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FOR A CRITICAL INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN EDUCATION

ABSTRACT

The development of information and communication technologies, particularly in the educational system, has produced a veritable digital revolution. The essay aims to analyse, by means of careful reflection and a critical, interpretative and problematising spirit on media and technologies, the evolution, advantages and disadvantages of the digital communication paradigm, also in the light of the consequences from an educational perspective.

KEYWORDS: *technology, communication, digital, school, education.*

THE DIGITAL REVOLUTION: DIGITAL TECHNOLOGIES IN EDUCATION

The contemporary debate on the new information and communication technologies in our society has ignited a diatribe in the educational sphere between those who support the potential of the new information media and those who, on the other hand, argue that technologies can annihilate books, mechanise creativity and trivialise the intelligence of young people^[1]. Many pedagogues and educators reflect on the impact

^[1] Cfr. A. Efrem Colombi, *Tecnologie e mediazione culturale. Per una integrazione critica delle tecnologie digitali nell'educazione*, Edizioni Junior, Bergamo 2003, p. 3.

and educational repercussions of technology on the new generations. On closer inspection, attitudes such as a lack of love for reading, study and disorientation are often blamed on the spread of technology, even though they would have emerged even before the spread of technology.

The exponential growth of technological means has led to a 'digital revolution' and it is evident that we have moved from an analogue to a digital model of communication. «The analogue structure is characterised by building relationships between representations [...] on the basis of their similarities, correspondences, if not affinities. The measure that suits it is continuity, linearity, sequentiality; compatible proximity. [...] The digital, on the other hand, is distinguished by an opposite tension, that of segmenting, sampling the indivisible and thus merging, uniting things that custom has handed over to us as divided. What is still defined by most as multimedia is its most 'popular' and evident physical version: different media (from telephone to calculator, camera, recorder, etc.) converge on a single medium, thus creating a new one»^[2].

Manuel Castells is an author who has dedicated part of his research to the media galaxy and its unstoppable growth; his most famous work is *The Birth of the Networked Society*^[3]. From this work it is clear what the most relevant elements are for understanding the revolutionary scope of information and communication technology and its economic fallout. In fact, Castells will say: «The peculiarity of the current technological revolution consists not in the centrality of knowledge and information, but in the application of knowledge and information to devices for the generation of knowledge and for the processing/communication of information in a cumulative feedback loop between innovation and uses of innovation»^[4].

The digital now represents the new reality, the new time we are living in, and the human being is realised to the extent that, through technological inventions, he constructs and preserves the human world. This

^[2] L. Toschi, *La deriva comunicativa. Verso un modello generativo della comunicazione*, in F. Cambi-L. Toschi (a cura di), *La comunicazione formativa. Strutture, percorsi, frontiere*, Apogeo, Milano 2006, p. 27.

^[3] Cfr. M. Castells, *La nascita della società in rete*, Egea, Milano 2014.

^[4] *Ibidem*, p. 32.

is why the digital should not be isolated, but addressed as part of a vast communicative textuality^[5]. So the use and manipulation of nature and the construction of civilisation go hand in hand. The new communication system «is determining both the global refinement of the production and distribution of the words, sounds and images of our culture, and their personalisation according to the tastes of the identities and moods of individuals. Interactive computer networks are developing exponentially, creating new forms and channels of communication, shaping life and at the same time being shaped by it»^[6].

The evolution of our society requires ever more up-to-date and renewed knowledge. For this reason, learning in this historical era will not be limited to particular moments or places in everyone's professional life, but will rather be a continuous process that will accompany man throughout his life. In this sense, information technologies represent an important tool for the creation of a true learning community that allows the full realisation of everyone's potential through interaction, sharing and availability of resources and information.

The attention, not new but more determined and intentional, with which the reform school looks at the use of information technology in the education of students, certainly has a connection with the assessment of the current international economic context, which is characterised by instability and the consequent need to rapidly learn new operational, organisational, entrepreneurial, and productive systems, using increasingly refined, fast and redundant tools, with the prospect that those who are techno-literate will inevitably be in difficulty or lagging behind or marginalised.

