The Necessity To Educate About Artificial Intelligence In The Digital Society

Diletta Chiusaroli [1]*and Rosina Leva [1]

[1] Department of Human Sciences, Society and Health; University of Cassino and Southern Lazio; d.chiusaroli@unicas.it; rosina.leva@unicas.it

* Correspondence: d.chiusaroli@unicas.it

Abstract: The increasing digitalization due to the pandemic has led to a new mode of thinking about the way we teach and learn, gradually abandoning traditional teaching as the only model of teaching/learning. We are witnessing a renewal of the social structure, where Artificial Intelligence's presence affects every sector. Society, and the school itself, are responding positively to this change, which brings with it many difficulties and concerns. Beyond the innovation that Artificial Intelligence is bringing to the educational context, its continuous implementation introduces some challenges. In fact, although teachers are working at their best to keep up with the current times, very often the generational gap related to digital skills stands out, highlighting inconveniences in their use. At the same times students, the so-called Generation Z, very often does not know the risk of its improper use even if they are digital native. With this paper, we want to produce a reflection on the need to educate and to understand the correct use of Artificial Intelligence by introducing an educational performance that provides, not only skills for its use, but also the correct knowledge in terms of risk.

Keywords: Artificial Intelligence; Education; Critical Thinking; Digital Skills; School.

1. Introduction

The digitized society, and every related sector of it, ask for an urgent and pedagogical reflection about educational contexts and about the construct of education, especially considering the sudden socio-cultural transformation that is taking place. In this scenario, the concept of Artificial Intelligence becomes more and more prominent, and with the passing of time, it represents one of the best and most discussed topics of the contemporary scientific research. Therefore, it is extremely necessary to face the digital topic, together with a reflection on the choice of the correct actions to privilege in order to face the challenges that it brings with itself. The need for an education that focuses on knowledge and understanding of digital technologies and artificial intelligence is fundamental to live our digital citizenship. At the same time, school continues to encounter several changes, which must be managed and regulated, and not only in technical terms, but in educational-didactic terms. The strong drive towards digitalization that the school and society itself have undergone with the arrival of the pandemic, is still carrying on with it problems that must be faced and

overcome. In this scenario, the main actors, students and teachers, are the protagonists of a teaching-learning process. To face the challenges related to the explicit or implicit use of Artificial Intelligence, it is necessary to support an educational approach with a critical meaning, based on knowledge not only of the AI concept itself but also of all that comes out from it.

2. Artificial intelligence as a teaching-learning content.

In the contemporary scenario, the learning actor lives constantly in a state of continuous connection with the digital world, not only in the school context but also and especially in the private and relational one. With the pandemic, the way of socializing has undergone a transformation that sees the digital context as the only environment for socialization. Today, although the pre-pandemic scene has been restored, there is a change in the social stage, and the presence of Artificial Intelligence in every sector grows day by day. This renewal of the social stage has led to a post-digital, there is no longer distinction between offline and online, but a society that as mentioned by Floridi, it is definited Onlife. School, a privileged educational environment, has the task of managing, with a socio-educational point of view, the cultural transformation that is living through, trying to provide students with the appropriate instruments to deeply understand the digital world and its related issue. The need to highlight a *critical capability* in the school context is driven by the need to confront students with the risks arising from digital. At the same time, it encourages the acquisition and consolidation of knowledge and skills necessary to grasp all the positive aspects arising from it (Pizzolorusso, 2022), with the aim of training citizens and adults of the future society. Digital education is, therefore, not only the knowledge of what digital devices and on-line tools are, but also it is about how they work. We talk about an *ethics care*, which develops between everything related to AI and the pedagogical aspect of free and conscious enjoyment (Panciroli et alii, 2020), a pedagogy that takes a look at the educability of man and of his critical and conscious potentials; prioritizing lifelong learning that fosters the consolidation of what Marangi (2023) defines as digital wisdom. In fact, he identifies in Media Literacy four areas: access, analysis, evaluation and production, designated to play against Digital Educational Poverty. The use of Artificial Intelligence in the school context, while offering inclusive opportunities ensuring the use of an education increasingly personalized and accessible to all, requires knowledge in terms of risk, with the aim of acquiring the life skills necessary for conscious use (Fabiano, 2022). In this scenario, the role of the teacher is characterized by strong controversy, the ones that are not adequately trained, often are sceptical in the use of AI since they are hesitant also with the use of digital in general, feeling at the same time threatened in their own profession. With the pandemic, teachers were catapulted into a new school stage, with a consequent acceleration of the renewal of the same context, necessary to keep up with the social and educational transformation. While on the one hand we are trying to make up for the gaps, on the other many teachers continue to encounter obstacles, presenting hostile attitudes and rejection of new teaching methods. In fact, too often it is believed that the use of AI at school can undermine the creativity and problem solving of students. Instead, it is ignored that AI can be an advantage for teaching activity, playing several roles, including the analysis of the activities carried out in order to support the teacher, saving time and offering the opportunity to use it for the relationship between students (Cesaretti, 2021). In order to allow teachers to get this awareness, it is essential

