Mobiles, Digital Tech, Empathy, Metacognition, Self-Consciousness and the Role of Parents in Schools and Societies of the Future

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Abstract—Parents need to develop their cognitive and metacognitive skills such as lifelong learning skills, self-leadership, self-regulation, empathy as well as mindfulness and self-consciousness in order to sustain their parenting role as well as develop their personal and professional capabilities. More specifically, emerging technologies, such as mobiles and artificial intelligence have gained ground on enhancing responsible parenting, parents' engagement with children's learning procedures, parents' wellness and active aging as well as parents' cognitive and emotional balance in regard to their parenting role. Emerging technologies offer convenient, personalized and cost-effective training and assessment tools for parents with the final aim to create flexible and inclusive school communities.

Keywords—parents, schools of the future, emerging technologies, school communities

1 Introduction

Parent involvement and the importance of fostering school family partnerships for training children's and adolescents' cognitive and emotional processes such as empathy has been a significant issue for several decades [1]. More specifically, parents have a leading role, positive or negative, on how digital technology is used in the family as parents have the power to monitor and limit media exposure and use by their children [2]. By media restrictions, it is insinuated that there must be both time and content restrictions, the latest focusing on the excessive use of media for social and entertainment purposes [3].

Notwithstanding, it appears that parents are frequently unaware about their children's social media activity or their children's involvement in a cyberbullying attack [4-5]. Therefore, it is of utmost importance that parents keep up with the digital innovations of their children's era in order to be able to safeguard their digital footprint. Moreover, digitally literate parents can assist children in their homework as modern

curricula demand constructive learning procedures based on the use of information from multiple media sources, such as blended learning or flipped classrooms [6-7]. Even more, the eminent role of parents in the schools of the future lies also in the fact that parental involvement in educational tools and processes can affect their child's dispositions regarding the use of technologies as well [8].

Also, parents' active participation in the school procedures raises their self-confidence and self-efficacy as far as their parental role is concerned. Such decision making procedures could entail parents' training on contemporary learning methodologies, parents' proposals on potential changes in educational curricula as well as their capability to notify the teacher of any special requirements in relation to their children. In short, parents should have the opportunity to acquire the knowledge and develop the skills to be able to maintain a genuine, humane and positive emotional and empathic relationship with their children as well as to be able to take the initiative to communicate their thoughts as equal partners of the school community [9, 10].

The core issues under discussion by the school community regarding the future of schools are related to the organization of the school as well as to the educational content and methodologies applied at school. First, the introduction of interdisciplinary subjects in school curricula as well as the existence of mandatory and optional subjects could uplevel the school status. Second, a student's holistic assessment based on skills assessment rubrics as well as up-to-date information services for parents concerning their children's cognitive, emotional and behavioral profile could enhance a parent's proactive involvement in their child's academic life. This tailor-made approach aims to enhance communication and collaboration among the members of the school community and as a result elevate the overall school functionality and assist both student's achievement and their psychological health [11]. Furthermore, the close relationships between parents and schools reduces the burden and stress caused by parents' involvement in distance and hybrid learning environments [12].

Nevertheless, digital parenting practices may jeopardize both children's rights and privacy in combination with bringing about negative outcomes on children's self-efficacy, affecting both the parent-child trust as well as the well-being of the child itself. Moreover, even though some mothers expressed the need to consult with their child before uploading an image or tagging them on social media, the majority of the mothers rarely consider the child's opinion on the matter [13].

2 Digital technologies in relation to responsible parenting

In the case of Language ENvironment Analysis (LENA), Artificial Intelligence can be used in the early detection of the interference of technology to the detriment of child and parent interaction due to the excessive use of mobile phones by parents. Machine Learning Algorithms are used in the assessment of young children's language skills as well as in the evaluation of children's quality of learning environment. The final outcome of such interventions is to improve the relationship between parents and young children and concomitantly mitigate a child's disruptive behavior [14-16].

In addition, the Video Interaction Project provides regular coaching sessions to parents with children at preschool age based on 5-minute videos of parent-child interactions. The benefit of this intervention stands in the enhancement of parent and children communication through playing, reading and talking, thus reducing maternal depression and parenting stress accompanied by minimizing the use of physical punishment [17].

