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ABSTRACT

The paper presents a theoretical research path on the impact of teaching and learning in the digital age. Through an in-depth analysis, the transformations in the educational landscape due to the introduction of digital technologies are examined. The challenges and opportunities arising from the use of educational technologies and AI are explored, intended not only as facilitators/speed-ups but also as motivational/emotional tools, able to implement school inclusion.

Il contributo presenta un percorso di ricerca teorica sull'impatto dell'insegnamento e dell'apprendimento nell'era digitale. Attraverso un'analisi approfondita, vengono esaminate le trasformazioni nel panorama educativo dovute all'introduzione delle tecnologie digitali. Vengono esplorate le sfide e le opportunità derivanti dall'uso delle tecnologie didattiche e dell'IA, intese non solo come strumenti facilitatori/velocizzatori ma anche motivazionali/emozionali, in grado di implementare l'inclusione scolastica.

KEYWORDS

Digital school, teaching, citizenship, emotions
Scuola digitale, insegnamento, cittadinanza, emozioni

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1. The new digital school

In the current educational scenario, the advent of digital technologies has triggered profound transformations in teaching and learning.

Our society is permeated by digital innovations that have radically changed not only our ways of living, communicating, socialising and working, but also of learning (Balbi, Magaudda 2022).

The aim of this contribution is to explore the consequences of this revolution, focusing on the challenges and opportunities arising from the integration of technologies in education. We do not limit ourselves to considering these tools as mere facilitators or accelerators of the learning process, but also as motivational and emotional catalysts.

Data from various international research studies confirm an increase in the use of technological devices in both the personal and professional spheres, and also testify to an increase in direct interaction with digital screens even by children (Bagnara et al, 2014).

As far as Italy is concerned, recent statistics reflect a growing trend towards digital communication and confirm that adults and adolescents are making increasing use of technology.

Parallel to this exponential growth in the use of multimedia devices, the perspective of education in the digital age can represent a shared path of cultural, organisational, social and institutional innovation, which aims to revitalise democratic processes and offer new opportunities to schools from the perspective of *life-long learning* (Tisseron, 2013).

The transformation towards a “new digital school” can be an opportunity to create a high quality educational environment that is accessible to all students, thus inclusive, and regardless of their abilities and *backgrounds*.

This transition can be an opportunity to guide students, through digital skills, to make their school learning meaningful in relation to their life context.

However, already since the previous decade, a technological backwardness in education has been observed, mainly due to the lack of basic digital skills among educational staff, who are too often unprepared for the technological challenges and evolving *web* languages.

The integration of technology in the educational environment is therefore complex, as teacher training is often unstructured and does not keep up with the constant innovations in the field.

To meet this challenge, the government has, in recent years, adopted a new strategy aimed at renewing the school system and deepening the use of technology

in education, investing in teacher training and enabling the full potential of digital education to be exploited.

The Ministry of Education, University and Research (Miur) with its “Digital School” project proposes to transform learning environments by introducing the use of technology as a constant support for everyday teaching. This implies not only the adoption of advanced technological tools, but also the development of new teaching methodologies.

Moreover, the Ministry of Education with the National Digital School Plan (PNSD), a legislative document (L. 107/2015) that goes beyond the mere provision of technical resources, proposes to promote a real culture of innovation within Italian educational institutions. The NDSP not only establishes guidelines for technology integration, but also promotes the sharing of best practices and the constant updating of the skills of teaching staff, with the aim of radically transforming the approach to teaching and learning, preparing students to face the challenges of the modern world in an effective and innovative way.

At the level of education policies, the European Agenda 2030 aims at an inclusive and sustainable growth of EU member states, with a focus on education, research/innovation and the digital society.

This translates into a political commitment to train teachers in digital skills, recognising that education systems are becoming increasingly digitised and that teachers need to be prepared for the change taking place (Darling-Hammond, 2021).

Within a new culture of reasoning, teachers' digital competence needs to be adapted to the context and training needs of students (Ritchhart, 2015).

