

## **Teaching educational process and citizenship in the contemporary digital environment: A literature review**

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### **Abstract**

The rapidly changing reality, which has been influenced by the development of technology and the industrial revolution since the 19th century, has largely weakened the teaching profession and the forms and type of professional certification. This weakening also depreciates the idea of citizenship, which is largely conveyed during the education process. Contemporary education (4.0) is focused on practical education, where the space for shaping attitudes and creating behavior patterns is marginalized. The relationship between education and industry related to socialization and culture-forming processes is part of the development of individuals in societies and part of a broader formal development plan for different types of state and national organizations. In order to understand what teachers think about the meaning of digital learning in everyday school life and work, it was necessary to undertake an investigation from the perspective of the teachers themselves.

**Key words:** Education 4.0, educational process, digital citizenship education, the role of teachers

### **Introduction**

The recent COVID-19 pandemic has revealed that an education and training system in connection with digital age is crucial for all citizens. However, the coronavirus crisis has also shown that the familiarity with digital tools remains limited (Darling-Hammond, L., & Hyler, M. E., 2020). The digital revolution has changed the education system that must meet the needs of the globalized information society. The goal of education is no longer simply the transmission of knowledge that is not possible to acquire, but the development of skills for its management and application, when and where needed. Also the necessity to focus on the existing 'digital divide' (Ragnedda & Muschert, 2013; Radwan et al 2022; Kearney et al, 2022) and the 'digital gender divide' (the discrepancy between women's and men's access to digital information and technology) has been revealed as a situation of emergency (Kalolo, 2019).

The students have changed radically and as Marc Prensky underlines "today's students are no longer the people our educational system was designed to teach" (Prensky, 2001, p. 1). There is a complete "discontinuity" with the educational past because students think and use information fundamentally differently from their predecessors. They are "digital natives" (Prensky, 2001). The term "digital immigrants" describes people that usually have networking and interaction skills that they acquired later in life and are opposed to "digital natives" who

are usually younger and students. Indicatively, “digital natives” prefer to use social networking platforms, while “digital immigrants” usually use asynchronous means of communication (Jarrahi & Eshraghi, 2019).

The adaptation of education to the new data goes through the readiness and adequacy of teachers and the modernization of their role. The modern educational reality requires vigilance and readiness, continuous training and information on new educational practices (Güneş & Bahçivan; 2018, Pangrazio et al., 2020). The familiarization with new technological tools and challenges can change teachers’ views of digital citizenship and equip them with the necessary knowledge, skills, competences and attitudes that will transform him/her to a confident and powerful digital citizen and professional agent (Choia et al., 2018; Borthwick & Hansen, 2017).

#### **Education 1.0 vs. education 4.0**

The term education 4.0 is linked to the term industry 4.0. Industry 4.0 is based on making use of the latest technological achievements, such as network solutions, artificial intelligence and the automation of cyber-physical manufacturing module. In the subject literature the theoreticians say that this stage was preceded by industry 3.0, i.e. industry based on miniaturization and computerization of production, which had been preceded by the period of “electricity age” (industry 2.0), characterized mainly by the use of electricity in mass production. Researchers define industry 1.0 as manufacturing processes based on a steam engine. By transferring the industrial typology onto education, we suggest the following types of periodization, which extend the time scope (World Economic Forum, 2018).

In the first approach, the level of formalization can be regarded as the determining factor. In this elaboration, education 1.0 embraces the period of the ancient times in which formal requirements for school founders did not exist. Education 2.0 lasted until the industrial revolution during which the standards of oligopoly (state-Church) in the ownership structures did not exist. Education 3.0 permitted a private sector, under the condition that it would not dominate the market. Education 4.0 means a total commercialization of the educational system on the assumption that a controlling institution would be established on the level of the state, local authorities or membership organizations of the owners of scientific institutions.

In the second approach, the distinguishing feature is the level of enrolment rate in the respective eras. In Education 1.0, less than 20% of population had a certificate confirming the graduation from an educational unit and in education 2.0 – from 21% to 50% (World Economic Forum, 2018). In education 3.0, the level of certification reached 90%. Education 4.0 is the ideal type with 100% of population having the certification on the level of secondary school or university. This assumption also requires accepting the condition that the participation in education on a secondary school or university level is not based on the motivation of obtaining the certificate confirming the years of education, but rather on the willingness to gain knowledge, to improve skills and competences.

