	Common Framework of Digital Teaching Competence
Authors:	Ministry of Education, Culture and Sport - National Institute of Educational Technologies and Teacher Training
Year of Publication:	2017
Country of Publication:	Spain
Link the PDF/website:	http://educalab.es/documents/10180/12809/MarcoComunCompeDigiDoceV2.pdf/e8766a69-d9ba-43f2-afe9-f526f0b34859
Short description of the document:	Common framework for digital teaching competence. The digital competence refers to the creative, critical and safe use of information and communication technologies to achieve objectives related to work, employability, learning, the use of free time, inclusion and participation in society.
AREA of the Key Competence identified:	• Information and information literacy • Communication and collaboration • Digital content creation • Security • Problem solving
Key Competences identified:	• Navigation, search and filtering of information, data and digital content • Evaluation of information, data and digital content • Storage and retrieval of information, data and digital content • Interaction through digital technologies • Sharing information and content • Online citizen participation • Collaboration through digital channels • Digital Identity Management • Development of digital contents • Integration and re-elaboration of digital contents • Copyright and licenses • Programming
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	3 levels: • Basic • Intermediate

	• Advanced
Additional information:	N/A

Annex 3.14

Title of the existing competence framework:	Catalonia: Digital framework - Digital Agenda 2020
Authors:	Government of Catalonia
Year of Publication:	2018
Country of Publication:	Spain (Local: Catalonia)
Link the PDF/website:	http://smartcatalonia.gencat.cat/web/.content/01_SmartCAT/documents/Agenda-Digital-per-a-Catalunya-2020.pdf
Short description of the document:	Reference to the European and Catalan digital framework. It aims to encourage innovation, economic growth and the improvement of everyday life.
AREA of the Key Competence identified:	• Entrepreneurial competitiveness • Digital citizens and social cohesion • Electronic administration of quality and efficiency • Advanced welfare services • Digital security • Development of the Catalan ICT sector • Technological infrastructures • Innovation and digital research
Key Competences identified:	• Promoting competitiveness • Digital citizenship • Developing research, innovation and technology transfer networks • Entrepreneurship and internalization • Security in a digital environment • Sustainability
Level of Proficiency (Foundation/basic/Intermediate/ Advance)* :	N/A
Additional information:	

Annex 3.15

Title of the existing competence framework:	Digital Teaching Competence of the Teachers of Catalonia
Authors:	Government of Catalonia, The Department of Education

Year of Publication:	2018
Country of Publication:	Spain (Local: Catalonia)
Link the PDF/website:	http://ensenyament.gencat.cat/web/.content/home/departament/publicacions/monografies/competencia-digital-docent/competencia-digital-docent.pdf
Short description of the document:	Digital teaching competences, i.e., didactic and methodological skills as well as ICT competences related to the instrumental use of technologies.
AREA of the Key Competence identified:	The framework defines 5 dimensions, each of them including a series of descriptors: • Didactic design, planning and implementation • Organization and management of educational spaces and resources • Communication and collaboration • Ethics and digital civility • Professional development
Key Competences identified:	For each area, 26 descriptors of competencies have been identified, each one reflecting an action or conduct specific to the dimension. We think that the following ones are key to L-Cloud topics: • Use of digital technologies as resources and strategies in teaching and learning processes. • Selection of digital resources for the design of activities and educational planning • Incorporation of digital technologies in coherence with the educational project and the infrastructures of the centre • Use of digital technologies to meet the diversity of students • Use of digital technologies in student monitoring and assessment • Application of innovative methodologies with the use of digital technologies • Knowledge and application of rules for the use of resources, infrastructures and digital spaces • Participation in institutional projects related to digital technologies. • Communication using digital technologies • Active participation in educational networks mediated by digital environments • Promotion of collaborative construction of knowledge with digital resources • Protection of fundamental rights to personal integrity and privacy in the use of digital technologies. • Responsible, safe and healthy use of digital technologies • Promotion of access to resources with respect to intellectual property

	• Promotion of digital inclusion • Encouraging the construction of an adequate digital identity • Configuration of the professional digital identity itself • Reflective practice on professional activity related to digital technologies • Integration of teaching innovations based on digital technologies • Participation in educational research related to digital technologies • Creation and dissemination of educational contents and resources in digital format. • Participation in virtual learning communities Participation in continuous training activities in the field of digital competence
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Three levels: 1. Basic 2. Intermediate 3. Advance
Additional information:	

Annex 3.16

Title of the existing competence framework:	Digital competences in Spain, how to improve them?
Authors:	Fundation "Digital Spain" (Fundación España Digital)
Year of Publication:	2015
Country of Publication:	Spain
Link the PDF/website:	http://www.espanadigital.org/cms/wp-content/uploads/2015/07/Dossier_Foro_Formacion_2015.pdf
Short description of the document:	It is a summary of the work carried out during 2015 by the Digital Training Forum. Following the description of the present state of digital competences and the future evolution of the ICT labour market, a series of initiatives launched at national and international level are presented.
AREA of the Key Competence identified:	• Planning • Construction • Execution • Habilitation • Management • E-Skills.
Key Competences identified:	• Design of apps • Innovation • Users' guidance • Problem management

	• Development and management of strategies for information security • Development and management of strategies for ICT quality • Management of knowledge and information • Needs analysis • Digital marketing • Project and portfolio management • Risk management
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	N/A
Additional information:	