It is certainly no longer possible to envisage an educational intervention that ignores the significance of this evolution and does not include among its intentions that of ensuring that all students receive a basic preparation, which is also built by using information technology tools on the educational and communicational sides. The indications of the

^[5] Cfr. L. Toschi, *La deriva comunicativa. Verso un modello generativo della comunicazione*, cit., p. 28.

^[6] M. Castells, *La nascita della società in rete*, cit., p.2.

Council of Europe, which calls for combining traditional basic skills with the ability to use information and communication technologies (ICT), go in this direction.

Information technology is transforming all the procedures that structure public services, the programmes and methods of analysis and design of all operational areas, the way of doing research, the way of communicating, with influences on cultures and ways of living. For the school, information technology represents a pivotal element of its innovation, because it involves and affects all the sectors that define it, from administration and accounting to teaching, from research to career guidance^[7].

Therefore, the school of the future^[8] will increasingly be a flexible school that will make continuous innovation its main feature, a school needed to develop interactive learning methods designed for the specific needs of each individual. In this sense, ICT is increasingly seen as a tool capable of creatively expanding the design capacity of teaching activities and, at the same time, enabling the construction of teaching paths capable of providing in-depth study and multidisciplinary links.

It will certainly be one of the school's fundamental objectives to develop the relational competence capable of critically containing and appropriately orienting the IT approach to education.

INFORMATION TECHNOLOGY IN THE SERVICE OF EDUCATION

Computer technologies, by allowing the use of new communicative and cooperative channels, are defined as facilitating tools that facilitate the pursuit of educational objectives because they facilitate mnemonic and assimilative processes, but also comprehension, let us think of the compensatory tools that are used with the Bes (dsa and disabled) such as voice synthesis and software for the creation and use of conceptual maps,

^[7] Cfr. D. Felini, R. Trincherò (a cura di), *Progettare la media education. Dall'idea all'azione, nella scuola e nei servizi educativi*, Franco Angeli, Milano 2015.

^[8] Cfr. C. Di Bari, A. Mariani, *Media education 0-6. Le tecnologie digitali nella prima infanzia tra critica e creatività*, Anicia, Roma 2018.

word processing programmes, digital texts^[9]. The potentialities offered are multiple and there is no discipline that cannot benefit from them for its own specificity and in connection with decisive aspects that pertain to other teachings. Let us also think about the role that telematics tools can play in teacher training, in fact Law 107/2015 of the “Good School”^[10] provided for the adoption of the National Plan for Digital Schools as a tool to address the challenges of innovation in the public system and emphasises the importance of innovation in the school system and the opportunities that digital education offers for the pursuit of this goal.

Paragraph 56 states: “in order to develop and improve students’ digital skills and to make digital technology an educational tool for building skills in general, the Ministry of Education, University and Research adopts the National Digital School Plan, in synergy with European and regional planning and with the National Strategic Project for Ultra Broadband”^[11].

The aim of the Ministry of Education has been to introduce into schools, actions and strategies aimed at fostering the use of technologies in teaching and enhancing the skills of teachers and students in the digital field. The challenge of innovation in learning processes has been ongoing in Italian schools for some time, but no action has ever fully succeeded within an educational institution. This is why in recent years it has been thought to establish the figure of the “digital animator”, which would be nothing more than a teacher catalyser and coordinator for the training and dissemination of digital skills. To better explain the role of the digital animator, we refer to the model of A. Calvani^[12], who emphasises three dimensions in particular:

- the technological dimension: reference is made to basic skills and notions, including those enabling the evaluation, storage,

^[9] Cfr. L. Cottini, A. Calvani, (a cura di), *Tecnologie per l'inclusione. Quando e come avvalersene*, Carocci, Roma 2020.

^[10] Cfr. https://www.istruzione.it/scuola_digitale/allegati/Materiali/pnsd-layout-30.10-WEB.pdf.

^[11] Cfr. Il Piano Nazionale Scuola Digitale (PNSD) è stato approvato dal Ministero dell'Istruzione, dell'Università e della Ricerca il 27 ottobre 2015 con decreto prot. N.851, http://www.istruzione.it/scuola_digitale/index.shtml.

^[12] Cfr. A. Calvani, *La competenza digitale nella scuola*, Erickson, Trento 2010.