The most inclusive conceptual model of the division of education into 4 stages is the one associated with the educational objectives. In the first period (1.0) the main emphasis was placed on knowledge transfer, in education 2.0 knowledge was as important as practical skills, education 3.0 included the attempt to create balance between knowledge, abilities and competences and education 4.0 concentrates on knowledge transfer and acquiring specialized skills and the social competences necessary in the narrow segments of the labour market. Students and teachers should be prepared to become productive contributors of future economies and responsible and active citizens in future societies. In this new context four skills are considered as necessary for students: 1) Global citizenship; 2) Innovation and creativity; 3) Technology; and 4) Interpersonal skills (World Economic Forum, 2020). The role

of the teacher and instructor becomes more demanding and needs a good balance of theoretical and practical knowledge to provide a solid foundation for their teaching.

### **The socio-pedagogical role of the teachers in the digital age**

With the socio-economic changes taking place in each society, the role of the teacher in the social system has changed as well. The initial role of a teacher was a universal one, which was to act as a guide and mentor who passed specific skills on to his/her students. Depending on the language system the following terms were used to call a person engaged in educational processes: “master”, “mentor”, “tutor”, “counsellor” (Pliogou et al., 2016). Importantly, in the initial period of the functioning of this profession, there were no formal frames of professional certification and holding this social function resulted in an adequate social status given to an individual by a social group (Karakatsani, 2012; Pangrazio, 2019).

As indicated in the literature on the subject, the emergence of the teaching profession was a manifestation of a more general process of differentiation, specialization, and professionalisation of activities that were originally mainly concentrated within the family or a small local community (Flora, 2014). Additionally, those practicing teaching organized themselves into a separate social and professional category. During the last decades, teachers have attempted to help marginalized groups become efficacious and participatory citizens in multicultural nation-states (Banks, 2017).

Thus, a division was distinguished between specialist teachers and general education teachers preparing young students to perform a social function. The teacher always connected with the local community, and their authority played an important role in the community in which the school operated: it influenced not only the teaching youth, but also the shape of the out-of-school environment. However, in the last decades of the twentieth century, the extracurricular role of the teacher was severely limited. The contemporary teacher is mainly focused on didactic and educational work at school. (Banda & Mutambo, 2016).

The digital gap that exists between teachers and students is an important factor that affects teachers' attitudes and perceptions. Teachers who have been taught and trained with the traditional blackboard and chalk, supervisory means limited to the globe and maps, are now called upon to offer their services using advanced digital media. The generation of teachers born before 1980, belongs to the generation of ‘digital immigrants’ despite participating in the information society using modern media (mobile phones, tablets, computers, etc.). They try to fill this gap and integrate themselves into the digital world (Jarrahi & Eshraghi, 2019). The digital gap with students whose digital skills are far better than their own skills makes them wary of digital technologies and their integration. In this case, teachers find it difficult to communicate since the students now speak another language, different from their own, a digital one. In addition, personal attitudes about whether and to what extent modern technology improves the efficiency of the educational process, are a basic condition for their use in the classroom. Although teachers use digital technology for personal needs as something necessary, the same does not happen in the educational process (Banda & Mutambo, 2016). Familiarity with technology and digital literacy are a two-way process for both teachers and learners nowadays as new technologies must be integrated effectively and functionally into schools, meeting the needs of both (Ribble, 2011).

“Digital Literacy” first emerged as a term during 1980. It was the ability to use and evaluate digital resources tools and services satisfactorily, applying it to lifelong learning procedures (Gilster, 1997). It is described as “the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life” (UNESCO, 2018). Over the years, teachers attempt to build students’ digital capabilities, using diverse models, frameworks and educational digital applications, in order to support them in their future classrooms.