Annex 3.17

Title of the existing competence framework:	Leadership Competency Framework
Authors:	National Charter School Resource Center (NCSRC)
Year of Publication:	2013
Country of Publication:	USA
Link the PDF/website:	https://charterschoolcenter.ed.gov/sites/default/files/files/field_event_attachments/AZ%20-%20School%20Leader%20Competencies.pdf
Short description of the document:	In the "Standards for School Leaders: Competency Frameworks and their Applicability" study, Professor Peter Earley from The London Center for Leadership in Learning Institute of Education, University of London, UK, shows that successful schools are the result of a high-quality leadership and leadership role is transformative, distributed and centered on learning. The study shows that many educational systems have developed standards or competency frameworks for school leaders. The study exemplifies the most recent version of standards for headteachers in England can be found on the National College website but other examples of competences can easily be found through a web-search. Competency frameworks and professional standards for school leaders are now widespread but expressed in differing degrees of detail with some examining the leader's role in fine detail and making a distinction between functional (or occupational) and personal competences, and with the evidence needed to demonstrate 'competence' at every level. National professional standards are intended to be used in a number of ways; for example, to underpin individuals' professional development and

	reflection, for accreditation purposes, for recruitment and selection, to help write job descriptions, assist performance management or annual reviews or to inform the content of leadership development programmes.
AREA of the Key Competence identified:	The Standards are set out in six key non-hierarchical areas. These six key areas, when taken together, represent the role of the headteacher. Shaping the Future Leading Learning and Teaching Developing Self and Working with Others Managing the Organisation Securing Accountability Strengthening Community Within each of these key areas, the knowledge requirements, professional qualities (skills, dispositions and personal capabilities headteachers bring to the role) and actions needed to achieve the core purpose are identified. Whilst particular knowledge and professional qualities are assigned to one of the six key areas, it is important to emphasise that they are interdependent and many are applicable to all key areas.
Key Competences identified:	Shaping the Future Knowledge Knows about: Local, national and global trends Ways to build, communicate and implement a shared vision Strategic planning processes Strategies for communication both within and beyond the school New technologies, their use and impact Leading change, creativity and innovation Professional Qualities Is committed to: A collaborative school vision of excellence and equity that sets high standards for every pupil The setting and achieving of ambitious, challenging goals and targets The use of appropriate new technologies Inclusion and the ability and right of all to be the best they can be Is able to: Think strategically, build and communicate a coherent vision in a range of compelling ways Inspire, challenge, motivate and empower others to carry the vision forward Model the values and vision of the school Leading Learning & Teaching Knowledge Knows about: Strategies for raising achievement and achieving excellence The development of a personalised learning culture within the school

	Models of learning and teaching The use of new and emerging technologies to support learning and teaching Principles of effective teaching and assessment for learning Models of behaviour and attendance management Strategies for ensuring inclusion, diversity and access Curriculum design and management Tools for data collection and analysis Using research evidence to inform teaching and learning Monitoring and evaluating performance School self evaluation Strategies for developing effective teachers Professional Qualities Is committed to: The raising standards for all in the pursuit of excellence The continuing learning of all members of the school community The entitlement of all pupils to effective teaching and learning Choice and flexibility in learning to meet the personalised learning needs of every child Is able to: Demonstrate personal enthusiasm for and commitment to the learning process Demonstrate the principles and practice of effective teaching and learning Access, analyse and interpret information Initiate and support research and debate about effective learning and teaching and develop relevant strategies for performance improvement Acknowledge excellence and challenge poor performance across the school Developing Self and Working with Others Knowledge Knows about: The significance of interpersonal relationships, adult learning and models of continuing professional development (CPD) Strategies to promote individual and team development Building and sustaining a learning community The relationship between managing performance, CPD and sustained school improvement The impact of change on organisations and individuals Professional Qualities Is committed to: Effective working relationships Shared leadership Effective team working Continuing professional development for self and all others within the school Is able to: Foster an open, fair, equitable culture and manage conflict Develop, empower and sustain individuals and teams

	Collaborate and network with others within and beyond the school Challenge, influence and motivate others to attain high goals Give and receive effective feedback and act to improve personal performance Accept support from others including colleagues, governors and the LEA Managing the Organisation Knowledge Knows about: Models of organisations and principles of organisational development Principles and models of self-evaluation Principles and practice of earned autonomy Principles and strategies of school improvement Project management for planning and implementing change Policy creation, through consultation and review Informed decision-making Strategic financial planning, budgetary management and principles of best value Performance management Personnel, governance, security and access issues relating to the diverse use of school facilities Legal issues relating to managing a school including Equal Opportunities, Race Relations, Disability, Human Rights and Employment legislation The use of new and emerging technologies to enhance organisational effectiveness Professional Qualities Is committed to: Distributed leadership and management The equitable management of staff and resources The sustaining of personal motivation and that of all staff The developing and sustaining of a safe, secure and healthy school environment Collaborating with others in order to strengthen the school's organisational capacity and contribute to the development of capacity in other schools Is able to: Establish and sustain appropriate structures and systems Manage the school efficiently and effectively on a day-to-day basis Delegate management tasks and monitor their implementation Prioritise, plan and organise themselves and others Make professional, managerial and organisational decisions based on informed judgements Think creatively to anticipate and solve problems Securing Accountability Knowledge Knows about: Statutory educational frameworks, including governance Public services policy and accountability frameworks, including self

	evaluation and multi-agency working The contribution that education makes to developing, promoting and sustaining a fair and equitable society The use of a range of evidence, including performance data, to support, monitor, evaluate and improve aspects of school life, including challenging poor performance The principles and practice of quality assurance systems, including school review, self evaluation and performance management Stakeholder and community engagement in, and accountability for, the success and celebration of the school's performance Professional Qualities Is committed to: Principles and practice of school self evaluation The school working effectively and efficiently towards the academic, spiritual, moral, social, emotional and cultural development of all its pupils Individual, team and whole-school accountability for pupil learning outcomes Is able to: Demonstrate political insight and anticipate trends Engage the school community in the systematic and rigorous self-evaluation of the work of the school Collect and use a rich set of data to understand the strengths and weaknesses of the school Combine the outcomes of regular school self-review with external evaluations in order to develop the school Strengthening Community Knowledge Knows about: Current issues and future trends that impact on the school community The rich and diverse resources within local communities – both human and physical The wider curriculum beyond school and the opportunities it provides for pupils and the school community Models of school, home, community and business partnerships The work of other agencies and opportunities for collaboration Strategies which encourage parents and carers to support their children's learning The strengths, capabilities and objectives of other schools Professional Qualities Is committed to: Effective team work within the school and with external partners Work with other agencies for the well-being of all pupils and their families Involvement of parents and the community in supporting the learning of children and in defining and realising the school vision Collaboration and networking with other schools to improve outcomes Is able to: Recognise and take account of the richness and diversity of the

