21st century literacies and OECD[1]

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Introduction

The Knowledge Economy Index (KEI), elaborated by the World Bank, represents the overall level of development of a country or region towards the knowledge economy. The KEI calculates the performance scores of a country based on four pillars: economic incentive and institutional regime, education and human resources, the innovation system and ICT. Interestingly, this instrument illustrates how the combination of technology, innovation and education play a significant role in the current economy (World Bank Institute, 2008). To have or not have the skills to the strategic use of new technologies, knowledge and information defines a clear landmark to distinguish between people, organizations, countries and regions.

Two relevant research about the 21st century's literacies have been published in the last months. The first study, elaborated by Macarthur Foundation (Jenkins, et. al, 2009), analyzed how teenagers create media-content applying traditional literacy, research skills, technical and critical-analysis skills. At the same time, scholars of the University College of London (Rowlands, et. al, 2008) concluded that much of the ICT skills of the young people have been overestimated. Both studies highlight that the postindustrial/knowledge-based societies require an e-competent[2] workforce.

The main ideas identified in those studies stress the necessity to enhance new informational skills and digital literacies among the younger generations. The two works emphasize the use and exploiting of knowledge, information, new technologies and mass media as basic competencies for students in the context of the knowledge economy. These investigations points out how important it is to rethink the educational system in order to better train a high-qualified and adaptable new workforce. These studies, and the ones presented in the following pages, impact educators and students in all levels and fields, including journalism educators and journalism students.

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[2] E-competencies could be summarized as the skills, abilities and proficiencies required by those individuals who deal mainly with information and/or knowledge management in their work/leisure/learning environment.

Scoping the review

This paper offers an analysis of the educational system particularly in relation to the adoption of information and communication technologies (ICT), providing baseline information about significant trends that are likely to have an impact on the development of e-competencies in the coming years.

This work identifies criteria that could be considered in the designing of public policies and programmes that promote the acquisition of e-competencies for the 21st century workforce. The goals of this paper are to:

1. Elaborate an updated definition of the "e-competencies" concept. The recommended definition is based on a review of current literature. Also, the elaboration of this definition classifies and describes the main principles embraced in this term.

2. Identify the strategies and instruments adopted by the Organisation for Economic Cooperation and Development to analyze and assess the development of "digital literacies". Particularly, the aim is based on the coming OECD[3] initiatives related to the global assessing of ICT skills.

The rapid evolution of the Internet, the emerging technologies, the expansion of new medias has lead to the fact that the ability to mass communicate is no longer exclusive for media companies and journalists. At the same time the media convergence contributes to a deep redefinition of the 21st century careers. Among them are, definitely, journalism and mass media careers. Relevant research about "journalism convergence" support this thesis (Uskali, Nordfors, Sandred; 2008; Meyer, 2004; Hachten; 2005; Deuze, 2004; Dailey, Demo, Spillman, 2005; Briggs, M. et al., 2007; Bardoel, 1996; Pavlik, 1999; Singer, 1998; Bardoel and Deuze, 2001). The following research describes trends that apply for the journalism education but also for a broad scope of professions and careers in the digital era.

[3] "The Organisation provides a setting where governments compare policy experiences, seek answers to common problems, identify good practice and coordinate domestic and international policies." (www.oecd.org)

Structure of this paper:

In order to reach the goals previously described, this work is organized in the following sections: 1) Conceptualization of the term "e-competencies"; 2) The OECD agenda and other public policies oriented to develop an e-competent workforce; and 3) Discussion of findings and conclusions.

The first section purposes a revision of different sources that define the concepts related to ICT skills. After reviewing technical reports and studies in the field of ICT literacy, this paper proposes a definition of the term "e-competencies" and also describes the underlying dimensions embraced.

During the second section this work reports current trends of the European public policies related to the development of a knowledgeable workforce. Moreover, here are described some of the guidelines, principles and strategies that the OECD has recommended to promote the acquisition of the "digital competencies".

Finally, in the third section, this work analyses and discusses some of the main challenges that the public policies face in the field of education and training.

This works contains a review of more than 20 updated studies and technical reports, which analyzed the impact of ICT in the education and training. The review provided is brief and not exhaustive but focuses on evidence that suggest noteworthy guidelines in the e-competencies framework.