2. Towards an empathic school: the role of educational technologies in the development of emotional intelligence

Digital education has become part of the national school scenario along with the wealth of digital technologies and tools that have spread over the past decades. When we speak of digital culture, we want to highlight the participation and digitisation of traditional cultural processes, from which the educational environment does not escape. Digitised didactics can be realised through multiple channels with different characteristics and purposes.

Computer thinking, understood as the ability to understand and use computer concepts and tools critically and creatively, has become increasingly central in contemporary education.

The introduction of educational technology has greatly influenced the way schools approach and promote this type of thinking, significantly affecting educational dynamics (Rivoltella, 2017).

The impact of educational technologies on schools is multifaceted: on the one hand, they offer teachers new tools and approaches for teaching, allowing for greater personalisation and differentiation of learning; on the other hand, they stimulate students to be more active and participative in their education, encouraging them to explore, experiment and collaborate in the digital environment.

Their use in the school environment can foster the emergence of cooperative work, a context in which emotional intelligence skills can be enhanced. Interaction between students, each with different abilities, intelligences and levels of experience, is fostered: the class becomes a mutually supportive group, where they can express feelings and moods knowing they are in an environment where others share the same challenges (Rivoltella, 2020).

In this context, teachers stimulate empathy and the development of pro-social skills in students, skills that are fundamental for effective interaction in society.

Goleman (1997) argues that being able to control one's emotions is the key to psychological and adaptive well-being because extreme feelings undermine stability. Emotional aptitude is crucial because it influences the utilisation of both emotional and intellectual capacities.

Technologies can be a valuable resource for working on emotional skills and acquiring new ways of recognising and managing emotions.

By promoting cooperative work, the classroom becomes an emotionally engaging group in which bonds are established between students involved in a shared experience. This enables a shift from an egocentric perspective to one centred on mutual respect and the promotion of pro-sociality.

By fostering cooperative work, technology contributes to developing a social worldview in which each individual plays a significant role (Ranieri, 2017). In this context, emotional intelligence is enhanced, allowing students to express their individuality and integrate it with that of others in a constructive manner.

The collaborative production of a hypermedia, for example, becomes an emotional learning laboratory in which students learn to recognise and manage their own emotions and those of others.

Working together to solve problems, students engage in in-depth discussions that go beyond verbal language to include body language. Each student is encouraged to express his or her own opinions, to support them with arguments and to be open to changing his or her beliefs based on new information.

By participating in the creation of a hypertext, which requires different thought processes to identify, organise and present information, students become aware of the identity and uniqueness of others. They recognise each other as bearers of knowledge and skills useful for the success of the group, making a shared commitment that makes them responsible for their own actions and their consequences on the group.

Working together, students experience intense emotions that stimulate them to manage and control their emotions, facilitating the management of conflicts that may arise during the collaborative process (Salovey & Mayer, 1990).

However, the introduction of educational technology also brings with it challenges and issues to be addressed.

In a context in which the school plays a fundamental role in the transmission of culture and knowledge, the need to reorganise the old system based on the transmission of knowledge through texts and lectures in order to integrate the digital technologies just outlined into the new educational system becomes clear. Based on this, it is necessary to be able to guarantee equal access to these resources for all students, reducing digital inequalities that may exclude certain groups from full and equal participation.

3. Technology inclusion in the learning process

The “digital” teacher plays a crucial role in increasing levels of school inclusion, and in creating opportunities for students to grow and learn.

Technologies offer tools and resources that can be adapted to the individual needs of pupils and their educational needs, facilitating access to education and active participation in the school community (Ardizzone, 2002).

One of the main advantages of digital technologies is the possibility to customise learning. Thanks to educational *software*, *online* platforms and specialised applications, teachers can create teaching materials adapted to the different abilities and learning modes of students.

Inclusive education addresses all students and compensatory tools are an integral part of it. It is based on active, participative, constructive and affective methodologies, aiming to meet the individual needs of students.

Inclusion requires precise organisational strategies: the use of new tools and forms of collaboration stimulates students' interest and motivation, encouraging active and autonomous learning processes (Booth, Ainscow, 2008).

