The “Beaver” International Competition and the Development of Digital Competences in Italian Pupils

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ABSTRACT

This paper discusses the hypotheses, instruments, and processes for the introduction of suitable strategies for digital competence improvement in schools and for lifelong learning, together with the analysis of the first results on the use of a special questionnaire for the assessment. First, the evolution of the models for digital competence analysis and development the author has proposed in past years is reported. The features of the international “Beaver” competition are then explained. The author then blends the needs of the strategies for digital competence assessment included in the framework with the aims of the international competition. The comparison of the results obtained by a sample of students involved in two different editions of the competition is analyzed and the improvement of the pupils’ performances is shown. The relevance of a careful planning of the “beaver” questionnaire emerges and suggestions to the competition organizers for the articulation and structure of the questionnaire are proposed.

Keywords: Digital Competence, Digital Competence Improvement, Digital Literacy, International Competition, Problem Solving

INTRODUCTION

It is straightforward to note that IT/ICT and especially digital technologies and the Internet have deeply modified the approach that subjects and society have to learning, knowledge construction and communication. National and International institutions made a great work in the last decades to define the knowledge, the skills and the competences that people need, to be better citizens in the “knowledge society”.

On this regard the Commission of the European Community has approved a recommendation for the member countries, where the whole set of the key competences for lifelong learning is reported. Digital competences, the fourth set among them, are considered by the European Commission especially important because of their cross cultural features with respect to language (reading / writing) and calculus competences (Council of the European Parliament, 2005).

Digital competence, as describe by the EU Commission, is based on the confident and
critical use of Information Society Technology (IST) for work, leisure and communication and is underpinned by basic skills in ICT. For the European Council, people must be especially skilled in the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet. The proposal of the digital competence definition from the European Council includes the ideas of Martin (2005), who worked on digital literacy in the DigEuLit research project (funded by the EACEA). He developed a framework for digital literacy and deduced that the corresponding skills and competences are intertwined with:

a) The understanding and knowledge of the nature, role and opportunities of IST in everyday contexts: in personal and social life as well as at work; they include main computer applications, a sound use of the Internet and the communication via electronic media for leisure, information sharing and collaborative networking, learning and research, and

b) The understanding of the support that creativity and innovation can receive from IST, the development of sound understanding skills helping people to state if information is valid, reliable and affordable enough and to develop the knowledge of the ethical principles for the interactive use of IST.

Whether makes sense to question about the features of digital competence for the lifelong learning in the “knowledge society,” the problem of a “digital” education and teaching in a digital world, to help new generations become better citizens and develop strong digital competences, has special features and poses different questions for the complex nature of the problem.

Main reasons for the above issue can be found in:

- The gap existing between “digital natives” and “digital immigrants” (both in learning styles and knowledge development) (Prensky 2001); otherwise stated, young people can use digital equipments to better perform in getting information and communicating with respect to elders, and, what is more, new generations have different perception of reality and, usually, are more ready to act than to think about phenomena (Mantovani & Ferri, 2008).

- The permanence, or the lowering, of the already low basic skills and competences in reading, writing and computing for students at different school levels (OECD, 2009), at least in Italy. This result seems to contradict the above statement, because it is usually recognized that the use of digital equipment implies the development of good information management skills (metacognitive skills); recent works show on the contrary, that students have problems in the use of computers and other digital equipment, when high level operations with information are required (Pozzali & Ferri, 2010; Cartelli & Di Nuzzo, 2011).

The apparent contradiction in the above statements has been one of the reasons for further investigations, especially aimed at answering the following questions:

- Is it possible to draw a framework for digital competence assessment and development at the school level and especially for younger students?
- Are there instruments, processes and strategies which can be more useful than others, to develop good digital competences?
- What role the school can play in the development of digital competence and its assessment?

In the following sections a report of the study, research and activities carried out until now to give a first answer to the above questions is given and the results of the undertaken initiatives are described.
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