1. Conceptualization of the term "e-competencies":

One of the complexities of the ICT skills analysis is the difficulty in finding a definition that could be suitable for different contexts and necessities. As the OECD (2005a) remarks, the often unclear terminology combined with the existence of a multiplicity of definitions (new economy, e-economy, ICT sector, …) mean that these concepts change depending on the framework of use.

Regarding the diversity of terminologies and definitions, this study follows the guidelines set by the European Centre for the Development of Vocational Training (CEDEFOP). During 2004, CEDEFOP published a European multilingual glossary in order to identify key terms that are essential for a common understanding of current vocational education and training (VET) policy in Europe. In this publication skill is defined as "the knowledge and experience needed to perform a specific task or job". At the same time, the term competence is described as the "ability to apply knowledge, know-how and skills in a habitual or changing situation". Interestingly the performance in a changing

situation is emphasized in the definition of the term competence, which also embraces the concept skill. Thus it is important to highlight not just the expression knowledge (tacit or explicit) in this definition but also the capability to apply this knowledge in other situations. In this perspective, the students or workers need to be able to use their abilities "in a new occupational or educational environment".

The classification of skill proposed by CEDEFOP (Tissot, 2004) identifies basic skills as: "skills and competences needed to function in contemporary society (e.g. listening, speaking, reading, writing and mathematics)" and new basic skills which "are information and communication technology (ICT) skills, foreign languages, technological culture, entrepreneurship and social skills".

Even though there is no unique, commonly adopted definition of ICT skills, it is important to remarks that efforts are made to characterise the various types of e-skills. In the following the definitions proposed by the OECD (2005a) and the European e-Skills Forum (2004) are analyzed.

The OECD (2005a, p.6) distinguishes three categories of ICT competencies:

1. 'ICT Specialists, who have the ability to develop, operate and maintain ICT systems. ICTs constitute the main part of their job – they develop and put in place the ICT tools for others';
2. 'Advanced Users: competent users of advanced, and often sector-specific, software tools. ICTs are not the main job but a tool';
3. 'Basic Users: competent users of generic tools (e.g. Word, Excel, Outlook, Power Point) needed for the information society, e-government and working life. Here too, ICTs are a tool, not the main job.'

Meanwhile the European e-Skills Forum (2004, p.5) proposes a definition of the term e-skills covering three main categories. This definition has been adopted and improved by the European Centre for the Development of Vocational Training (CEDEFOP, 2006, p.31) among other Europeans institutions:

1. ICT practitioner skills: the capabilities required for researching, developing, designing, strategic planning, managing, producing, consulting, marketing, selling, integrating, installing, administering, maintaining, supporting and servicing ICT systems, for the benefit of others.
2. ICT user skills: the capabilities required for the effective application of ICT systems and devices by the individual. ICT users apply systems as tools in support of their own work, which is, in many cases, not ICT. User skills cover basic digital (or ICT) literacy, the utilisation of common (generic) software tools in an office environment, and the use of specialised tools supporting major business functions within a large number of user sectors.

3. E-business skills: the capabilities needed to exploit opportunities provided by ICT, notably the Internet for specific industry or societal sectors; to ensure more efficient and effective performance of different types of organisations; to explore possibilities for new ways of conducting business/ administrative and organisational processes; and/or to establish new businesses. E-business skills are strategic and innovation management skills, but not technology-management skills which are part of ICT practitioner skills. E-business skills contain elements of both ICT practitioner and end-user skills, but in addition they contain a significant element of generic (non-sector specific) non-ICT skills.

The term users (non-expert) is mentioned in both definitions (OECD & European e-Skills Forum). Nevertheless, in each one of these descriptions the understanding of user (as "basic user" or "ICT user skills") seems to be particularly circumscribed to functional use of ICT.

Considering that the term user is characterized by the one who has the skills "needed for the information society" (OECD, 2005b) and who has the "digital literacy" (European e-Skills Forum, 2004), a more accurate description and understanding of the term "ICT user skills" seems to be necessary.