	school's communities Engage in a dialogue which builds partnerships and community consensus on values, beliefs and shared responsibilities Listen to, reflect and act on community feedback Build and maintain effective relationships with parents, carers, partners and the community, that enhance the education of all pupils
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Each competency is broken down into levels and provides a detailed illustration of it.
Additional information:	

Annex 3.18

Title of the existing competence framework:	Standards for school leaders: competency frameworks and their applicability
Authors:	Prof. Peter Earley London Centre for Leadership in Learning Institute of Education, University of London, United Kingdom
Year of Publication:	2012
Country of Publication:	United Kingdom
Link the PDF/website:	http://www.schoolleadership.eu/sites/default/files/standards-school-leaders-competency-frameworks-applicability-2012_6.pdf
Short description of the document:	
AREA of the Key Competence identified:	
Key Competences identified:	
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	
Additional information:	

Annex 3.19

Title of the existing competence framework:	UNESCO ICT Competency Framework For Teachers
Authors:	UNESCO
Year of Publication:	2011
Country of Publication:	
Link the PDF/website:	https://www.ictedupolicy.org/resource-library/resource-library/unesco-ict-competency-framework-teachers https://unesdoc.unesco.org/ark:/48223/pf0000213475
Short description of the document:	UNESCO ICT Competency Framework for Teachers (ICT-CFT) is intended to inform educational policy makers, teacher-educators, providers of professional learning and working teachers on the role of ICT in educational reform, as well as to assist Member States in developing national ICT competency standards for teachers with an ICT in Education Master Plan approach.
AREA of the Key Competence identified:	The Framework therefore addresses all aspects of a teacher's work: • Understanding ICT in education • Curriculum and assessment • Pedagogy • ICT • Organisation and administration Teacher professional learning
Key Competences identified:	THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS Framework is arranged in three different approaches to teaching (three successive stages of a teacher's development). The first is Technology Literacy, enabling students to use ICT in order to learn more efficiently. The second is Knowledge Deepening, enabling students to acquire in-depth knowledge of their school subjects and apply it to complex, real-world problems. The third is Knowledge Creation, enabling students, citizens and the workforce they become, to create the new knowledge required for more harmonious, fulfilling and prosperous societies. ➢ Understanding ICT in education Technology Literacy • Policy awareness Knowledge Deepening • Policy understanding Knowledge Creation • Policy innovation ➢ Curriculum and assessment Technology Literacy

	• Basic knowledge Knowledge Deepening • Knowledge application Knowledge Creation • Knowledge society skills ➢ Pedagogy Technology Literacy • Integrate technology Knowledge Deepening • Complex problem solving Knowledge Creation • Self management ➢ ICT Technology Literacy • Basic tools Knowledge Deepening • Complex tools Knowledge Creation • Pervasive tools ➢ Organisation and administration Technology Literacy • Standard classroom Knowledge Deepening • Collaborative groups Knowledge Creation • Learning organizations ➢ Teacher professional learning Technology Literacy • Digital literacy Knowledge Deepening • Manage and guide Knowledge Creation • Teacher as model learner
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Each competency is broken down into levels and provides a detailed illustration of it.
Additional information:	

Annex 3.20

Title of the existing competence framework:	Teach to Lead – Leadership Competency Framework
Authors:	Teach for Australia
Year of Publication:	9/2016
Country of Publication:	Australia
Link the PDF/website:	https://teachforaustralia.org/content/uploads/2016/09/TTL-Leadership-Competency-Framework.pdf
Short description of the document:	The Teach to Lead – Leadership Competency Framework was published in order to provide a framework for the one-year leadership development program for teachers with formal leadership roles in schools both primary and secondary throughout Australia, and targets middle leaders who have at least one year of leadership experience in a school-based role, who are responsible for a team throughout the year, deliver professional development, provide feedback on classroom observation and are in a position to coach other staff members.
AREA of the Key Competence identified:	The Framework used to guide the learning objectives in the Teach To Lead program identifies four focus areas for developing beliefs and behaviours that enable leaders to facilitate improved outcomes for all students: - Leading Self: Leaders build a strong understanding of themselves to optimise professional relationships, sustain wellbeing, harness emotional energy, and grow in one's practice - Leading Others: Leaders develop others through coaching, delivering feedback and holding teams accountable for achieving goals; Understand, facilitate and support high - performance team work - Leading Learning: Leaders develop and implement approaches with teams to improve teaching and learning, making effective use of data and evidence to inform actions - Leading Change: Leaders engage their team to work towards a shared vision and to plan, implement and embed changes that generate improvement in outcomes for all students These focus areas for developing leadership capability work in partnership and 'from the inside out'. That is, it is assumed that an individual must understand their own mindsets and behaviours, if serving in a position that effectively influences the journey of others and impacts organization - wide change. Specific competencies that identify the actions leaders perform, in relation to each of these focus areas, are provided in the Framework. Participants can use these competencies to establish a baseline from which they can set goals, orientate feedback about their leadership practice and monitor their leadership development. The Framework is designed to encourage reflection on where one's practice lies in terms of frequency of the behaviour, recognizing that our candidates are in the process of developing these skills as consistent aspects of their

	leadership. Upon reading the competencies, each behaviour can be rated on a scale from rarely to always.
Key Competences identified:	The following diagram summarizes the dimensions of the Teach To Lead Leadership Framework.  Source: Teach For Australia – TEACH TO LEAD, Leadership Competence Framework More specifically the competencies identified are:

