

Learning to Be: Developing and Understanding Digital Competence

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Traditionally, the word *literacy* referred to the level of reading and writing skills needed for minimum functioning in a modern society. Translating literacy into other languages has proven problematic. 'Literacy' in English is associated with the cognitive realm and rarely directly conveys the intended conception of meeting complex demands through mobilizing a range of mental prerequisites. Several international studies note that talking in terms of skills provides only a narrow perspective on education and learning activities (OECD, 2002).

The OECD invited its member countries to participate in a four-year project: *DeSeCo – Definition and Selection of Competencies* (OECD, 2002), which originated in increasing international interest in outcome and the effect of training and education, as well as a need for a common frame of reference for identifying and analysing so-called basic components. Competence is defined here as: “[...] the ability to meet demands or carry out a task successfully, and consists of both cognitive and non-cognitive dimensions” (OECD, 2002).

DeSeCo focuses on three basic competency categories: (1) using tools interactively (e.g., language, technology), (2) interacting in heterogeneous groups and (3) acting autonomously. These competencies are important in different life situations and are defined as necessary to all of them. The DeSeCo report emphasises that basic components must be selected and defined in accordance with what societies and individuals within particular societal groups and institutions value. The DeSeCo report has become the foundation for international collaboration on work related to the concept of competence.

The use of the concept of competence in connection with primary and secondary education is relatively new. The concept of competence has been applied to adults' knowledge and skills. With regard to lifelong learning, a comprehensive concept of competence has become an important term in educational policy, planning and quality studies.

The OECD emphasises that building competence concerns the whole person. It is about relating proactively to challenges posed by the environment and times in which we live along with meeting highly complex demands. Mere knowledge and skills are not sufficient in themselves. Strategies, attitudes and procedures are also required. Competence is a performance-related term describing a preparedness to take action: Competence is the ability and readiness to meet a challenge through action, when it is often implicit that the challenge is not a given, but depends on context; that it is not a routine challenge, but novel and not judged by given criteria for success, but by the outcome; whose form is not known in advance (Hermann, 2005).

In the Key Competences Recommendation, ‘competence’ is defined as *a combination of knowledge, skills and attitudes appropriate to the context* (European Parliament and the Council, 2006). The recommendation of the European Parliament and the Council (2006) recognized eight key competences for lifelong learning: communication in the mother tongue; communication in foreign languages; mathematical competence and basic competences in science and technology; digital competence; learning to learn; social and civic competences; entrepreneurship; and cultural awareness and expression.

Digital competence is defined in the Recommendation as involving the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet. Digital competence has been confirmed as a relevant priority for the Commission in more recent policies, actions, and communications (European Commission, 2010a, 2010b).

The report *Digital Competence in Practice: An Analysis of Frameworks* (Ferrari, 2012) analyses 15 frameworks that develop digital competence. These frameworks vary in scope (from school curricula to certification schemes to academic papers) and target groups (adults, children, the young, the elderly). The analysis carried out in this DIGCOMP report identified three areas to be reported upon: a definition of digital competence, the identification of competence areas and a discussion about the levels. According to the different understandings of digital competences in the cases studied, Ferrari (2012) proposes the following definition of digital competence:

Digital Competence is the set of knowledge, skills, attitudes (thus including abilities, strategies, values and awareness) that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socialising, consuming, and empowerment. (Ferrari, 2012)

This definition is encompassing and should be considered for the development and implementation of digital competence frameworks. The DIGCOMP report highlights that digital competence is built on different learning domains (knowledge, attitudes and skills) and spreads across several competence areas. Several of the frameworks selected for the analysis in the report suggest that technical skills constitute a central component of digital competence. Having technical skills at the core of a digital competence model does not give enough importance to other equally relevant aspects. Digital competence should be understood, in its wider sense, as a multi-faceted concept.

The new report *A Framework for Developing and Understanding Digital Competence in Europe* (Ferrari, 2013) presents the final findings of the DIGCOMP projects and proposes a framework for digital competence for all citizens. The output of this project was based on a data collection phase (including a literature review, case study analysis, and an online survey) and an intensive stakeholder consultation (including workshops, interviews, reviews by experts, presentations at seminars and conferences). The areas of digital competence are the following:

1. Information: identify, locate, retrieve, store, organise and analyse digital information, judging its relevance and purpose.

2. **Communication:** communicate in digital environments, share resources through online tools, link with others and collaborate through digital tools, interact with and participate in communities and networks, cross-cultural awareness.

3. **Content-creation:** Create and edit new content (from word processing to images and video); integrate and re-elaborate previous knowledge and content; produce creative expressions, media outputs and programming; deal with and apply intellectual property rights and licences.