Digital tools play a crucial role in adapting education to the individual needs of students.

Accessibility options offer a wide range of features, allowing learners with disabilities to customise the learning experience. For example, through tablets and smartphones, text size can be adjusted, magnification functions can be used and *voice over can be* activated for greater accessibility.

In the presence of specific learning disorders such as dysgraphia and dyslexia, digital tools provide valuable support. Dedicated *fonts* improve the readability of text, while assisted writing tools with spellcheck facilitate the production of error-free texts. Furthermore, the use of electronic dictionaries, digital books and speech synthesisers simplifies the management of school activities (Ghidoni, Angelini, 2007).

Technology provides students and teachers with a wide range of tools to perform multiple tasks, take notes and write, create presentations, archive files, record audio and video, create timelines and concept maps.

Integrating technology into teaching means providing constantly positive *feedback* that helps students to perform tasks independently and take an active role in their own learning process.

Educational technologies are not only facilitating tools, but also motivational and emotional, as well as operational strategies. They make it possible to develop individualised paths that take into account the times, the ways of accessing knowledge, and the learning styles predominant in each student.

It is believed that such an approach can have a positive impact on the knowledge acquisition process. Students will be encouraged to explore, learn, collaborate and learn through continuous discovery as they are stimulated in their curiosity and creativity (Gardner, 1987).

Artificial Intelligence (AI) is at the centre of this reflection as a key resource for analysing, enhancing and improving the learning process. This type of approach offers the opportunity to build an inclusive school, where every individual can benefit from quality education, while promoting the cultural, social and emotional growth of students (Liu, Kromer, 2020).

AI is not simply a tool, but a fundamental element that influences the configuration and perception of reality. It makes it possible to pursue the goal of personalisation, which is essential in the context of lifelong learning and the adoption of a widespread and continuous approach based on the concept of a “continuous learning and innovation environment”.

This *setting* fosters autonomous exploration, accompanying it with personalised individual support, integrating collective training moments and face-to-face interactions according to the maturity level reached by students and their competence development plans (Calvani, 2007). Consequently, personalisation

becomes the core and central value of using AI in education. It is not simply a matter of increasing efficiency in certain activities, but of radically transforming the educational approach, implementing a true personalisation of training paths according to the individual needs of students.

However, for digital technologies to effectively contribute to school inclusion, it is essential to address inequalities in digital access and skills among students.

Educational institutions must strive to remove barriers to accessing technology, ensuring that every student has the opportunity to use digital resources to enrich their learning. In addition, it is crucial to provide training and support to teachers so that they can effectively integrate technologies into their teaching (Jenkins, 2010).

Technological inclusion must not be limited to material access, but must involve the adoption of inclusive practices that take into account the different abilities, learning styles and cultural backgrounds of students.

The aim is to create a learning environment in which all teachers can make their students feel welcome, valued and supported in their growth and development.

To ensure that students become aware citizens, it is essential to integrate digital culture into teaching, content and teacher training (Bonaccini, 2015), in order not only to enrich the educational experience, but also to shape a stronger democracy both within the school and in society as a whole.

Conclusions

Computer-aided thinking and the use of educational technology have slowly, and with considerable difficulty, revolutionised the educational landscape.

Such resources now offer unique opportunities to enrich student learning and to foster the development of those skills that are fundamental to *life-long learning*.

However, the challenges associated with access to and responsible use of educational technologies should be recognised and addressed (Ripamonti, 2016).

Unequal access to technological resources can widen the educational gap between students, creating inequalities in learning opportunities. In addition, inappropriate use of technology can lead to problems related to digital addiction, cyberbullying and loss of concentration.

To ensure that all students can fully benefit from the opportunities offered by school in the digital age, these challenges need to be addressed proactively. This requires a continuous effort to promote inclusion, ensure informed use of technology and democratise access to digital education.

It is only by integrating these three dimensions that we can ensure that educational technologies are truly effective in preparing students for an increasingly digitised and complex future, foster cooperative working and enhance emotional and social skills, which are indispensable for being well at school and in society (Benadusi, Consoli, 2004).

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