1.1 Defining the meta-competencies

Based on the glossary of CEDEFOP (2004) the term competence ("ability to apply knowledge, know-how and skills in an habitual or changing situation") in relation to the use of ICT and information, seems to offer a richer approach than the mere inclusion of skills ("experience needed to perform a specific task"). In connection with that, The Key Competences for Lifelong Learning – A European Framework (2007) mentions digital competence as one of the eight key competencies described in the Education and Training 2010 programme supported by the EU (European Commission, 2007; Education Council, 2006).

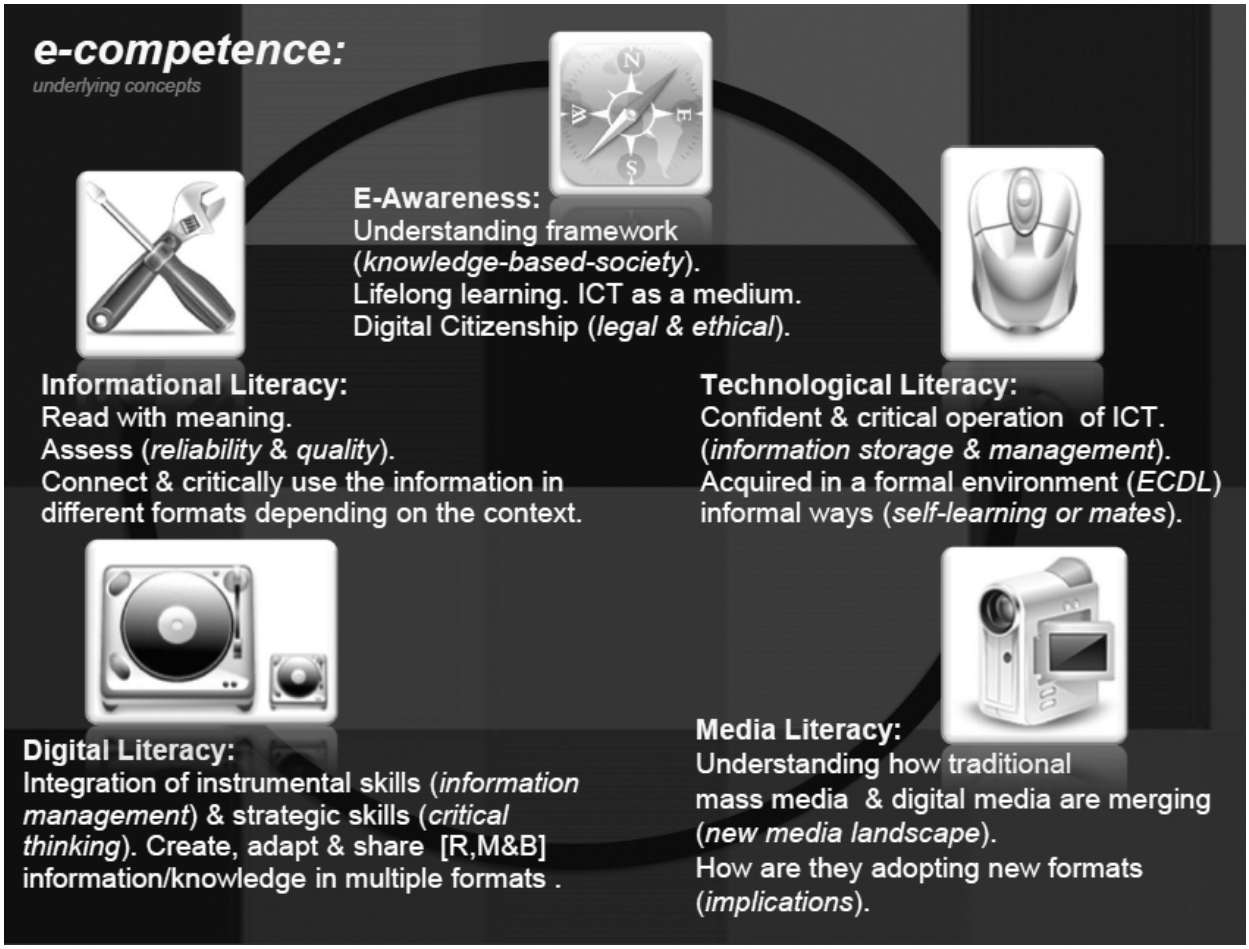
The review of different sources (elaborated by institutions like CEDEFOP, OECD, European e-Skills Forum, etc.) makes evident that there is a major interest in the proficient users of the ICTs (business, practitioner, advanced users, specialist, etc.) but the basic or non-expert ICT users have been oversimplified as evidenced by mentioning only capability to interact with generic ICT tools. However, the previously described definitions show that the profile of the current ICT user (non-expert) needs a more precise characterization. Without doubts this profile of ICT user will change over time, but for now it has to do with aspects such as people who combine the cognitive capabilities (e.g. critical thinking, creativity, innovativeness) and the practical skills (e.g. proficient use of ICT and other tools for the knowledge management) to create added value. Hence it is necessary to develop a new