Teachers emerges as the essential factor that determines the successful and effective integration of digital media in the educational process and practice. Understanding the new constantly changing technological requirements and challenges, a teacher must constantly experiment with new technologies, innovate, promote collaborative and exploratory learning, plan learning activities and learning scenarios, test, reflect and modify/redesign his/her practice appropriately in the direction of active action research. At the same time, he/she evolves from a "consumer" to a "creator" of digital content and a member of the community. In addition, codes of ethics, responsible use of Information and Communication Technology (ICT), and the need to recognize the full impact on the digital health and wellness of users becomes imperative. The need of both learners and teachers to strengthen the "resistance" of the former to the lures of –admittedly- attractive virtual reality is a challenge. The modern school must respond consistently and seriously, strengthening and improving all the actions that take place within the school community, in order to meet the needs of both (OECD, 2016).

The majority of teachers recognize as necessary the need for continuous training and digital literacy in order to meet modern requirements, enriching their knowledge and revising -when required- ways and teaching practices. They believe that re-training will facilitate them and improve their efficiency as they should be able to plan and implement appropriate activities in order to motivate students to actively participate in new learning environments. Those who possess the necessary skills have the ease to respond to the new teaching practices for the utilization of digital education. They are more confident and also positively predisposed. The level of re-training also shapes the degree of new technologies' use (Falloon, 2020).

#### **Digital Citizenship and Education**

The concept of citizenship is understood as a status granted by the State to independent individuals, who act rationally to achieve their personal aspirations with the state ensuring equal rights before the law (Jones & Gaventa, 2004). It is sometimes described as an identity associated with the sense of "belonging" and the web of relationships that develop between members of a community, with the primary concern being the collective rather than the individual interest (Jochun et al., 2005). In an attempt to reconcile the first two views, a third perspective wants citizenship to be linked to a practice, which focuses on the common public culture shaped by the individuals' rights. As an identity, it emerges stronger than the individual. Either as a situation, or as an identity, or as a practice, citizenship is closely linked to a web of rights and obligations, especially as it frames the figure of the modern citizen in an extremely complex, multicultural society (Jones & Gaventa, 2004; Conley et al., 2018).

The modern version of the discourse on citizenship will also include terms that describe the multiple modern civic identities and forms of government (Bellamy & Castiglione, 2003). These terms are associated with the existence of a post national model (Keating, 2012), since the model of a sovereign nation-state no longer constitutes a satisfactory framework and functional definition of the term of the political status of the subject. As the modern social structure constitutes a new technological paradigm, a new knowledge economy, three complementary axes emerge and spring up as a "rhizome", composing flexible nodes which transcend spatio-temporal anchorages and coexist in "flow spaces" (Castells, 2010). Society is based on information, global governance and networking. Therefore, citizenship acquires a global content, taking a political, economic, social and cultural dimension (UNESCO, 2015), where the access and the sharing of information is done to and from a complex network of social partners.

We must also underline that the notion of citizenship expands and changes nowadays with citizen participation in the new technology era, as it can be observed in "spaces" with blurred boundaries and sometimes in asynchronous spatio-temporal entities. That is why we speak of a new kind of citizenship which is strongly connected to the digital era and its requirements.

With the growing use of digital technologies in everyday life, we faced an important issue, how better to prepare citizens to make appropriate use of these technologies. As a result, a new concept has entered, the “digital citizenship”. A digital citizen is a person who can criticize online information, can communicate via digital technologies, can produce and consume in a digital environment, complies with the ethical rules while conducting these behaviors and is aware of their rights and responsibilities. The ability to participate in an online society (Mossberger et al., 2007) is a simple acceptance of the definition of digital citizenship with particular emphasis on internet use and less on other digital, interactive media (Staksrud et al., 2009). Hobbs and Jensen (2009, p. 5) define digital citizenship as “the skills and knowledge that are necessary for an individual to be able to function effectively in an increasingly demanding social media environment. In this, the separation of the public from the private sphere remains invisible, highlighting new ethical challenges and at the same time a (different) network of opportunities in the whole population that is in direct and daily contact with the new technology”. Simsek & Simsek (2013) link digital citizenship with new media literacies in a new democratic context, where the latter provide opportunities for greater, more active and insightful participation and response to needs of modern social structures.

