

# Inclusive Education and ICT: Reflecting on Tools and Methods

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**Abstract.** This paper looks at the issue of e-inclusion in the field of school education. It aims at shedding light on the potential that Information and Communication Technologies (ICT) offers to avoid any kind of discrimination between students. The basic idea underpinning the paper is that the process of school inclusion can be fostered by means of new technological tools only if, in parallel, educational approaches, methods and strategies are conveniently revised and improved. Taking the viewpoint of both educational tools and methods, the paper addresses the key issues of the “accessibility” of educational tools and of the “new competences” required by teachers. In order to build up a genuinely inclusive classroom on the one hand it is necessary for mainstream educational tools (including the ICT-based ones) to be barrier-free and fully accessible to all students, and, on the other, for teachers to have the competences to carefully select e-tools and plan/make a good use of them.

**Keywords.** E-inclusion, Accessibility, Teacher training, Mainstream school education, ICT educational tools

## 1. Inclusion, school and ICT: setting the scene

The concept of e-inclusion is strictly linked to the idea of the “Information Society” which actually concerns “the central position information technology has for production, economy, and society at large”<sup>2</sup>.

As a matter of fact, the Information Society is rapidly becoming an essential part of economic, educational and social life; in this scenario the concept of e-inclusion refers to the goal of guaranteeing access to “information-society based products and services” to all people, including those with special needs or at risk of exclusion (such as the elderly, people with disabilities, those with little formal education, the unemployed, ethnic minorities and people living in isolated rural areas...) <sup>3</sup>. It deals with the idea of ensuring that “everyone is included in and gains from developments enabled by ICT” [1], in the hope that full access to ICT may contribute to overcoming social and economic disadvantages and exclusion, thus also enabling and facilitating the full integration of “all people” in today’s society.

On this same line the concept of inclusion has also been extended to the educational field, where it refers to the idea that all students are ensured with equal

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<sup>2</sup> Definition from Wikipedia, accessed May 2009 at: [http://en.wikipedia.org/wiki/Information\\_society](http://en.wikipedia.org/wiki/Information_society)

<sup>3</sup> “An Information Society For All” Action Plan prepared by the Council and the European Commission for the Feira European Council 19-20 June 2000. Accessed May, 2009 at [http://ec.europa.eu/information\\_society/eeurope/2002/documents/archiv\\_eEurope2002/actionplan\\_en.pdf](http://ec.europa.eu/information_society/eeurope/2002/documents/archiv_eEurope2002/actionplan_en.pdf)

opportunities; thus one of the target objectives to be reached by today's school systems has become that of offering the same level of education to all pupils, irrespective of their varying abilities/possibilities [2].

Recently the concept of "inclusion" has gradually substituted that of "integration" which was based on the distinction between "normal" students and those with special needs (thus requiring specific educational interventions). While the idea of integration suggests that the school takes steps to accept "also" those students who present a variety of problems or difficulties [3] the concept of inclusion is actually much stronger, it refers to "the right to belong to the mainstream", leaving behind the idea that only a few learners have "special needs". As a matter of fact, currently many young people of school age are still unable to fully access mainstream education or are "de facto" excluded from active participation in school systems. This happens for a variety of reasons and mainly regards those students:

- with physical and/or sensorial impairments;
- with cognitive disabilities;
- with specific and non-specific learning difficulties;
- with communication disorders
- who have a cultural/linguistic heritage that is different from most of their classmates' (e.g. immigrants);
- who are hard to reach because of specific personal, family or social situations (school drop outs, illness, social exclusion, nomadic habits,...)

All these students, despite the specificity of their problems, have the right to have equal opportunity in education [4] and to be considered and act as being an integral part of the learning community. On the contrary, the very majority of them still face the problem of accessing and /or using mainstream educational tools and for some of them regular attendance at school is highly problematic. In this panorama, the role of ICT to foster school inclusion has been widely recognized as very promising, in that ICT may help most students overcome barriers to learning, by increasing both achievement and self esteem [5]. Indeed, educational research provides strong evidence that "ICT is both a medium and a powerful tool in supporting inclusive practice. It provides wide-ranging support for communication, assisting many learners to engage with learning, including those who are hard to reach" [6].

Thus, in the field of education, the term e-inclusion clearly assumes the above mentioned double-edged meaning and refers both to:

- the idea that all students (with no distinction) have the right to benefit from ICT tools to the same extent, irrespective of their disabilities/difficulties; this implies all of them having the right to access, and the actual possibility of doing so, and use mainstream educational tools, including those that are ICT-based.
- the idea that the school should "address and respond to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education, also by means of ICT tools" [2].

In the former perspective, the *tools* are the key point and thus full access to all educational e-tools<sup>4</sup> should be guaranteed to all students; in the latter perspective, the educational *method* is at the core: the school should ensure that all students are

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<sup>4</sup> Henceforth the term e-tools refers to: 1) software products (stand-alone or net-based), 2) hardware components, 3) ICT-based services.

considered and enabled to act as being an integral part of the learning community, (also by means of e-tools) to the best of their possibilities.

In the following, by taking the viewpoint of school education, this paper puts forward some experience-based reflections on both educational tools and methods suitable to foster educational inclusive practices.

## 2. E-tools for an inclusive classroom

As already mentioned, educational research has provided strong evidence that e-tools are “both a medium and a powerful tool in supporting inclusive practice” [6, 7]. Nevertheless, “while these technologies are beneficial and have been shown to help with educational tasks, their design and usability are an issue” [8]. In other words, the use of e-tools, in principle, can be both highly beneficial and, at the same time, also very challenging for some categories of students; the possibility of filling in some of the existing gaps can be guaranteed only if fully accessible educational products are used.