and operational definition suitable for the educational or professional frameworks.

For the purposes of this study, the term e-competent user has been adopted, according to the CEDEFOP guidelines, which refers to a person who is able to complement the use of some specific technologies with other proficiencies and knowledge. The e-competencies are a set of capabilities, skills and abilities to exploit tacit and explicit knowledge, enhanced by the utilization of digital technologies and the strategic use of information. E-competencies go beyond the use of any specific ICT, including the proficient use of information and the application of knowledge to work individually and collaboratively in changing contexts.

Due to the diversity of approaches related to the term e-competencies, a number of sources have been reviewed in order to propose a new conceptualization of this term. For example: Gilster, 1997; Peña, 2009; Ontario Ministry of Education and Training, 1989; CEDEFOP, 2004; Educational Testing Service, 2003; Pernia 2008; OECD, 2007a; Becta, 2009; UNESCO, 2008b; Boles, 2009; Jenkins, 2008; Media Literacy, 2009 and Hjørland, 2008. Thus five underlying concepts that constitute the expression e-competencies have been elaborated: e-awareness; technological literacy; informational literacy; digital literacy and media literacy, just as the following image summarized.

[Figure N°1. E-competencies & the five underlying concepts (Cobo Romaní, 2009)].



1.2 Defining the underlying concepts of e-competencies

1.2.1 E-Awareness: This cognitive (thinking) skill is characterized by a user's awareness of ICTs and appreciation of the relevance of these ICTs in the information based society. It embraces familiarity with the technologies and understanding how these are actually, or can be potentially, beneficial or prejudicial for the society. Fundamentally it is an act of cognition influenced by the use of information and knowledge and the related technologies as tools to add more value and innovation to specific contexts. E-awareness is based on the understanding (comprehension & critic) of the information society's framework and its implication in the current days. From this perspective an e-competent user has the capability to understand and adopt the lifelong-learning paradigm and the use of ICTs as a medium to facilitate the individual or collective development of knowledge, skills and new capabilities in both social and professional life. On the other hand, this understanding of the human, cultural, and societal issues related to technology and their practice also include a legal and ethical behaviour (also called "digital citizenship").

1.2.2 Technological Literacy: The confident and critical use of electronic media for study, work, leisure and communication. It is represented by the ability to interact with hardware and software, as well as productivity applications, communication devices and management applications. This literacy includes the use of main computer resources such as word processing, spreadsheets, databases and tools for the storage and management of information. It embraces the understanding of the opportunities and potential risks of the Internet and communications via electronic media for activities as networking, sharing information, collaborating, etc. It also includes the ability to use Internet-based services (e.g. creating an account, composing an e-mail, attaching and downloading files, participating in an online discussion, using social networking sites, creating blogs, etc.). The technologies involved in this definition evolve according to the technological transformation (currently this includes tools such as: mobile phone; computers; Internet; cameras, among other digital devices). The ability to use these tools can be acquired in a formal environment like schools (e.g., ECDL or EPICT[4]) or informal ways like home, trial and error, friends, manuals (self-learning or mates), etc.

1.2.3 Informational Literacy: The ability to understand, assess and interpret information from all kinds of sources. The concept of informational literacy goes beyond simply being able to read; it means the ability to read with meaning, to understand critically and —importantly —to evaluate, connect and integrate different information, data, knowledge and other sources. Acquiring informational literacy involves mastering a set of core competencies. It requires the ability to make informed judgement about what is found on or offline, identifying the sources, authors and their diverse approaches. Being able to evaluate the reliability and quality of information is a key aspect to decide what and when the information is needed for a specific audience, context or task. In an environment where users are overloaded with information being able to analyse, judge, evaluate and interpret information and placing it in context becomes a crucial skill.