Competences			
Leading Self	**Leading Oth-ers**	**Leading Learn-ing**	**Leading Change**
Developing Self-Awareness	Cultivating Relationships	Using Research and Evidence	Creating a Shared Vision
Managing Emo-tions	Developing Others	Analyzing and Responding to Student Data	Planning Stra-tegically
Building Resili-ence	Maximising Team Perfor-mance	Delivering Pro-fessional De-velopment Team Perfor-mance	Managing Change
Growing as a Professional	Monitoring & Reinforc ng Account bility	Observing & Giving Feed-back	Engaging Stakeholders

Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Advenced?
Additional information:	TEACH FOR AUSTRALIA is a non-profit organisation, supported by the Australian Government Department of Education & Training, and aims in ensuring that all children can achieve their potential. Its vision for Australia is for all children to , regardless of background, attain an excellent education and moreover recruit Australia's future leaders into the classroom and inspire, connect and empower them to a lifetime of action towards educational equity. One of its initiatives, Teach To Lead was established in partnership with a four-year funding commitment from the Sidney Myer Fund and Gandel Philanthropy. The Victorian Department of Education and

	Training's Bastow Institute of Educational Leadership (Bastow) contributes funding each year for Teach To Lead in Victorian government schools.

Annex 3.21

Title of the existing competence framework:	Leadership Competency Framework
Authors:	Glasgow City Council
Year of Publication:	N/A
Country of Publication:	UK
Link the PDF/website:	http://www.glasgow.gov.uk/CHttpHandler.ashx?id=4082
Short description of the document:	This document sets out the Glasgow City Council Leadership Competency Framework. It contains detailed descriptions of each competency and the levels that can be attained within each competency. The Framework has been created through detailed research, tailored to the specific needs and environment of Glasgow City Council, and is applicable to leadership roles at any level of the service.
AREA of the Key Competence identified:	In the framework are identified 15 competencies divided in 3 areas: - Personal Qualities; - Setting Direction; - Delivering the Service.
Key Competences identified:	Personal qualities: L1 Self Belief; L2 Self awareness; L3 Self management; L4 Drive for improvement in Public Services; L5 Personal integrity; Setting Direction: L6 Seizing the future L7 Intellectual flexibility L8 Broad scanning L9 Contextual Astuteness L10 Drive for results Delivering the Service: L11 Leading change through people L12 Holding to account L13 Empowering others L14 Effective and strategic influencing L15 Working effectively with others
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Each competency is broken down to levels, each of which gives an illustration of what the competency might look like.
Additional information:	

Annex 3.22

Title of the existing competence framework:	Digital Competence of Educators
Authors:	Christine Redecker (Author) Yves Punie (Editor) – Joint Research Center
Year of Publication:	2017
Country of Publication:	Luxemburg
Link the PDF/website:	https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu
Short description of the document:	This study presents a framework for the development of educators' digital competence in Europe. It aims to help Member States in their efforts to promote the digital competence of their citizens and boost innovation in education.
AREA of the Key Competence identified:	The framework is made up of 3 different clusters: 1) Educators' professional competences o Professional engagement: 2) Educators' pedagogical competences: o Digital resources: o Teaching and learning: o Self-regulated learning; o Assessment: o Empowering learning: 3) Learners' competences o Facilitating Learning Digital Competences:
Key Competences identified:	4) Educators' professional competences - Professional engagement: o Organizational communication; o Professional collaboration; o Reflective practices; o Digital CPD 5) Educators' pedagogical competences: - Digital resources: o Selecting o Creating and modifying o Managing, protecting and sharing - Teaching and learning: o Teaching; o Guidance; o Collaborative learning; o Self-regulated learning; - Assessment: o Assessment strategies; o Analysing evidence o Feedback and Planning

	- Empowering learning:
	  ○ Accessibility and Inclusion;
	  ○ Differentiation and personalization;
	  ○ Actively engaging learners.
	6) Learners' competences
	- Facilitating Learning Digital Competences:
	  ○ Information and media literacy
	  ○ Communication
	  ○ Content creation
	  ○ Responsible use
	  ○ Problem solving

Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Lever of proficiency recognized in the document: Newcomer (A1) and Explorer (A2), Integrator (B1) and Expert (B2), Leader (C1) and Pioneer (C2).
Additional information:	

Annex 3.23

Title of the existing competence framework:	STRATEGISCH COMPETENTIE DENKEN
Authors:	*Arjan Vernhout* arjan@v-consult.nl
Year of Publication:	*2018*
Country of Publication:	THE NETHERLANDS
Link the PDF/website:	http://competentiedenken.nl/competentieframework.html
Short description of the document:	An in depth description of the competence framework how to strategically apply competences.
AREA of the Key Competence identified:	Human Resource Management
Key Competences identified:	Competence Management; Competence Development; Assessing Results; Set Targets
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	advanced
Additional information:	A fundament for competent and agile organisations

Annex 3.24

Title of the existing competence framework:	SCHOOLLEIDERSREGISTER PO BASISCOMPETENTIES
Authors:	*Marja Creemers, Directeur m.creemers@schoolleidersregisterpo.nl*
Year of Publication:	*unknown*
Country of Publication:	*THE NETHERLANDS*
Link the PDF/website:	*https://www.schoolleidersregisterpo.nl/registreren/basiscompetenties*
Short description of the document:	" Schoolleidersregister PO " = Schoolleaders Registar Primary Education targets to empower the image of the profession of schoolleader. With their registration the Schoolleader Primary Education present their drive for quality and life long learning
AREA of the Key Competence identified:	Management in primary education
Key Competences identified:	personal leadership; grip & strategy; development of knowledge & quality; contact in environment; dealing with differences; leadership in change; future in education
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Intermediate to advanced
Additional information:	Since 2013 and selfregulating