Present day parents have several technological options leading to responsible parenting, such as baby monitors or smartphone apps, some of which transmit both sound and light, some transmit videos and some detect movement. These can be integrated with sensors built into children's clothes to monitor their health or movements, such as their heart rate, their skin temperature, their oxygen concentration, baby apnea, tachycardia, bradycardia as well as potential oxygen desaturation [18]. All the above indicate that a wide variety of "tracking apps" with geo-fencing options enable parents to mark concrete locations on the map and turn them into so-called safety-zones without the consent and knowledge of the child [19]. Also, pregnancy apps provide women with an opportunity to monitor their pregnancies by inserting intimate health data and personal identifying information about themselves and their unborn child, such as diet before conception, conception date, medical history, number of kicks in the womb and potential due date [20]. However, decision-making based on these apps often reveal conflicting recommendations regarding issues, such as consuming alcohol, eating fish or cheese, taking medicine, dyeing one's hair or planning a scheme for immunization [21]. In addition, sharing one's own medical and private health data with service providers and their potential third parties can create and commodify the sensitive data belonging to the unborn child [20].

3 Digital technologies in relation to parental engagement with children's learning

Distance learning redefined parenthood as educational institutions employ digital platforms to meet students' learning needs and achieve learning goals. Distance learning activities refer to learning activities taking place through virtual classes, synchronous and asynchronous interaction among the members of the school community as well as online tests and assessments [22, 23]. Studies show that two-way information flows between school and parents play a key role in fostering positive learning environments for improving student achievement, behavioral and social skills as well as educational attainment [24, 25]. Parental engagement includes active parenthood varying from moral, emotional and empathic guidance to modeling metacognitive skills as well as creating rich learning environments to address children's learning needs and interests.

Therefore, students' learning processes are interrelated to parents' lifelong learning skills and self-leadership skills, pointing at parents' and children's mutual benefit in learning, beyond the school curriculum. In addition, parental engagement is tied to remote learning environments that can facilitate students' learning capacity and inclusiveness. Hybrid learning environments necessitate students' self-regulation skills

and a certain level of resilience as well as they are a strong predictor of children's achievement [26, 27].

A social robot, which mimics human means of communicating, such as speech, movement and nonverbal cues, including gaze, gestures and facial expressions, was used to engage in dialogic story reading with preschoolers. Social robots can address children's personalized level of language and communication skills as well as attention span [28, 29]. As a result, children learn how to interact in multiple ways and develop their social skills [30].

4 Digital technologies in relation to parents' wellness and active aging

Health education integrating Artificial Intelligence technology and Internet of Things technology, such as in the case of wearable devices and medical equipment, can lead to good behavior habits and lifestyles, thus reducing potential risk factors affecting health and improving the quality of life. More specifically, IoT technology enables the connection to any item via a specific network protocol and it is mainly used for intelligent identification, positioning, tracking, monitoring and management of biometrical and physiological data with the aim to support adults' healthy lifestyle, such as in the case of tracking physical activity and providing biofeedback [31].

IoT technology in smartphones can also assist in bridging the communication gap in the relationship among parents, students and teachers. The educational interactive platform consists of a server and a client. The client includes two applications. A student information management system and an interactive system among students, parents and teachers. Both systems offer real-time interaction as parents and teachers can take an overall look at student's learning status information and parents can master students' diet, exercise status and health information. Therefore, this family education interactive system was built to improve the collaboration among parents, students and teachers and thus, transform the educational environment [32].

Health, well-being and wellness are reciprocally interrelated. Health is a multi componential construct as well as it insinuates that certain norms and directions need to be followed in order to promote and maintain it. More specifically, expecting parents, during pregnancy, can deal with several challenges in regard to their mental, psychological and social health. Expecting mothers with low digital skills, face a stressful period of time as they seek information through the Internet [33]. Moreover, the World Health Organization argues that, people's personal empowerment through improving their digital literacy as well as their cognitive and social skills, is vital in order to be able to gain access and use health information effectively [34, 35].