that they understand the strengths and weaknesses driving from it, thinking of a constant updating of the curriculum, avoiding a vision in which the AI is studied marginally, but considering that now is well implemented in educational designs.

3. Deep understanding of Artificial Intelligence for critically and consciously use.

The European Commission, in fact, with the update of DigiComp 2.2 has highlighted, among the various challenges, the target to have a deep comprehension of AI, focusing on the importance of empowering citizens (Agenda Digitale, 2024) critically and consciously. In fact, it includes a section dedicated to information and data literacy and an additional section on security and privacy. The need for education to a digital life has become a constant factor in creating a digitally inclusive society. European recommendations go hand in hand and find a point of union with the Declaration of Rights on the Internet, which is based "*on the full recognition of freedom, equality, dignity and diversity of every person*" (Camera dei Deputati, 2015). The creation of a legislation that guarantees the fundamental rights of everyone is evident in relation to the digitalization that contemporary society is experiencing, especially in the last decade. The Declaration of Rights on the Internet therefore guarantees access to every individual, with the aim of overcoming any digital partition. Due to the strong diffusion of Artificial Intelligence, it is necessary to introduce the principle *Protection of personal data* in order to guarantee its privacy, as "*may only be collected and processed with the effectively informed consent of the person or on any other legitimate basis provided for by law. Consent is in principle revocable. For the processing of sensitive data, the law may provide that the consent of the data subject must be accompanied by specific authorizations*" (Camera dei Deputati, 2015). From this point of view, however, the lack of clarity and transparency with which many online platforms use user data using them for the profiling of users persists. In this regard, in 2016 the European Union introduced the General Data Protection Regulation and in 2022 the Digital Service Act (Bruni, 2023) as a means of combating disinformation and relating to online user profiling. The necessary training of aware citizens is reflected in D.lgs. 92/2019, which introduces the Citizenship Education that aims to educate students in terms of awareness of the digital world and everything related, highlighting the need to implement an education aimed at achieving critical knowledge and competence of the digital context since the school period (Pizzolorusso, 2022). Getting to know what is an AI tool and how it works, it is fundamental to ensure the conscious use of it necessary and to fully obtain benefit from it. We live, according to Floridi, in the *Onlife* society, where the distances between the analogic world and the digital world meet and merge. Understanding the functioning of Artificial Intelligence, Data, and the achievement of certain solutions, is essential to use it in a critical and conscious way, and at the same time allowing the reduction of cognitive overload risks in students. Regarding the level of knowledge of AI, the International Society for Technology in Education (2021) reiterates that Artificial Intelligence is not something in itself, but penetrates almost every day, ignoring the level of influence in exerts on our lives. The ethical issue of Artificial Intelligence continues to be a big question mark, which is even more the debate with the introduction of ChatGPT and its lack of transparency in terms of saving data acquired through chat. The chatbot developed by OpenAI, has aroused strong interest in young students, it can be a valuable ally for teaching, although often it is defined as a tool that risks to