Three are the key points to be carefully considered when dealing with the potential of e-tools to support school e-inclusion: e-accessibility, e-usability and e-availability.

- *Accessibility* is the standard word that describes “the degree to which a product (e.g., device, service, environment) is accessible”, that is it can be used (both from a physical and a cognitive viewpoint) by as many people as possible<sup>5</sup>;
- *Usability* is a “qualitative attribute that refers to how easy user interfaces are to use”<sup>6</sup> namely it takes into account the actual clarity and ease of use of the tools;
- *Availability* is a less standardized term that refers to the actual possibility of having at one’s own disposal e-tools in order to fulfill educational objectives.

The above mentioned categories of users that are at high risk of school exclusion face the three challenges related to e-accessibility, e-usability and e-availability to a different extent.

While the actual availability of technological tools can be considered as a significant problem for most of those students who have been defined as “hard to reach” (in particular those who live in isolation or haven’t a stable or even those of no fixed abode, those who live in a context of poverty and social exclusion), the issue of accessibility is particularly important for those students with physical, sensorial and cognitive disabilities. The very majority of them are often unable to either physically use the tools as they are (without considerable adaptations), or to fully access the proposed educational contents. Usability is very relevant indeed and should be regarded as a major goal to reach; in fact, while in principle it may involve all the e-tools users, it may certainly have a determinant impact on immigrant students, on those with communication disorders, those with cognitive disabilities and even on those with specific, or non-specific learning difficulties.

If the availability of e-tools for all students can actually be solved by policy makers by means of adequate investments and suitable awareness campaigns, the two issues related to e-accessibility and e-usability still require significant research efforts and require the setting up of specific field experiences and adequately disseminating their results. This is still true, even if we see that in the field of e-accessibility much has

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<sup>5</sup> definition from Wikipedia: <http://en.wikipedia.org/wiki/Accessibility>

<sup>6</sup> definition from Wikipedia: <http://en.wikipedia.org/wiki/Usability#Definition>

already been done [9]: on the one hand, assistive technologies offer relevant solutions to improve education by helping to overcome instrumental barriers, on the other, in most European countries specific laws have been promulgated [10] in order to ensure “Access for All” to ICT tools [11]. The research field of e-usability is less studied [12] although some of the advances in the Human Computer Interaction (HCI) field and in software interfaces (possibility of customization, responsiveness, adaptability...) already play a major role in enhancing learning possibilities, by helping to overcome cognitive and communication barriers.

### **3. Educational methods for an inclusive classroom**

As clearly stated by Becta [6], in the field of school e-inclusion the provision of technology alone will never fully capitalize on the opportunity ICT may offer, in that “there is a need for a clear understanding of the pedagogy of ICT and inclusive education by all those supporting children’s welfare and education”.

As a matter of fact, the key role of teachers in giving birth to and maintaining a truly e-inclusive classroom is unquestionable [8]. Teachers need some basic new competences among which:

- From a technical point of view: the capacity to evaluate and select the appropriate e-tools and resources (including assistive devices), by also paying particular attention to problems related to software and hardware accessibility.
- From a methodological point of view: the awareness that the use of ICT by students provides them with a great potential, because in principle this allows them to become active constructors of their learning process.

As a matter of fact, the introduction of ICT in school practice enhances a more autonomous learner’s role; this implies that the teacher is no longer the “knowledge repository” who “pours” the contents into the students’ minds, but rather she becomes the facilitator of the learning processes, the one who orchestrates all the resources and manages the dynamics towards the achievement of the learning objectives. Thus, *collaborative work*, as well as *personalization* and *individualization* of the learning path, *inquiry* and *active learning*, are only some of the educational approaches that should belong to the teacher’s competences in an inclusive perspective. At the same time, it is essential that the teacher is able to provide the general outline of the learning activity, then let the single student “shape” it according to her needs, pace and interests, and finally catch the stimuli provided by the student herself from time to time and direct her towards the learning objectives.

Finally, going beyond the teacher’s role, it is even evident that great changes are required to the overall school systems as well. As a matter of fact, in order to allow and support an inclusive pedagogy, schools should guarantee a more efficient and flexible organization, so as to allow their teachers to fully exploit the potential offered by ICT.

### **4. Final remarks**

Inclusive education is an on-going, long-lasting process that needs to be pursued with determination, despite the significant challenges it poses; in this direction, all the

available/ suitable means should be employed, including technological tools that are widely recognized as having high potential at these ends.

E-accessibility is the main, necessary prerequisite for a widespread “inclusive” use of e-tools and its costs (mainly in terms of human effort) can be greatly reduced through the “design for all” approach and by pursuing a better interoperability between services and devices<sup>7</sup>.

Thus, school e-inclusion requires time, efforts, competence and strong conviction by all the main actors involved in students’ education: policy makers, researchers and teachers.

Policy makers have an important role in taking key decisions about the strategic development of this sector, and, in particular, as to hardware provision, teacher training and general public awareness raising actions. The role of researchers is fundamental both to develop appropriate and innovative ICT solutions (technology needs to be robust and sufficiently powerful to do the job), and in the field of inclusive pedagogy. Finally, teachers must work actively and deliberately to reach this goal and the whole educational system should go through significant changes, involving the educational contents, the approaches, the structures and strategies.

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