Annes 3.25

Title of the existing competence framework:	HET GEHEIM VAN DE INNOVATIEVE SCHOOLLEIDER
Authors:	*Daniëlle Verschuren*
Year of Publication:	*2013*
Country of Publication:	*THE NETHERLANDS*
Link the PDF/website:	*https://www.kpcgroep.nl/media/1210/het-geheim-van-de-innovatieve-schoolleider.pdf*
Short description of the document:	PhD document on "The Secret of the Innovative Schoolleader" Dutch with Summary in English
AREA of the Key Competence identified:	Educational Management in Innovation
Key Competences identified:	All connected to pro-active leadership
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Intermediate to Advanced
Additional information:	"Theory U" - Scharmer 2007

Annex 3.26

Title of the existing competence framework:	Waar blijft de middenmanager? Een onderzoek naar de strategische rol van team- en afdelingsleiders in het voortgezet onderwijs.
Authors:	*Wieland, J.M. Faculty of Law, Economics and Governance Theses (Master thesis)*
Year of Publication:	*2018*
Country of Publication:	*THE NETHERLANDS*
Link the PDF/website:	*https://dspace.library.uu.nl/handle/1874/373165*
Short description of the document:	Master Thesis University of Utrecht on the role of "middle-management" in secondary education.
AREA of the Key Competence identified:	Survey on the strategic role of teamleaders
Key Competences identified:	capacity; empathy; sensitivity;

Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Intermediate
Additional information:	None

Annex 3.27

Title of the existing competence framework:	De leidinggevende in het onderwijs als regisseur
Authors:	Robert-jan Simons
Year of Publication:	2016
Country of Publication:	THE NETHERLANDS
Link the PDF/website:	https://wij-leren.nl/persoonlijk-leiderschap-onderwijs.php'
Short description of the document:	In depth article on the position of the school manager in the role of (film) director.
AREA of the Key Competence identified:	Leading Learning
Key Competences identified:	professional space; ownership; professional attitude; excel; cooperation
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	intermediate to advanced
Additional information:	

Annex 3.28

Title of the existing competence framework:	Competentieontwikkeling M-decreet
Authors:	Departement Onderwijs en Vorming
Year of Publication:	Unknown
Country of Publication:	BELGIUM
Link the PDF/website:	http://onderwijs.vlaanderen.be/nl/competentieontwikkeling-m-decreet
Short description of the document:	Program to assist competence development in education
AREA of the Key Competence identified:	the overall field of primary and secondary education
Key Competences identified:	identify and adress specific needs to improve competemcies
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	basic and intermediate
Additional information:	none

Annex 3.29

Title of the existing competence framework:	Een nieuw profiel voor de leraar secundair onderwijs. Hoe worden leraren daartoe gevormd?
Authors:	Vlaamse Overheid
Year of Publication:	Unknown
Country of Publication:	BELGIUM
Link the PDF/website:	https://www.vlaanderen.be/nl/publicaties/detail/een-nieuw-profiel-voor-de-leraar-secundair-onderwijs-hoe-worden-leraren-daartoe-gevormd-informatiebrochure-bij-de-invoering-van
Short description of the document:	Document and programme to identify a new basic profile for teachers secundary education and the competences connected to it
AREA of the Key Competence identified:	the professional teacher in secondary education

Key Competences identified:	many, all fields are covered
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	basic to intermediate
Additional information:	none

Annex 3.30

Title of the existing competence framework:	Education competency frameworks
Authors:	UK Government
Year of Publication:	2016
Country of Publication:	UK
Link the PDF/website:	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/553167/Education-Sept16.pdf
Short description of the document:	The framework gathers information and applies competencies in order to identify, generate and utilise the best evidence,knowledge, technology and ideas to improve the effectiveness and impact of the UK's aid programme.
AREA of the Key Competence identified:	The Framwork consist of Education Advisers that are able to identify and design education programmes that are evidence based and suited to different contexts.
Key Competences identified:	***Shared competencies in International Development***: Develop and implement policy; Using evidence to inform policy and programming ; Design and manage programmes and projects; Apply key economic and commercial concepts;) Understand the potential for digital technology. ***Primary competencies cover***:Education Policies; Education Systems development; Global Education Context; Equity in education; Evidence, innovation and evaluation. ***Specialist competencies***: ICT in education; Economics of Education; Politics and Governance of Education; WASH ; Health; Evaluation / Research; Conflict and education; Early childhood care and development; Higher Education and skills; climate change and education
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	intermediate to advanced
Additional information:	none

Annex 3.31

Title of the existing competence framework:	Digital Skills competency framework (UK)
Authors:	Education and Training Foundation
Year of Publication:	2018
Country of Publication:	UK
Link the PDF/website:	https://www.et-foundation.co.uk/supporting/support-practitioners/edtech-support/digital-skills-competency-framework/
Short description of the document:	The Digital Teaching Professional Framework is a competency framework for teaching and training practitioners.
AREA of the Key Competence identified:	Formal Education and Training
Key Competences identified:	planning; searching; designing'; adapting;empowering learners; communication; collaboration
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	all levels are addressed
Additional information:	None