Two very important abilities related to the information literacy are evaluation (reflecting to make judgements about the quality, relevance, usefulness, efficiency, authority and timeliness of the information) and integration (interpreting, summarizing, drawing conclusions, comparing and contrasting information from multiple digital sources).

1.2.4 Digital Literacy: The proficiency to build new knowledge, based on the strategic employment of ICTs. The main aspects related to digital literacy are: how to get relevant information (instrumental dimension) and how to manage and produce new knowledge (strategic dimension). Being digital literate embraces using technology for information and knowledge in order to access, retrieve, store, organize, manage, synthesise, integrate, present, share, exchange and communicate in multiple

[4] European Pedagogical ICT Licence. http://www.epict.org

formats, either textual or multimedia. Critical, creative and innovative thinking is combined and empowered with information management skills. Digital literacy also means to understand that the management and sharing of new products of information could be enriched through networks of collaboration, just as open software' communities do.

Some of the skills related to digital literacy are: definition (using ICT tools to search, find, identify and recognize the information need); access (knowing how to collect and/or retrieve information in digital environments, and the ability to develop a search strategy to locate information from one or more sources); management (organizing information into one or more classification schemes); creation (generating new information and knowledge by adapting, designing, editing, inventing, or representing information in ICT environments) and communication (conveying information and knowledge to various individuals and/or groups).

1.2.5 Media Literacy: This literacy has to do with the understanding of how the traditional mass media and the digital media are merging, combining and evolving towards a new media landscape. Some of the related skills and knowledge are based on the comprehension of how media work, how they are organized, how they are evolving to new formats, platforms and ways of communication and interaction and, finally, the understanding how and why they produce meaning (construct reality) as well as the social, legal, economic and political implications of that. This literacy is necessary to understand the phenomenon of the digital changeover.

This process of understanding and using the mass media in an assertive and non-passive way includes an informed and critical viewing or critical analysis of the media's nature. Also the skills related to media literacy include the capability to identify, judge and discriminate media content and services that may be unsolicited, offensive or harmful; as well as making effective use of media in the exercise of the democratic rights and civic responsibilities.

As it can be seen this concept includes different processes, knowledge, proficiencies and aptitudes. Rather than the specific names given to each one of the elements described in this section, what really matters is to understand the e-competencies as a meta-term, which includes capabilities beyond just learning how to manipulate computer technology.

2. The OECD agenda and other e-competent public policies

2.1 E-Competent public policies

Without major distinction of age, political tendency or social position most people agree that it's imperative to adjust the current education system to the rapidly changing world of work. The integration of different trends such as globalization, the information society[5], the current economic crisis and the professional mobility made this necessity a collective concern.

The Organisation for Economic Cooperation and Development (OECD, 2006) remarks the current correlation between investment in human capital, labour productivity and the growth of nations. At the same time this international organization refers to the mismatch between the skills taught in schools and those demanded by companies today, adding that many countries are experiencing skill gaps which are affecting directly the employability of the current and coming labour force. In addition to a higher qualified workforce the UNESCO et al. (2008a) highlights capital deepening[6] and technological innovation as factors that lead to increased productivity and competitiveness in a knowledge-based economy.

For instance, in the European framework, the European Commission declares the transformation of the labour market, the importance of a knowledge-based growth and the necessity to training a highly skilled workforce:

> "Building higher skills through better education and training systems is an essential part of Europe's strategy to meet future challenges such as the ageing of society and to deliver the high levels of sustainable, knowledge-based growth and jobs that are at the heart of the Lisbon strategy" (European Commission, 2008a, p.2).

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[5] "The information society is revolutionising many areas of everyday life, particularly access to training and knowledge (distance learning, e-learning related services), work organisation and mobilisation of skills (teleworking, virtual companies), practical life (e-health services) and leisure [...] In the light of these potential benefits and threats, the European Union has placed the information society at the heart of its strategy for the 21st century. Among other things it has launched a series of support and promotion actions (eEurope action plan) and adopted measures aimed at controlling and limiting the risks associated with the development of the information society such as an action plan aimed at promoting safe use of the Internet and combating unlawful and harmful messages. (European Union, 2004)."The 'information economy' consists of the economic activities of those industries that produce content, and of the ICT industries that move and display the content. These economic activities include the use of information and of ICT products by both people and business. The 'information society' includes the social impact of the information economy" (OECD, 2005c).