Digital citizenship is a complex and multidimensional concept which has only been recently analysed. There are studies that focus on the impact of individual background and different characteristics such as age, gender, socio-economic status on political participation and digital literacy, which are used as a basis for the construction of digital citizenship (Gleason and von Gillern, 2018). Age and gender, but also the years of teaching experience, the school level, the subjects that had been taught as well as the experience with Internet use seem to affect teachers’ levels of digital citizenship (Chu & Garcia, 2014).

It acquires a special content as it addresses, on the one hand, a heterogeneous (in every aspect) audience. On the other hand, it maintains an exclusively mediated character, as it presupposes the use of digital media for communication, information and interaction. Education -at any level and in any way- is considered perhaps the most basic and powerful means of exploiting the benefits of the wealth of technological achievements and the progress of human intellect in this field. According to recent literature digital citizenship contains the following elements: digital ethics (ethical and responsible online behavior, awareness of political, social and cultures issues coming from the digital technologies, digital rights and responsibilities), media and information literacy, participation-engagement and critical resistance which focus on the role of transformative participation through the use of the Internet and the critique to the power relations and structure of the digital environment (Choi, 2016; Simsek & Simskek, 2013). Recent literature also emphasizes the impact of psychological variables on users’ abilities and competence to use the Internet, their online engagement as well as the construction of digital citizenship (Livingstone & Helsper, 2010; Paul & Glassman, 2017). The psychological characteristics seem to be also an important factor that influence teachers’ levels of digital citizenship. However, we must underline that there are few studies focusing on the relationship between psychological factors (Internet self-efficacy and Internet anxiety) and teachers' levels of digital citizenship.

The concept of digital citizenship is analyzed either in a narrow way giving emphasis on the ethical and responsible use of the Internet and other digital technologies or in a more broad and multidimensional way in connection with the following five aspects: technical skills, networking agency, local or global awareness, internet political activism and critical perspective (Choi, 2016). Recent analyses of digital citizenship focus on some specific digital capacities that should be developed through teaching and learning: the protection of intellectual property and privacy, the respect for others online and the ways to avoid cyberbullying and deal with fake news (Ohler, 2012). Some other researches underline how important it is to help students become digitally informed, actively engaged in communication with others online as well as to participate in a responsible way to various elections and other

political and social procedures (Warschauer, 2004; Citron and Norton, 2011). In all aspects the role of teacher is underlined as an important factor of a responsible, informed and active digital citizenship (Greenhow, Robelia & Hughes, 2009; Kimmons & Veletsianos, 2015; Richards, 2010; Milenkova & Lendzhova, 2021).

### **Digital citizenship and teachers' role**

The contemporary citizen is "immersed" in the media. ICT are becoming an integral part of the social activity of individuals and groups. Today, it is difficult to accept the possibility of a technological lockdown as such an event could bring negative effects not only for ICT systems but also for the mental sphere of citizens (Bria, 2017; Falloon, 2020). The teacher has an important role as a link to the knowledge community, or state of the art in digital citizenship. It is crucial in this process that teachers realize their role and assume their responsibility as digital citizens and educators of digital knowledge, skills and competences. A special training on digital citizenship and awareness is very important and should be connected to enhanced content knowledge and pedagogical theories and practices (Jimoyiannis & Komis, 2007).

Contemporary teacher competences should include the effective ability to implement ICT solutions in the teaching process. In some items of pedagogical literature, this education is called multimedia education (Joshi, 2012). The role of the teacher has already changed in part depending on the extent that new technologies have been introduced in schools and the educational process. There is an increasing realization that its traditional role has passed irrevocably and it becomes a driving force for the search, creation and encouragement of self-improvement from being a master of knowledge and having ability to transmit. New technologies and their pedagogical utilization must be done in such a way that the full development of students is sought and it is in line with the modern digital age. The teacher should be the regulator in order to serve the pedagogical purpose and digital literacy becomes an integral and irreplaceable part of the educational process. Teachers have to encourage the development of skills like interactive learning, collaborative and independent learning among the students in order to transform them into life-long learners and innovators (Yondler & Blau, 2021).