- production and exchange of information, integrated with the ability to choose appropriate technologies to tackle real problems;
- the cognitive dimension: which concerns the ability to read, select, interpret and evaluate data, construct abstract models and assess information considering its relevance and reliability:
 - ethical dimension: technology implies a relationship model and therefore a social responsibility, which involves establishing commitments and agreements towards oneself and others.

The aim is to bring the world of traditional education closer to the world of digital innovation by understanding the potential of network technologies for the collaborative construction of knowledge^[13].

While allowing for the emergence of ever better living conditions, at the same time the continuous technical evolution has raised a series of problems of such a quality that human reason finds itself unprepared to deal with. It cannot be denied that the Internet is an inordinate source of opportunities for the construction of knowledge, but it will be necessary to take into account the risk of ‘Hermetic intoxication’, as the philosopher James Hillman repeatedly emphasised with reference to the god Hermes-Mercury, which would end up making us slaves of electronic communication, neglecting the other ‘senses’, i.e. the other forms of knowledge and communication. “Hermes is now everywhere. He flies through the ether, he travels, he phones, he crosses every border. In particular, Hermes is in the market, in the stock market, since in today’s capitalist world everyone plays the stock market, everyone trades, goes to the bank, trades, sells, buys. And then, of course, there is the World Wide Web, the global Internet. So we are in a state of communication and information intoxication. It doesn’t matter what the information is, it doesn’t matter who we communicate with, we just do it and that is a hermetic disease – an overdose, a monotheism of Hermes”^[14].

^[13] Cfr. L. Galliani, R. Costa, C. Amplatz, B.M. Varisco, *Le tecnologie didattiche, Pensamultimedia*, Lecce 1999.

^[14] Cfr. J. Hillman, “L’intossicazione ermetica; la psicologia archetipica guarda ai media elettronici” Conferenza Università degli Studi di Torino 1996.

Technology can be of help in education and training insofar as it retains the connotation of being a means and never becoming an end. Those who use technology, as an end and not as a means, transforming it into a technique, are forced to lose and nullify control of the learning process and become, with excessive damage to the brain, digital succubi, almost bordering on a pathology that manifests itself precisely with the unlimited use of both information technologies and new media. This new psychopathology was discovered and theorised by the neuroscientist Manfred Spitzer. The German scholar argued that «if we limit ourselves to chatting, tweeting, posting, googling [...] we end up parking our brains, which are now incapable of reflecting and concentrating. The increasingly intensive use of computers discourages studying and learning and, conversely, encourages our children to stay for hours in front of electronic games. Not to mention social networks that give toxic substitutes for real friendships, weakening the ability to socialise in reality and encouraging the onset of depression»^[15].

Technological means can help didactics, but they can never replace it because true didactics is above all about relationships, and this can only take place in the school in the presence where interpersonal relationships are important for the purpose of a humanisation process that can never take place with distance didactics alone. The use of educational technologies can only be accepted as valid from a pedagogical and legal point of view if it serves to guarantee human rights for all children and each child, and not be a cause of discrimination and inequality.

As also widely emphasised by Vygotsky's theory, educational practice must emphasise the interactive aspect between educator and learner, between student and student, between students and adults, because without social interaction, internalisation and learning would never take place. The school atmosphere promotes and encourages mutual interaction of the members of the entire educational community^[16].

In the face of telematics, increasingly sophisticated technologies, and the hyperbolic evolution of media, man claims his right not to be

[15] M. Spitzer, *Demenza digitale*, Corbaccio, Milano 2013, p. 13.

[16] Cfr. L. Vygotskij, *Psicologia e pedagogia*, tr.it., Editori Riuniti, Roma 1969.

contaminated in his essence. Since the most powerful medium at man's disposal is communication, it is on this that the teacher must leverage to bring order to complexity.

Today, someone writes, for the power of innovation, that communication is called "perestroika" and everyone knows that the true meaning of "perestroika" is metanoia, that is, the change of man, of anthropological qualities.

However, for this change to occur, a valid education must be implemented. An education is valid when it places 'the person' at the centre; the term education derives from the Latin *educere*, which means 'to bring out' what is inside, and from *educare* (to cultivate), which means that the teacher must draw on and bring out what is inside the child, those faculties, potentialities that constitute his essence, his nature, and cultivate them until they fully bloom. In school language, therefore, education means implementing what is potential, what is in 'germ' (aptitudes, capabilities, faculties, etc.). Education in the authentic sense is that which tends to cultivate and promote the humanisation of the young person in the expression of all their potential^[17].