[6] Capital Deepening: "Increases in the amount of real capital per unit of labour". (Atack, Bateman, Margo,2004)

> "The next decade will see an increasing demand for a high-qualified and adaptable workforce and more skills-dependent jobs […] Up to 2020, in EU25 17.7 million additional jobs could be created in high-skilled non-manual occupations such as administrative, marketing, logistics and sales managers, IT systems administrators, teaching professionals and technicians" (European Commission, 2008b).

A significant trans-national programme that represents the European interest to develop a most competitive and dynamic knowledge-based economy is the Lisbon Summit. This initiative was designed to mark a turning point for EU enterprise and innovation policy, promoting the integration of social and economic policies with practical initiatives to strengthen the EU's research capacity, encouraging the development of a highly skilled workforce and facilitating take-up of information society technologies.

The Lisbon Summit has played a relevant role shaping the mid-term growth & employment agenda of the European Commission during the first decade of the 21st century. This programme embraces objectives to reach the aspired levels of employability in the European labour force. These initiatives include improving the quality and effectiveness of education and training systems, getting better investment in human capital, encouraging the development of key competencies, promoting the creation of new knowledge (R&D), innovation, creativity and entrepreneurial among other transversal competencies.

The eight key competencies included in the Lisbon Summit are: 1) Communication in the mother tongue; 2) Communication in foreign languages; 3) Mathematical competence and basic competencies in science and technology; 4) Digital competence; 5) Learning to learn; 6) Social and civic competencies; 7) Sense of initiative and entrepreneurship; 8) Cultural awareness and expressions (European Commission, 2007). In the context of education and employability it is interesting to see the importance that the notion of an ICT proficient ("digital competent") workforce has achieved in the European agenda.

2.2 The OECD perspective

In relation to the European agenda, the Organisation for Economic Cooperation and Development has also been emphasizing the importance of developing new competencies and skills in the coming generation.

Bernard Hugonnier (2008), OECD Deputy Director for Education, analyzes the integration of ICT at school. The Deputy Director defines a useful framework to comprehend why policies to promote digital competencies are that important in the OECD agenda. (Workshop of ICT Indicators in Education, 2008)[7]. Concerning the use of ICT in the classroom (15-year-old students) Hugonnier summarized some of the main results of the research "Are Students Ready for a Technology-Rich World?" (OECD, 2005b):

- Access to computers at school is more universal than access to computers at home, but students report using computers much more frequently at home. (OECD, 2005b, Figures 3.3 and 3.4, pp.39 and 41.)
- A minority of students frequently use educational software on computers. (OECD, 2005b, Figure 3.4, p.41.)
- In general, students are confident in performing routine 11 and Internet tasks on computers. (OECD, 2005b, Table 3.9, p.110.)
- At least 90% of students report confidence in these tasks in Australia, Canada, Iceland, Korea, New Zealand, Sweden and the United States. (OECD, 2005b, Table 3.11, p.112.)

The presented results point out valuable aspects in relation to the use of new technologies in the educational context. The mentioned elements are the ICT user profile and the types of use of ICT.

> ICT user profile: The students are self-confident and have a positive evaluation of their competencies in relation to new technologies. Based on students' engagement and confidence this aspect could be considered by educators as an influential opportunity to promote the development of new ICT skills. On the other hand, it is important to avoid that the student's overestimate their capabilities. This could become an obstacle to acquire new proficiencies related to the use of ICT (e.g. better understanding of the intellectual property, capabilities to

[7] International Telecommunication Union (2008) *Workshop on Indicators of ICT in Education*. ITU. http://www.itu.int/ITU-

assess the reliability of the information, legal and ethical online behaviour, among others).

Types of use of ICT: The digital technologies are ubiquitous tools not restricted to a specific context of use. In other words, it shouldn't be surprising that the students are using ICT more frequently at home than in the classroom. This data doesn't mean that those public policies focused on the integration of ICT in schools have failed; on the contrary, it can be interpreted as the use of new technologies are evolving to other contexts and places (see domestication of ICT[8]). From that perspective, there's a whole new approach to explore in relation to ICT as learning tools used in other (informal) environments.

