

Children and Computers

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INTRODUCTION

Engagement, effort, pleasure, concentration, happiness in exploring, trying and producing ideas, experience and performance, cooperative action, all these aspects are very conspicuous when we observe young children using computers in educational settings. They seem to love technology, computers, and digital networks. How can we observe the way they approach, explore, discover, and use these very special cultural artifacts (computers and digital networks), how can we investigate the ways in which they interact with them? We probably need a “phenomenology of motivation” (Lumbelli, 2000, 2001a, 2001b) aimed to develop educational eyes capable of seeing children, who are experimenting and learning with ICT. This would provide a basis to develop and organize learning paths and tools which may make the most of children’s energy while avoiding to waste their happiness to connect. Today, observing and studying the way children gain interest, explore and use computers, whether individually, with other children or with an adult, is a key issue in early childhood education, as it is connected with adults’ educational ideas, and their influence on relations and teaching practices, as well as with the roles children can play as mediators of shared experiences (Bove, 2004; Ferri, 2004, 2005; Ferri & Mantovani, 2006; Mantovani, 1998; Mantovani & Musatti, 1996). The research project presented in this paper studies how children and adults explore the potential of new technologies in family and preschool settings. We took as our starting point some shots videotaped and discussed through focus groups with teachers and parents, following the approach outlined by Joseph Tobin in the study “Preschool in Three Cultures: Japan, China, United States” (Mantovani 1998, 1996; Tobin, Wu, & Davidson, 1989).

RESEARCH GOALS AND THEORETICAL BACKGROUND

The goals of the research are:

- Understanding the ways in which 3 to 6 children use and explore new digital technologies and interpret their meanings and functions at home and in preschool settings;
- Exploring teachers’ and parents’ ideas and representations with regard to the use of computers, at home and in preschools, and to their educational roles;
- Working out a methodological approach for the study of these issues in early childhood settings and for eliciting and making explicit the educational models;
- Stimulating opportunities for dialogue and interpretation on issues like education and technologies, learning tools in the early years, collaborative learning, and so forth;
- Developing training materials based on this approach. with computers in the early years;
- Outlining patterns for the development of “new” media education for teachers and schools.

The basic assumption of our research is that in order for teachers and parents to promote an effective and critical use of new technologies in the early years (especially in preschools) they need to gain a deeper understanding of the way in which children *spontaneously* approach these technologies together with an improved awareness of adults’ representations and ideas (Ferri & Mantovani, 2006). Too often computers and digital technologies are introduced in early childhood contexts without adequate understanding of their cultural meanings, cognitive, and social potentials or constraints, which is particularly true in preschool settings as shown by Varisco (2002) and Albanese, Migliorini, and Pietrocola (2000).

On these grounds, our research focuses on exploring the way in which young children approach computers,

how they relate to these tools (both at an individual level and at a social level), what they do with them and what they think about them. Along with observing children, we aimed at understanding the way in which teachers and parents interpret the role of technologies in early childhood education and their educational responsibilities.

Having among its goals a broadening of our theoretical understanding and the development of training materials, our research is based on the assumption that creating dialogue opportunities (focus groups) may promote higher awareness and deeper understanding of the role played by new technologies in the early years. Creating this kind of dialogue may also help provide a sound basis to the design of a way “to mediate” the introduction of technologies in early childhood (Rogoff, 2003, 2001; Siraj-Blatchford, 2004).

Observing the first natural approaches to computer and web technologies, the changes in systematic use of tools, the cognitive strategies and the relational patterns involved is a way to clean up our minds from adults’ prejudices on children’s use of technologies. For example, videotaping and observing young children in front of computers helps us understand how the solipsistic concerns and the social exclusion concerns associated with the use of computers are only teachers’, parents’ and scholars’ fears: young children always approach computers and networks in a cooperative way and get bored of them very fast. Obviously, we are talking about educational software and not about videogames (Ferri & Mantovani, 2006, pp. 75-121)

As early as the 1980s, Robert Taylor (1980), in his book *The Computer in the School: Tutor, Tool, Tutee*, put forward the idea that, at school, digital technologies could play three different roles: tutor, tool, and tutee. It’s clear that each of these roles depends on the kind of dialogue established between the computer, intended as a teacher, and the student. Some software thought to teach, stimulates a real dialogue between children and computers. In the same way, on line communication software mediates symmetrical and unsymmetrical communication between teacher and student and through specific interfaces. They moreover permit a new kind of technology mediated of peer-to-peer relationship. In spite of that, only a few scholars, has yet defined a way to study how analyze the relationship between children and computers and a way to understand educational and communicational patterns that children work out with digital learning tools. Some suggestion can be founded

in the work of same pioneer of this research field, Marc Prensky (2001), Don Tapscott and Anthony Williams (1998, 2006), Win Veen (2006). They spoke about a new generation of learners identified by the metaphor of the Homo Zappiens.

This metaphor represents, for these scholars, a generation that was born inside a digital world and a “computer screen as a window to the world” (Tapscott, 1998). This generation has grown up with technology and learns through computer screens, pc-games, exploration, and show non-linear learning behaviour.

The New Millennium learner are not born in the Gutenberg Galaxy. They are digital kids, navigate efficiently and effectively through digital information, they know how to communicate, and how to build effectively knowledge in a network of peers. Experiencing these digital information flows, kids develop an exploratory learning approach trying to give meaning to the information provided (Veen, 2006). As learners they adopt an exploratory approach, just like in gaming, they start learning without knowing the real goal of tasks. “They define their own goals, finding out the available tools and defining the appropriate strategy to achieve their goals” (Veen, 2006). Through this exploratory approach kids develop a number of meta-cognitive skills directly related to learning. They are self-directed learners, and they adopt very often a problem solving approach to learning subjects. This behavior looks like a consequence of the use of technologies. New Millennium learners have worked out new strategies that contrast with those of the former Gutenberg learner’s generation. They are also an “open source generation”; cooperation for them is better than competition. They show a different behavior in dealing with learning and communication. “What appears crucial here is that learning has evolved from an individual activity of internalizing knowledge towards a social process of externalizing knowledge. Although educational theories have stressed this social activity of learning even before technology became predominant in the lives of young learners, it is through technology that humans have now become nodes in technical networks” (Veen, 2006).

These are fruitful hypotheses and this is a fruitful field of research, if related with an experimental field analysis that can permit us to verify these issues.

Our research goal is to understand the role that digital technologies may play in the different learning phases of child cognitive development. Therefore, it

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