Annex 3.32

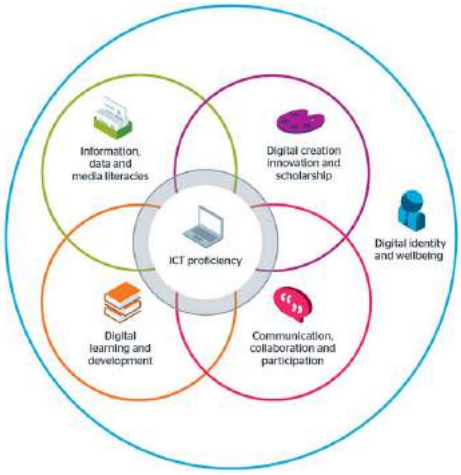
Title of the existing competence framework:	Professional Digital Learning Framework
Authors:	Education and Training Foundation (ETF)
Year of Publication:	2018
Country of Publication:	UK
Link the PDF/website:	https://www.sero.co.uk/etf-edtech/wp-content/uploads/sites/2/2018/08/ETF-EdTech-Competency- HYPERLINK "https://www.sero.co.uk/etf-edtech/wp-content/uploads/sites/2/2018/08/ETF-EdTech-Competency-Framework-V6.pdf" HYPERLINK "https://www.sero.co.uk/etf-edtech/wp-content/uploads/sites/2/2018/08/ETF-EdTech-Competency-Framework-V6.pdf" HYPERLINK "https://www.sero.co.uk/etf-edtech/wp-content/uploads/sites/2/2018/08/ETF-EdTech-Competency-Framework-V6.pdf"Framework-V6.pdf

Short description of the document:	The Professional Digital Learning Framework is a competency framework for teaching and training professionals which will be linked to micro-learning content to support just in time and self-identified training needs and provide a foundation for discovery tool and development plans.
AREA of the Key Competence identified:	Teaching and training professionals
Key Competences identified:	Three Competency levels Level A: Newcomer and Explorer – teachers assimilate new information and develop basic digital practices Level B: Integrator and Expert – teachers apply, further expand and structure on their digital practices Level C: Leader and Pioneer – teachers pass on their knowledge, critique existing practice and develop new practices
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	basic/intermediate/advanced
Additional information:	none

Annex 3.33

Title of the existing competence framework:	Curriculum for Digital Education Leadership
Authors:	Cheryl Brown, Laura Czerniewicz, Cheng-Wen Huang and Tabisa Mayisela (Commonwealth of Learning)
Year of Publication:	2016
Country of Publication:	South Africa
Link the PDF/website:	http://oasis.col.org/bitstream/handle/11599/2442/2016_Brown-Czerniewicz-Huang-Mayisela_Curriculum-Digital-Education-Leadership.pdf
Short description of the document:	The Commonwealth Digital Education Leadership Training in Action project is a programme of the Commonwealth of Learning that intends to promote digital education in the Commonwealth nations. The paper introduces the project's view of the challenges faced in terms of digital education leadership in a global context.
AREA of the Key Competence identified:	Educational School Management; Digital Educational Leadership
Key Competences identified:	Digital Literacy; Digital Education; Digital Leadership
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	all levels are addressed
Additional information:	Challenging is the information on: Digital identities and on : Dimensions that are discerned:situational/critical/access

Annex 3.34

Title of the existing competence framework:	Building digital capabilities framework Leadership Project https://www.jisc.ac.uk/rd/projects/building-digital-capability 
Authors:	JISC (digital skills in teaching)
Year of Publication:	2016
Country of Publication:	UK
Link the PDF/website:	http://repository.jisc.ac.uk/6611/1/JFL0066F_DIGIGAP_MOD_IND_FRAME.PDF
Short description of the document:	The framework has most often been used by digital leaders and staff with an overall responsibility for developing digital capability in their organisation. However, it can be used by staff in any role and by students in any educational setting.
AREA of the Key Competence identified:	ICT proficiency (Functional skills) Information, data and media literacies (Critical use)Digital creation, problem solving and innovation (Creative production)Digital communication, collaboration and participation (Participation)Digital learning and development (Development)Digital identity and wellbeing (Self-actualising)
Key Competences identified:	all levels are addressed
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	
Additional information:	none

Annex 3.35

Title of the existing competence framework:	Leadership competency framework in education
Authors:	Leading Educators
Year of Publication:	2012
Country of Publication:	USA
Link the PDF/website:	http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594 HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594&download" HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594 HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594&download"& HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594&download"download" HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594&download"& HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594&download" HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594 HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594&download"& HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594&download"download" HYPERLINK "http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=1594&download"download
Short description of the document:	The program exists to support experienced teachers.
AREA of the Key Competence identified:	From experienced teachers into middle level leaders, or teacher-leaders.
Key Competences identified:	instructional leadership; cultural leadership; (self) management; core beliefs and mindsets
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	from intermediate to advanced
Additional information:	none

Annex 3.36

Title of the existing competence framework:	UK Professional Standards Framework - UKPSF (UK)
Authors:	Higher Education Academy
Year of Publication:	Don't know
Country of Publication:	UK
Link the PDF/website:	https://www.heacademy.ac.uk/ukpsf
Short description of the document:	A nationally-recognised framework for benchmarking success within HE teaching and learning support. Teaching and supporting learning in higher education.
AREA of the Key Competence identified:	Higher Education
Key Competences identified:	1. Demonstrates an understanding of specific aspects of effective teaching, learning support methods and student learning. 2. Demonstrates a broad understanding of effective approaches to teaching and learning support as key contributions to high quality student learning. 3.Demonstrates a thorough understanding of effective approaches to teaching and learning support as a key contribution to high quality student learning. 4.Demonstrates a sustained record of effective strategic leadership in academic practice and academic development as a key contribution to high quality student learning
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	Intermediate/advanced
Additional information:	none

Annex 3.37

Title of the existing competence framework:	KIPP leadership framework and competency model
Authors:	KIPP
Year of Publication:	2016

Country of Publication:	USA
Link the PDF/website:	https://www.kipp.org/wp-content/uploads/2016/11/KIPP_Leadership_Competency_Model.pdf
Short description of the document:	The model describes the competencies and behaviors considered most important to the performance of Executive Directors, Principals, Vice Principals/Deans and Grade Level Chairs/other teacher leaders, leaders in the regional shared services teams and Foundation staff.
AREA of the Key Competence identified:	higher education management
Key Competences identified:	Drive results ; Manage People ; Build Relationships
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	intermediate to advanced
Additional information:	none

