Pedagogy and ICT: 
The Principles of Differentiated Teaching and New Technologies

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ABSTRACT

While the principles of the personalization of study plans are now affirmed at scientific level and in the school world, new technologies must be used appropriately. Reflections on the personalization of ICT in relation to different learning styles seem scarce, particularly regarding differentiated teaching strategies aimed at supporting students with disabilities or learning difficulties. This article develops a thread of reasoning conducive to exploring the use of ICT in teaching to promote development that is integrated and not alternative to methodologies already experimented by teachers. It focuses on the concept of differentiated teaching, giving examples of integrated learning environments and operational proposals.

KEYWORDS

Differentiated Teaching, Educational Relationship, Educational Tools, ICT, Inclusion, Learning Environment

1. INTRODUCTION

In his book The Children’s Machine: Rethinking School in the Age of the Computer (Papert, 1993), Seymour Papert imagines the situations in which a surgeon and a teacher would find themselves, were they transported a hundred years on, from the 800s to the 900s, and had to work in their professional contexts after the changes that had taken place in that time lapse. Without a doubt the surgeon would find himself confronted by an operating theatre that was totally different from past times, with technological innovations that would prevent his professional work. Vice versa, the teacher would find a context that had hardly changed, except for a few slight modifications in the furnishings: the same classrooms, the same blackboards, tables and desks; and he could carry out his professional work without difficulty.

This comparison was taken up by a number of commentators (in Italy even by the Ministry of Education) to underline the scarce propensity for innovation in schools and call attention to the need for renewal, with much emphasis being placed on the changes that new technologies can bring about in the spheres of education and training. It initiated a season of important investments to equip schools with the necessary materials, from IWBs to computers and tablets in every classroom. The goal has been reached in part but continues to be pursued, together with the need to provide teachers with adequate training in the appropriate use of ICT.
In the debate between techno-optimists and techno-sceptics, the more traditional current underlines that new technologies are simply a “tool” for good teaching, perhaps to calm the anxieties of the many non-native digital teachers who have trouble acquiring familiarity with sophisticated technologies in which students often prove to be more competent than their instructors.

Some scholars (Varisco, 2002) stress the importance of constructing technology-rich innovative learning environments (OECD, 2103; Groff, 2013), the value of which lies not in the presence or absence of particular types of tools, but in the quality of the educative project supporting them. So, it is the teacher, through the instructional planning, who confers value and significance to the technologies.

Then there are those who say it is not right to think of ICT in mechanistic terms for the transmission of knowledge, or to introduce ICT into the school system as a mediator of learning on the basis of its innovative potential (Cesareni & Cacciamani, 2014), conceptually rejecting its merely “instrumental” use.

According to some authors (Varani, 2002), new technologies should be considered resources that are active, “situated” (Lave & Wenger, 1991) and “problematizing” (Calvani, 2000) in the construction of knowledge, to be “set up” expertly and attentively for the creation of significant learning environments.

Pier Cesare Rivoltella intervenes in this debate with elements of clarification. He asserts that digital technologies, precisely because of the highly important role they play in the processes through which we today construct and manage our relationships, organize our time, define our identity and promote social acceptance, constitute the infrastructure and languages of our society (Rivoltella, 2015) and their role is not limited to being cognitive or didactic mediators (Damiano, 2014). Continuing with the distinctions between Education Technology and Media Education, he maintains that, far from being a factor of discontinuity, digital should be considered a re-mediation of reality, that is, a reconfiguration in another key of the elements of daily reality. Digital does not replace anything, rather it enriches our possibilities of intervention in real life situations (Rivoltella & Ferrari, 2016).

Observing the European context in general and the Italian situation in particular, where the theoretical approach often prevails over practical aspects, it is apparent that the level of conceptualizations is still fluid, fluctuating between definitions of “tool” or “cognitive/didactic mediator”, “active resource”, “infrastructure” or “language”, even though everyone acknowledges an active role in the re-mediation of reality both of the teacher, as the person behind the training programmes, and of the student, who uses the new technologies, considered “problematizing resources”, in an informed manner.

Despite the depth of this debate, most reflection seems to concentrate on learning environments and dynamics rather than on educational relationships and the relevance of the teaching itself.

Taking a cue from these considerations and mindful of the need to elaborate orientations for educational policies, we began to reflect on the use of new technologies, which we have monitored for more than 10 years, starting from the use of ICT for inclusion, in order to provide indications for ordinary class management – classes which, since the abolition of special classes in Italy in 1977 to initiate the process of inclusion, have been very heterogeneous.

An important investigative element in the acquisition of scientific data was the 2010 Report of the Istituto Nazionale di Valutazione – National Institute of Evaluation (INVALSI), in collaboration with the Istituto per le Tecnologie Didattiche – Institute of Teaching Technologies – of the CNR in Genova (ITD-CNR). Now, seven years later, we have begun a further investigation on new technologies for inclusion in all the provincial core schools (which I will discuss shortly), from which we have come by a number of considerations. Additional reflections have been derived from the participation in some European projects, carried out in conjunction with the European Agency for Special Needs and Inclusive Education.

From the examination of the scientific literature and from the data collected, as well as from visits to hundreds of schools, it emerges that:
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