overload students' cognitively due to the huge amount of data generated by it. At the same time, however, if used in the right ways and with the correct knowledge in terms of AI Hallucination (fantasy of the generated product, so not always authentic), can stimulate critical thinking and improve the problem-solving activity (Grassini, 2023). Having the right critical tools in terms of AI is part of the rethinking of the educational design and school curricula, within which there is space for an educational-experiential concept based on Critical Making (Gratani, 2023) and to make this happen, we need a Maker Culture and adaptive learning, with a long life learning perspective (Gratani, 2023). The use of artificial intelligence in the school context is not something new: the Intelligent Tutoring System represents an example of the first approach to AI. It offers individualized tutoring activities to each student, acquiring the level of knowledge of the learner and the pedagogical model of reference (Panciroli et alii, 2020) through an activity of support and personalization of his learning process (Cesaretti, 2021). Beyond ITS we find Educational Robotics and Gamification, in which the former stimulates student's interest, motivating and providing them with a participatory learning, while developing transversal skills such as problem solving, critical thinking and teamwork; while the latter makes the educational experience more challenging by focusing on motivation. Beyond the use of functional teaching/learning processes, we enjoy a more stimulating and interactive educational experience, through playful-practical educational activities (Ferrari et alii, 2020) that increase the internalization of what has been learned. As regards Educational Robotics, it is possible to divide it into two areas: robotics as a tool to support the teaching-learning process and robotics as a subject of study (Ferrari et alii, 2020), deepening it also in terms of operation, through the study of its hardware and software components but also of the programming languages used by it. This point of view may be more corresponding to the approach adopted by STEM subjects, but the need lies in the implementation of this teaching methodology necessary not only in technical and professional school, but also in other school. As mentioned above, the introduction of AI in the school is not only beneficial for the student, but can also be an effective tool to support the teacher, not only in teaching, but also in understanding the student himself. Thanks to Machine Learning, in fact, the teacher can have clearer information on the profile of the learner, acquiring constructive feedback for the student but also for his work (Panciroli et alii, 2020). This method of data acquisition and analysis (ML) is based on experience, but we have to remind that we learn automatically and not reasoning, in fact, it is well known that Artificial Intelligence now does not pass the Turing Test. There are various types of learning algorithms: the supervised one where the machine learns through a general rule that connects input and output data; the unsupervised one that learns only through input data and reinforcement learning (Panciroli et alii, 2020). Knowledge of data and everything related to it requires a transition from Media Literacy Education to Data Literacy Education, in a perspective of deep understanding that goes beyond the simple exploration of the theme. Living in a data centric society it is necessary an Interpretability and an Explainability of data and algorithms (Panciroli & Rivoltella, 2023), to be inserted in the school context at the curricular level, not as a marginal activity but as a relevant discipline in equal measure to all the others. According to this point of view, the Finnish school reform becomes an example of good practice (Agenda Digitale, 2020), having introduced since 2016 the Media Information Literacy not as a single subject but as a transversal practice to all disciplines, since kindergarten. The main purpose lies pre-

cisely in the need to train future citizens for the continuous changes of the society and to allow the development of awareness and of the thought. There is therefore a need for an intervention aimed at every context, especially in teaching stages, which can encourage the promotion of an education that goes hand in hand with the so-cio-cultural transformation, with the target of forming aware citizens.