In the past century it was said: education must conform to the universal principles of reason, i.e. accustom the educand to live *convenienter naturae*, and live *convenienter rationi*.

Back then, teachers were guilty of rigorism. Today, in the wake of the social revolutions of the 1960s and 1970s, which set aside the pedagogy of the negative (education through obedience, authority), there is a tendency to embrace the pedagogy that is essentially based on a metessic and dialogical relationship and that does not deduce behaviour from general norms, but is inspired by them and by fundamental values, «incarnates itself in situations and calls the individual to the difficult and irreplaceable job of man»^[18].

^[17] Cfr. M.C. Nussbaum, *Coltivare l'umanità. I classici, il multiculturalismo, l'educazione contemporanea*, Carocci, Roma 1997.

^[18] E. Ducci, *Approdi dell'umano. Il dialogare minore*, Anici, Roma 1992.

Certainly technological development cannot be ignored, but the relationship with technology requires critical reflection^[19]. It would be appropriate today to talk wisely about a *philosophy of technology*^[20], which can reflect on the implications that the use of information could have on human life and to find ways of using it that are compatible with a good politics of existence.

The educational role and the wise use of technology must be able to contribute to the real development of those *capabilities* that, according to Nussbaum, when translated into action, lead to the full flowering of humanity in all its expressions without running the ethical risk of misusing the same technology that from a means becomes an end, as unfortunately has often happened^[21] Well the progress of technology as long as technology retains its nature as a means and does not become an end. Mounier recalls that technology is «for man, if he masters it, a powerful possibility of liberation. What we must therefore reproach the civilisation of technology is not that it is inhuman in itself, but that it is not yet humanised and therefore serves an inhuman system»^[22]. Instead, we believe that, in a society strongly tied to technology and therefore to 'specialisations', such as ours, orientation is a necessity, as well as a duty, as a guarantee of awareness and realism. If everything pushes young people towards the cultivation of isolated worlds, from the technological to the virtual, school^[23] is still what safeguards the human, the encounter, relationships, exchanges because the true heart of school «is made up of lesson hours that can be adventures, encounters, intellectual and emotionally profound experiences»^[24].

[19] Cfr. M. L. Genta, *Cosa significa davvero mettere in mano ai nostri piccoli cellulari e device. Rischi e opportunità da 0-6 anni*, Le Comete Franco Angeli, Milano 2021.

[20] Cfr. L. Taddio, G. Giacomini (a cura di), *Filosofia del digitale*, Mimesis, Milano 2020.

[21] Cfr. P. C. Rivoltella, *Saggezza digitale: l'educazione mediale una sfida tra etica e scuola di cittadinanza*, AA. VV., *Educare tra scuola e formazioni sociali*, La Scuola, Brescia 2011, pp. 107-119.

[22] E. Mounier, *Manifeste au service du personalisme*, in *Oeuvres*, t. I, cit. p. 584.

[23] Cfr. P. C. Rivoltella, *Screen generation. Gli adolescenti e le prospettive dell'educazione nell'età dei media digitali*, Vita e Pensiero, Milano 2006.

[24] Cfr. M. Recalcati, *Lora di lezione. Per un'erotica dell'insegnamento*, Einaudi, Torino 2014, p. 7.

It must be admitted, however, that the use of new technologies, with particular reference to Internet use, exposes our pupils to risks that should not be underestimated by teachers and parents. Adults have the task of educating young people to adopt virtuous and responsible behaviour online, such as

Assessing the trustworthiness of sites and the information they contain:

- Use complex passwords for their accounts;
- Protect personal information;
- Protect your computer from viruses and other harmful programs;
- Do not illegally download material from the net;
- Do not abuse the Internet;

Schools face the tough challenge of turning digital natives into 'digitally aware', which means triggering a process of taking responsibility and a critical approach to digital.

General objective: to develop digital competences, to exploit the advantages and understand the dangers of uncontrolled use of technology, for proper management of digital transformation applied to the school context

It therefore becomes essential to accompany scientific research with the attentive gaze of critical thinking to question the meaning of our actions, the directions that the use of technology takes.

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