Based on the report: "Are Students Ready for a Technology-Rich World?" (OECD, 2005b) Hugonnier suggests at least four interrelated indicators that influence the integration of ICT in education: the ICT environment; the ICT user readiness; the use of ICT and the effects of the use of ICT.

1. The ICT environment: The environment can be defined as the technical conditions that enable the development and use of ICT. Some of the most relevant aspects included in the ICT environment might be:

- ICT availability: This aspect has to do with identifying the degree of ICT availability to users.
- ICT access: An indicator merging data such as ratios of pupils per computer connected to the Internet.

2. The ICT user readiness: This is the propensity of users to produce/use ICT. This tendency is linked to the level of e-competencies showed by teachers and pupils. Measuring readiness is a difficult task since no available data on this propensity exist (such as the precise answer to the question how ready teachers/pupils are to use/produce digital learning resources). However, to start with it could be somewhat linked to the training or level or competence showed by different groups of users on the basis of already existing data, such as: – teachers: training hours on ICT related competences by teacher or surveys of ICT-related skills and attitudes; – pupils: surveys of ICT-related skills and attitudes (such as PISA data); – families: general population surveys of ICT-related skills and attitudes.

D/ict/conferences/dominicanrep08/index.html

[8] As Silverstone (1999, p.252) remarks on the **domestication of ICT**: 'The more recent history of home computing indicates that individuals in the household construct and affirm their own identities through their appropriation of the machine via processes of acceptance, resistance, and negotiation. What individuals do, and how they do it, depends on both cultural and material resources".

3. The use of ICT: This refers to the actual use of ICT in teaching and learning activities, both by teachers and pupils, as well as the types of ICT used and for what purposes.

4. The effects of the use of ICT: Any kind of measurable effect of the use of ICT either in the quality or in the output of the teaching and learning processes could be said to be the impact of using ICT. In addition, it could be reasonable to expect that an intensive use of ICT at large can result also in the learning of competences and skills not accounted for in traditional educational settings.

Based on the four interrelated key indicators mentioned by Hugonnier (2008) it is possible to identify an interesting perspective, which suggests a transformation in the aim of those policies that promote the integration of ICT in schools. The OECD Deputy Director for Education proposed a set of criteria and priorities. His suggestions show particularly the necessity to move from an ICT-access-and-availability approach to a new one focused on ICT-related skills, attitudes and impacts.

From this perspective, the attention is focused on the quality and proficiency of ICT use. Further than the acquisition of a particularly digital tool, what really seems to be relevant is the output and effects of ICT during the learning process. Hugonnier notes students' achievements as a key indicator of the effective ICT integration in education (e.g. promoting better outputs and developing ICT skills).

2.3 PISA 2009-2012

Simultaneously, the OECD has announced that their parametric-standardized evaluation Programme for International Student Assessment (PISA[9]) could include a whole new section to evaluate the cognitive competencies related to the use of technologies (e-competencies). Under the premise that "ICT forms an essential part of life in the modern world" this international organization is getting ready to apply a worldwide ICT skills test on 15-year-old schoolchildren.

Initially this internationally standardised assessment was implemented in 43 countries in the 1st assessment (2000), 41 countries participated in the 2nd assessment (2003), 57 countries in the 3rd assessment (2006) and 62 countries have signed up to participate in the 4th assessment in 2009.

[9] PISA is a regular survey of the knowledge and skills of 15-year-olds. The aim of the study is to assess aspects of young people's preparedness for adult life. The first cycle of the survey was during 2000. The study is repeated every 3 years. In the 2003 PISA study, 41 countries participated, and 57 countries took part in the study in 2006 (Turmo, Lie, 2006).

In the previous standardised assessment the emphasis was on mathematical literacy and reading literacy. Nevertheless, in the coming assessments (2009 & 2012) the evaluation of the digital competence has been introduced as a key field to be analyzed.

In 2003, PISA applied a questionnaire to survey the extent to which students used computers and felt comfortable using them. For 2009 the assessment of reading electronic texts has been planned and for 2012 the goal is to implement supplementary computer evaluation in focus areas such as assessing the development of a new ICT literacy. The idea is to test the ability of students to respond to different sets of questions related to the use of ICTs. Even considering that this new assessment has not been implemented yet, official OECD documents (OECD, 2005c; OECD, 2005d; OECD, 2007a) evidence the awareness of this international organization with regard to the development of e-literacies.