4. Conclusions

The need for a digital education reflects an educational emergency that the school has to manage, having the principal goal of forming active citizens, providing them with the tools they need to fully carry out their citizenship in a context increasingly permeated by technology. In this regard, the MIUR (2020) introduces two funda-mental concepts: critical spirit and responsibility, essential to gain awareness of the potential of technology by capturing both the positive and negative aspects. In this background, it is necessary to draft the implementation of training activities related to the introduction and a correct use of AI in school curricula, including educational journeys. This is not only related with technical and professional high schools, but in any other High School Course, so to ensure to everyone a formative and training opportunity useful fot the first and future entrance to the working world, where the presence of artificial intelligence becomes a constant. At the same time, it is so im-portant teachers' training about the acquisition of essential knowledge and skills to apply at best this new technology in teaching processes and during every school journeys. To support teachers and students it necessary to introduced formative paths on Data Literacy, as well as an Interpretability and an Explainability of the algorithms, which represent its basis. This can give students and teachers the opportunity to understand, not only how an AI works, but also how to give a purpose to what it returns to the outside world, so as to develop a critical sense necessary to ensure a conscious use of it (Panciroli & Rivoltella, 2023). Therefore, it is necessary to have a new mode of thinking about teaching, where AI will be included in the curriculum of each institute, giving access to the Critical Thinking introduced in the Finnish school context (Agenda Digitale, 2020). By this way it happens a transition from Learning by Doing to Learning by Making (Gratani, 2023), also through methodologies such as Gamification, which actively engage children in the study, in the comprehension process and in the acquisition of the life skills. Only with a correct knowledge, the acquisition of life skills and the comprehension of the surroundings context it is possible to benefit of AI at all. The educational action of the school aims to prepare students for the challenges of society, making them aware and resilient, in a world where Artificial Intelligence is now a constant. Therefore, it is a right for students to have education's follow up during their journeys' life construction, taking into ac-count everything that concerns him. Only with a correct knowledge, the acquisition of life skills and the comprehension of the surroundings context it is possible to benefit of AI at all.

References

Agenda Digitale, (2020). Pensiero critico batte fake news, a scuola: così la Finlandia detta la linea.

Agenda Digitale, (2024). DigComp 2.2: cosa cambia nel nuovo quadro delle competenze digitali per i cittadini.

Bruni, F. (2023). Capitalismo della sorveglianza, diritti e competenze digitali. In Curricoli Digitali nuove intelligenze nuovi diritti. (a cura di Rivoltella, P.C. et alii). Media e Tecnologie per la didattica. FrancoAngeli Open Access.

Camera dei Deputati. (2015). Dichiarazione dei diritti in Internet. Roma: Camera dei Deputati.

Cesaretti, L. (2021). Intelligenza artificiale e educazione: un incontro tra due mondi. Rischi e opportunità. Rivista di Scienze dell'Educazione. LIX. 1.

European Commission, (2022). DigComp 2.2 The Digital Competence Framework for Citizens.

Fabiano A., (2022). Hypothesis for better social justice. The inclusive school between digital teaching and Artificial Intelligence. Formazione & Insegnamento. XX. 1.

Ferrari, L., Macauda, A., Soriani, A. & Russo, V. (2020). Educational robotics and artificial intelligence education: what priorities for schools?. Form@re - Open Journal per la formazione in rete. Firenze University Press.

Giaconi, C., D'Angelo, I., Marfoglia, A. & Gentilozzi, C. (2023). Ecosistemi formativi inclusivi. Traiettore inclusive. FrancoAngeli.

Grassini, S. (2023). Shaping the Future of Education: Exploring the Potential and Consequences of AI and ChatGPT in Educational Settings. Education sciences.

Gratani, F. (2023). Makers at school: L'apprendimento nell'era post-digitale. Media e Tecnologie per la didattica. Milano: FrancoAngeli.

International Society for Technology in Education., (2021). Hands-on AI Projects for the Classroom. A Guide on Ethics and AI.

Malavasi, P. (2019). Educare robot? Pedagogia dell'intelligenza artificiale. Milano: Vita e pensiero.

Marangi, M. (2023). Sviluppare competenze digitali, tra creatività e partecipazione. In Curricoli Digitali nuove intelligenze nuovi diritti. (a cura di Rivoltella, P.C. et alii). Media e Tecnologie per la didattica. FrancoAngeli Open Access.

MIUR, (2020). Educazione Civica Digitale. ecd.generazioniconnesse.it

Panciroli, C. & Rivoltella P.C. (2023). Pedagogia algoritmica. Per una riflessione educativa sull'Intelligenza Artificiale. Brescia: Scholé.

Panciroli, C., Rivoltella, P.C., Gabbrielli, M. & Richter, Z.O. (2020). Artificial Intelligence and education: new research perspectives. Form@re - Open Journal per la formazione in rete. Firenze University Press.

Pizzolorusso, F. (2022). Citizenship Education during digital transformation. Post-pandemic scenario as a time of pedagogical reflection to an onlife civic experience. Formazione & Insegnamento. XX. 1.