Annex 3.38

Title of the existing competence framework:	National Council of School Leaders: Facilitation competency framework
Authors:	National College for School Leadership
Year of Publication:	2017
Country of Publication:	UK
Link the PDF/website:	https://www.nationalcollege.org.uk/cm-mc-fac-resource-competency-framework.pdf
Short description of the document:	To help both new and more experienced facilitators explore the National College facilitation competency framework (the framework) and to support them in the facilitation of leadership learning.
AREA of the Key Competence identified:	Facilitators in higher education
Key Competences identified:	Self-awareness Emotional; self-awareness; Accurate self-assessment; Self-confidence; Social awareness; Empathy; Contextual awareness; Self-management Emotional self-control; Achievement orientation; Adaptability; Relationship management; Developing others; Co-facilitation
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	intermediate to advanced
Additional information:	none

ANNEX 4: Methodology

Introduction to IO1 and Overall Methodology

L-CLOUD is a two years project, co-funded with the support of the European Union – Key Strategic Partnership for School Education under the European Program Erasmus plus.
L-CLOUD is the acronym that stands for **Developing Tomorrow's Cloud Education Leaders.**

Cloud computing is an innovative technology that uses internet to deliver a wide variety of IT services and it is experiencing an exponential growth. For instance, supporting products such as mobile device applications are multiplying including email, information storage, file sharing, collaborative tools, digital communications and other services.
At the same time, school leaders expectations are changing, so that educational institutions mush show a significant leadership to embrace the challenges of innovative collaborative tools and contents (ex. 24/7 access to secure, reliable networks and the ability to create, deliver and share contents across institutions).
Cloud Computing adoption in education remains fragmented because while Cloud Computing offers many advantages, decision makers are largely unaware of the potential benefits for learning, teaching, administration and management. Therefore, training and support systems are needed to help them keep up to date with the rapidly changing Cloud Computing environment. Leadership is also needed for pedagogical change, otherwise educators will continue the paradox of using old teaching methods but with new tools.

The aim of the first intellectual output is to develop **Guidelines for Skills and Competences for Adaptive Educational Cloud Leaders.** Approaching the future with today technologies is impossible, so we are approaching it by searching for the necessary skills and competences that future school leaders need to handle the evolution of technologies.

In this report DLEARN designs the methodology to drive the partners to deliver a successful comprehensive report that entails the Guidelines for Skills and Competences for Adaptive Cloud Leaders. Each partner will be asked to develop activity and to participate actively.

The first Intellectual Output, **Guidelines for Skills and Competences for Adaptive Education Cloud Leaders**, is divided in the following actions:

A1: Preparation - Clarifications and Definitions
A2: Develop Chapter1
A3: Develop Chapter2
A4: Develop Chapter3

All the information collected in the A1, A2, A3 and A4 will be collected into a comprehensive report.

The report will be the baseline for the development of the IO2. The overall methodology will be validated by the IO2 leaders and the project partners in order to set a common baseline for project development.

The partners involved are:

1. **EACG**-European Association of Career Guidance as project coordinator (CYPRUS);
2. **UB** – Universitat de Barcelona (SPAIN);
3. **Colegiul National Pedagogic "Mircea Scarlat"** (ROMANIA);
4. **DOUKA EKPAIDEFTIRIA AE** - PALLADION LYKEION EKFPAIDEUTHRIA DOUKA (GREECE);

5. **EUROGEO VZW**- EUROPEAN ASSOCIATION OF GEOGRAPHERS (BELGIUM);
6. **DLEARN** - European Digital Learning Network (ITALY).

1. Methodology

1.1 - IO1.A1 Preparation – Clarification and Definitions

1.1.1 - Basic definitions

Dlearn **will introduce the concept of Adaptive Education Cloud Leaders** and the main concepts of L-CLOUD: Educational Leaders and cloud computing.

A **common glossary** will be created also to share the definition that will be useful for the project development (the glossary will be created first as a google doc and then revised to be a word document by the end of the IO1). The Glossary will be developed in the collaboration with all partners.

In the glossary information are stored in alphabetic order, and, below each definition, there is the source where the information is taken from. The glossary wants to follow a bottom-up approach where each partner can upload the necessary definitions under the supervision of IO1 leader, DLEARN, European Digital Learning Network. The glossary entails definitions for complex word and concept that are presented and used for the Intellectual 1 development.

https://docs.google.com/document/d/190TdBUhb8UJuh8v0s9vHz1D9R3Gjss9mLwwsR8FxpmY/edit

Responsible partner: DLEARN with the collaboration of all partners.
Format: Word document, suggested length: 3 pages (depending on the length of the final Glossary);

1.1.2 – State of the Art of Cloud Education leader concepts in Europe and local level;

The partners will be asked to review all the existing guidelines, competence structures and qualification framework regarding the main concepts of project, Adaptive Educational Cloud Leaders, in particular the research will be subdivided in:

- **Leadership concepts and approaches, goals and outcomes;**
- **Cloud computing technologies and their use into the educational system.**

Taking into consideration the target group of the project, namely the teachers, headmasters and educational leaders' information can be found, for instance, in school teacher's curriculum in university programme and/or any other source according to national organization and structure.

The research will be about: already existing qualification framework/guidelines and syllabus at local level regarding Adaptive Cloud Leaders in national/regional curriculum for school teachers.

Responsible partner: DLEARN + all partners;
Format: Word document, up to 2 pages/partner country (ANNEX 1);

2.2 - IO1.A2 Development of Chapter 1

2.2.1- Guidelines and inspiring current and innovative practices at European, local and international level.

The project partners will cooperate to select and describe the current and innovative practices at local, European and International level in terms of cloud computing and educational leadership in educational institutions, in particular at school level. The current and innovative practices have to be suitable to develop the baseline for the competence framework, especially in terms of Learning Outcomes needed (Knowledge, Skills and Competences), if available.