It is expected that the PISA 2009-2012 initiatives could generate significant impacts in the political agenda of the OECD members. Maybe not in a short-term perspective, but if this worldwide ICT skills assessment is applied possibly it will detonate effects like: more attention in the development of e-competencies; a broader discussion related to the necessities of trans-national e-competencies standards; a continue re-definition of this concept and a critical discussion about ICT and education.

3. Discussion of findings and Conclusions

In the framework of the post-industrial society, the widespread use of ICTs brought a significant transformation in the labour market. The expansion of ICTs is shaping a much more complex phenomenon than the simple computerization of the tasks. Nowadays the workforce demands highly skilled and educated employees, proficient in the use of ICT and able to manage exponential amount of information and knowledge. Further than the declining demand in routine jobs, carried out by low-qualified employees there is a considerable increasing in the demand of those non-routine jobs. There are evidence-based studies that register a raise in the demand of highly qualified employees with abilities to perform cognitive, analytic and interactive complex tasks (Autor, Levy & Murnane, 2003).

In our time, the acquisition of ICT competencies is increasingly becoming a key and a transversal requirement for employability (Card & Dinardo, 2002; Torrent, 2008) that has surpassed the communication field and journalism. The described trends have been particularly notorious in the last decades and without doubts they will continue influencing the education sector. The Lisbon Summit and the PISA assessment are two different trans-national initiatives designed to face this phenomenon.

Principal findings:

1) In order to propose a wider approach of ICT skills beyond the instrumental (and basic) use of technology, this study proposed the term e-competent user, which refers to a person who is able to complement the use of some specific technologies with other proficiencies and knowledge. The meta e-competencies are a set of capabilities, skills and abilities to exploit tacit and explicit knowledge, enhanced by the utilization of digital technologies and the strategic use of information. E-competencies go beyond the use of any specific ICT, including the proficient use of information and the application of knowledge to work individually and collaboratively in changing contexts. Also five underlying concepts that constitute the term e-competencies have been identified: e-awareness; technological literacy; informational literacy; digital literacy and media literacy.

2) A trans-national challenge to face is how to test and certify the informally acquired e-competencies. There are discussions and decisions to be made in relation to the criteria and methodologies of how to assess the formal and informal acquisition of ICT competencies. There is much research evidence pointing to the difficulty of evaluating the abilities and proficiencies of students, particularly in relation to those higher-level skills, which can generate more complex and unpredictable outcomes.

In that sense, it is expected that the OECD and its PISA initiative will contribute to generate the needed information, instruments and e-awareness required to bring a better understanding of the e-competencies and the strategic role that schools and educators play in their development.

Finally, even considering that this OECD-PISA initiative could contribute to promote an extensive understanding of the term e-competencies, it is mandatory that policy makers and educators comprehend that the main goal is to improve the quality of use of ICT an the achievements that users can do with these technologies. In that sense, as Hugonnier recommends the ICT environment; the ICT user readiness; the use of ICT and the effects of the use of ICT as strategic principles to include in the designing of public policies in the field of education and training.

After ten years of consistent effort to improve educational achievements by infusing massive amounts of capital into ICTs, current research constantly demonstrates that access to and the use of ICT are no guarantees for increased achievement of students (Goolsbee and Guryan, 2005; Law, Pelgrum and Plomp, 2006; NEA 2008).

All these antecedents emphasize the necessity of a sharp shift in education. Considering this scenario, an increasing number of nations are trying to transform and update their educational system supported by the use of ICTs. Some of them are just bringing computers and connectivity to the classroom; meanwhile others are systematically trying to reduce the gap between the e-skilled and the non e-skilled students.

Finally, these results indicate the necessity to adopt a broad range of improvements in the educational system but also in terms of public policies, which should go far beyond the acquisition of ICT. The e-maturity (maturity in the use of ICT) will not arrive without major changes and improvements. In that sense, the lack of coordination between the adoption of ICT and the embracing of flexible and innovative teaching-learning strategies will demand collective effort between the policy makers, educators and employers of the 21st century.

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