Apart general teaching skills, some more skills are needed and a teacher should play their role effectively as a facilitator of learning. It is interesting to underline the importance of networking skills which facilitate collaborative learning, communications skills and social media communication. It is also very important to have the appropriate skills for the management of Knowledge which is a key skill for a teacher in a knowledge-based society. This includes the possibility to find, analyze, evaluate, use and disseminate information within a particular context always in connection with educational goals and pedagogical uses. It is very important to combine learners' needs and desires with the objectives of the curriculum. Another interesting analysis of Choi et al. (2017) has created a Digital Citizenship Scale (DCS) for the analysis and interpretation of teachers' levels of digital citizenship based on the following elements: technical skills, local and global awareness, networking agency, internet political activism and critical perspective. Other researches have compared the role of teachers' participation in social networking sites to digital citizenship capacity and ability (Kimmons and Veletsianos, 2015) and other have analysed the impact of psychological variables on users' competence to successfully use the Internet and on their degree of online engagement and digital citizenship (Livingstone & Helsper, 2010; Tomczyk L. 2020).

### **Digital gender equality and citizenship**

For both women and men it is very important to take advantage of the digital transformation, which is considered as a keystone for inclusive and sustainable economies and societies. However, women still face problems and anxiety in the access and use of digital tools or suffer from 'technophobia' (Bello and Galindo-Rueda, 2020). Cultural barriers, biases and stereotypes related to femininity (Wajcman, 1991), the socialization process and education can affect their understanding and their expectations. Experience such as cyber-bullying and online harassment can have a negative impact on women's contact with technology as well as on their choices of career paths that are connected with the use of digital techniques and materials. This situation is related to the 'masculinity' of technology (Tiainen & Berki, 2019) and to the 'digital gender divide' and can provoke digital illiteracy (OECD, 2018). Another problem is the "glass ceiling" phenomenon, which describes the invisible barrier that keeps women from rising beyond a certain level in their career in connection with digital technology (Larsson & Viitaoja, 2019).

We must underline that education systems play a very important role in developing digital capacities of students and give the same chances to women in this field. The role of the curriculum, education activities and practices is crucial because it will help students acquire the necessary knowledge, skills and competence and recognize their own biases and stereotypes. The transformation of school activities and content based on digital technology in an equal way and approach for both gender will help all students understand their capacities and give them new opportunities to fulfil their aspirations in education and in the labor market (Bello & Galindo-Rueda, 2020). The role of teaching professionals, educators, school leaders is very important in this field.

### **Conclusions**

Despite the fact that the use of ICT gains more and more influence by 'penetrating' the daily life and practices of the whole population, - especially of the younger age groups - digital literacy is still a question as it has not always an obvious and universal acceptance (Knight Commission Report, 2009). Research findings show significant inequalities in the use and dissemination of new technologies in the field of education and in the consequent course of students/learners, with a corresponding deficit in understanding the importance and application of the principles governing their status as digital citizens.

A significant number of teachers have a negative attitude towards new technologies and their use in the educational process, although they acknowledge their positive impact. They focus on the negative effects they can have (Lloyd & Albion, 2005) implying that the use of technology makes them particularly concerned and cautious. Some of them see technology as threatening (Phelps & Ellis, 2002) or don't feel very safe and confident in front of their students (Nunan & Wong, 2005). Nevertheless, there are those who, regardless of their personal perceptions, believe that the conditions in the educational process today are such that teachers are somehow obliged to use new technologies in order to be part of the digital school and to show their qualifications. The active involvement and support of teachers has a strong impact on the teaching process and effectiveness of the teaching-learning process. The level of success in the integration of new technologies in schools does not depend on the quality of the technology but rather on the teachers' support (Romano, 2003) and on teachers' positive disposition and attitude (Deniz, 2007).

The speed of changes and the development of modern information and communication technologies mean that the education system faces new challenges, but also new opportunities. The education system, as it should prepare students to cope with the future life, should anticipate and respond to the following changes rather than lagging behind. The influence of new technologies on the sphere of social activity is enormous and thanks to this phenomenon the role of the teacher is also transformed. It is important that educational

institutions organize teacher training programs for the use of new technology and different innovative techniques which will have a positive effect in using and integrating technology.

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