In particular:

- Each partner will select the current and innovative practices regarding **Adaptive Education Cloud Leaders**;
- **EUROGEO** will instead provide an overview at European level and filter the practices collected in School on the Cloud Project in relation to skills and competences needed for the teachers and their leaders;

It is advisable to use current and innovative practices from partner countries, but it is not obligatory. Current and innovative practices from other countries in Europe and outside Europe can also be used. In this case, the current and innovative practices should be balanced: one national, one European and one international.

For finding current and innovative practices you can use:

- already existing good practices at national, EU, international level collected in reference report or reliable website/project;
- Research publication;
- University and/or professional courses for educational leaders;
- Interview with school teachers and their leaders;
- Live events such as webinars and speeches (offline/online);
- Focus group and brainstorming activities.

The best practices will be described in ANNEX II.

2.2.2 Criteria for the selection of the current and innovative practices.

Once that each partner has collected the current and innovative practices, the practices will be re-organized according to **priority**.

Priority will be given according to 6 criteria. Each partner will have the chance to state its satisfaction though an online survey about the:

7. **EFFECTIVENESS:** the results have to be measurable. As set of possible measurable can be: diplomas, new curriculum, research project and new courses created;

8. **EFFICIENCY:** the practices selected must produce results with a defined set of resources and time;

9. **RELEVANCE:** the current and innovative practices needs to be in line and fit with the ERASMUS PLUS priorities and L-CLOUD project objectives;

10. **PARTNERSHIP:** the selected best practices that have been co-created among different stakeholders such as schools, training institutes, research centre, policy makers;

11. **TRASFERABILITY POTENCIAL:** each best practice and initiative must be open source so that the results can be available and consulted by all;

12. **ETHICAL SUSTAINABILITY:** the best practices must sustainable from an environmental, economic and also social point of view;

The practices collected by the partners will be organized according to the above-mentioned criteria and the most relevant will be highlighted in the final resume and will set the baseline for the Qualification Framework for Education Cloud Leaders based on Skills and Competence (IO2).

Responsible partner: DLEARN + all partners at national level (EUROGEO included);
Format: Word document (ANNEX II); At least 2 good practice by partners.

3.3.- IO1.A3 Development of Chapter 2

The third step of IO1 is aimed at collecting **competence framework** developed in partner countries, European and international level for preparing teachers and school leaders for ICT based future world (dynamic curriculum developed included).

In order to reach the object Dlearn will need to be supported by the partner to develop research at national and European level regarding already existing guidelines about the project topic. If national level practices do not exist, partners can provide examples at European and international level. Guidelines need to identify already existing competences framework made up of Knowledge, Skills and Attitudes for Adaptive Educational Cloud Leaders.

For guidelines collected in national languages, partners will be asked to filter the document and provide a translation of the parts that are relevant for the project topic.

ANNEX III is the template that partners need to follow to filter and present the results to IO1 leader. This activity is made up of two separate steps as presented in the ANNEX III.

Responsible partner: DLEARN + all partners
Format: Word document (ANNEX III); At least 2 competence framework by partner.

3.4.- IO1.A4 Development of Chapter 3

The last activity of the first intellectual output will provide a comprehensive resume with the Guidelines for the development of the Qualification Framework for Education Cloud Leaders based on Skills and Competence. The final report will entail the Glossary and the extract the relevant information regarding the state of the art in partner country. Guidelines will be also built up on the results coming from the research phase about the current and innovative initiative selected and the competence framework relevant for developing the Quality Framework for Education Cloud Leaders. Furthermore, EUGOGREO

will provide a list with the relevant Guidelines coming from the project: School of the Cloud. They will be necessary to exploit the project results.

2. SUB-ANNEXES

SUB-ANNEX I

Country:

Partner:

IO1: Guidelines for Skills and Competences for Adaptive Education Cloud Leaders

Activity: State of the art of Adaptive Cloud Leaders in selected partner's country.

References:

For websites: Last name(s), initial(s) of the author(s). Publication or last updated date. Title. [URL-address]. Date of access.

For articles: Last name(s), initial(s) of the author(s). Publication year. Article title. Journal title. Volume: pages or article number.

For books: Last name(s), initial(s) of the author(s). Publication year. Book title: subtitle. Publisher, place of publication. Total number of pages (pp).

SUB-ANNEX II

Country:

Partner:

IO1: Guidelines for Skills and Competences for Adaptive Education Cloud Leaders

Activity: Current and Innovative practice of Adaptive Educational Cloud Leaders

Title of the activity/project/initiative/course:	
Authors:	
Sources (Research Publication, Report etc.):	
Data/where:	
Duration (if applicable):	
Target Group:	
Partnership involved:	
Objective of the current and innovative practice:	
Description of the current and innovative practice:	
Methodology:	
Evaluation/Validation/Assessment	
Knowledge, Skills and Competences detected for adaptive cloud leaders:	
Open Educational Resource:	
Technical infrastructure needed: (please list in bullet points)	
Link to the initiative of pdf/website:	
Additional information:	

SUB-ANNEX III

Partner:

IO1: Guidelines for Skills and Competences for Adaptive Education Cloud Leaders

Activity: Identify existing competence framework at national, European and International level.

FIRST STAGE:

Title of the existing competence framework:	
Authors:	
Year of Publication:	
Country of Publication:	
Link the PDF/website:	

SECOND STAGE:

Only once you will receive confirmation by DLEARN, you can proceed with second stage of research.

Short description of the document:	
AREA of the Key Competence identified:	
Key Competences identified:	
Level of Proficiency (Foundation/basic/Intermediate/Advance)* :	
Additional information:	

** Foundation: Relying on support from others;*
Intermediate: Building independence;
Advanced: Taking responsibility;
Expert: Driving transformation, innovation and growth

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