4. **Safety:** personal protection, data protection, digital identity protection, security measures, safe and sustainable use.

5. **Problem-solving:** identify digital needs and resources, make informed decisions as to which are the most appropriate digital tools according to the purpose or need, solve conceptual problems through digital means, creatively use technologies, solve technical problems.

The OECD's view of competence influences policy and education: Digital competence has set the agenda for innovation, education and pedagogy in Europe.¹ Digital competence is a multimodal and complex concept, constantly changing with the development of digital media. Media development is multidisciplinary by its very nature. Over the last 15 years, digital competence has established itself as a key concept in educational policy and in educational research.

Digital competence can be seen as a concept whose status is “essentially contested” (Connolly, 1993). It has a conceptual core or essence that is subject to discussion on a fundamental level. Much in the same way as with the word ‘democracy’, several participants will join discussions and efforts to define the concept of digital competence. A discussion on digital competence may take place along three dimensions. Firstly, it is about appraisal or values. Secondly, there is a complex span between skills and knowledge and formative education. Thirdly, there is an openness that creates potential for several possible interpretations and areas of use.

The concept has had a double function as an agenda setter. On the one hand, it is the principal political concept in innovation policy and in educational reform. On the other hand the concept has become an objective in the development of schools and in practical pedagogy. Educationalists are now working on anchoring digital competence in theories for learning and media development and further developing the concept. The term digital competence has been something akin to a password into new fields politically as well as pedagogically.

Digital competence is more important in the information society than focusing solely on skill-based activities. Digital competence expresses an overall understanding of how children and young people learn to develop their identity and learning strategies. The term will also encompass and combine the application of skills, qualifications and knowledge. In this way, digital *competence* points to an integrated and comprehensive approach that enables us to reflect on the influence of ICT on different qualifications such as communication skills, social skills and pupils' critical judgements. By focussing on a greater degree of the use of ICT integrated in all subjects, both teachers and pupils will develop the necessary ICT skills while building competence in areas such as navigation in and critical appraisal of sources, and an understanding of the social significance of digital technology.

The SMIL study presents results from one of the largest ICT studies, conducted in upper secondary schools in Norway among 17,529 students and 2,524 teachers. The background for the study is

based on the need to develop educational monitors and indicators for ICT-use. The SMIL study shows that the pedagogical use of ICT varies substantially between different groups of students, groups of teachers, professional groups and educational programs.

Some of these differences are related to the characteristics of different subjects, the lack of appropriate digital tools in different subjects, as well as lack of digital competence. For this reason, one of the most important implications of the findings of the SMIL study is that an increase in digital competence among teachers is one of the most important means of increasing students' learning outcome when ICT is used. (SMIL, 2013)

The study also shows that students need digitally competent teachers as role models for their professional ICT use. More specifically, they need teachers who have a salient leader role in the classroom, who possess a broad array of methods, and who follow them closely in their formative and individualized assessment.

Figures from the Norwegian Centre for ICT in Education Monitor (in press 2013) shows that eight out of ten upper secondary students (VG2) believe that the use of computer / tablet helps them understand the subjects better; it gives more desire to learn and makes it easier to learn school subjects.

The increasing ICT use in schools reflects the evolution of society, and the school provides both challenges and opportunities for learning. The SMIL study points to the relationship between a high grade point average from upper secondary and extracurricular low ICT use in high school, and that the teacher's digital competence and screen time increases the ability of good classroom management and enhances learning with ICT.

Successfully preparing all learners with the skills and capacities for 21st century citizenship – global awareness, creativity, collaborative problem-solving, self-directed learning – is no small order, and many educational leaders are finding that the traditional forms of education that have evolved through the end of the last century are simply inadequate for achieving these goals. (Groff, 2013)

A fundamental reason to pursue digital media rich environments is that we live in a digital world. This raises many question, concerns, and unknowns that should matter to both policymakers and educators – all of them stemming from the fact that education has the responsibility to equip young people with the necessary digital competence that will allow them to cope with the challenges that connectedness is currently posing to them.

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1 In the Norwegian white paper St. m. no. 30 (2003-2004) *Kultur for læring (A learning culture)* digital competence is defined as: "[...]the sum of individual ICT skills, such as reading, writing and maths, and more advanced skills ensuring a creative and critical use of digital tools and media". ICT-skills include making use of software, searching, finding, processing and controlling information from various digital sources, while critical and creative ability also requires ability to evaluate information and sources, interpretation and analysis of digital genres and media types. Thus, digital competence can be regarded as a very complex form of competence (48).