Low health literacy could be described as poor health-related knowledge and comprehension as well as negative health outcomes associated with a limited ability to interpret medical labels and health messages or use healthcare services [34]. It is essential to prepare the grounds for expecting parents to maintain their health and well-being during the transition to parenthood while taking into account the ever-growing need for a digitalized transfer of knowledge. Especially in the last decade, there has

been an increase in the number of expecting parents who use digital sources, such as the Internet to attain health information. Therefore, health literacy skills can be related to expecting parents' health and thus, to a smooth transition to parenthood [36]. However, health and well-being information derived from the internet could be unreliable and not medically sound.

5 Parents' cognitive and emotional balance in relation to their parenting role

Self-transcendence and self-consciousness are higher mental abilities that are related to parents' mental capacity and thus, to their effectiveness of performing their parenting role. By training parents in the means and techniques involved in the improvement of their cognitive abilities, they gain insight into the indispensable 21st Century Skills, such as resilience, social skills, lifelong learning and cognitive flexibility [37-39].

More specifically, emotion awareness and emotion regulation are main pillars in problem solving, decision making as well as creativity and critical thinking accompanied by metacognitive skills, such as self-awareness, self-monitoring and self-regulation affecting parents' both personal and professional life [40-41]. Moreover, emotion and cognition are interrelated components of intelligence and they are both constructs characterized by their plasticity and their interactive relation with individuals' personality [42]. Therefore, parents as stakeholders in future schools and societies should be supported in order to improve their skills in a holistic way by enhancing their physical and psychological processes in combination with growing their self-value and developing attitudes towards humanity and compassion [43-44].

Holistic behavioral interventions in line with positive psychology, already in full operation are mobile-based and virtual reality training accompanied by artificial intelligence training applications, such as chatbots as well as computerized training courses, encompassing both personal and professional skills development [45-48]. More specifically, mindfulness training, neuro-linguistic programming (NLP) as well as clinical hypnosis have proved to neuro-empower executive functions, foster stress resilience and control impulsive behaviors. Furthermore, these techniques have multiple applications in modern medicine, working environments and school psychology, supported by ICTs to enhance health status [49-51].

6 Research highlights

In a technology-saturated society, where almost all aspects of life are transformed into quantifiable data, it is becoming increasingly important to scrutinize how the processes of datafication affect our everyday lives such as our understandings of society, human behavior, conduct and social interaction. This era of datafication has an important effect not only on adults, but also on children as children's personal information is being collected, monitored, stored and shared in such a myriad of ways and in many respects.

This overwhelming influence of digital technology on parenting has been largely attributed to the demanding rhythm of family life and a parent's need to tackle everyday obstacles. More and more parents encounter stressful situations due to great expectations issued by the marketing industry about "good parenting". More specifically, parents get convinced that a surveillance routine is necessary for being a responsible and careful parent through the use of various mobile apps and digital devices in addition to using social media and various websites to train themselves in responsible parenting. However, digital parenting tools tend to focus on the protective and preventive features [52] while almost entirely discarding the issues related to the ethical approach of children's privacy.

Evidently, various policy documents [53] emphasize the role of parents and caregivers in protecting children's privacy, personal data and online reputation accompanied by the need to respect confidentiality of their correspondence. As there are currently no empirical studies on children's views and experiences related to intimate surveillance exercised by parents, future research should aim to fill the gap on the national and international policies that can foster the accountability and responsibility of the digital technology industry.

7 Conclusions

21st Century skills aim to foster both children's and their parents' quality of life by setting the grounds for reaching an equilibrium between the digitized society we are living in and the need to keep high standards in our humanity and ethics for attaining a sustainable society. Evenmore, parents must keep an equilibrium between their personal and professional lives by developing both their personal and professional skills. Such skills embrace self-leadership, self-efficacy and resilience as well as cognitive flexibility and social skills, all of which depict lifelong learning as a fundamental skill for holistic health and learning interventions.

Finally, we underline the importance of all forms of digital technologies in the education domain for all stakeholders. Digital technologies in education are considered productive and effective, they facilitate and improve assessment, intervention and educational procedures via mobiles, thus bringing educational activities everywhere [58-62]. Also, ICT applications as core supporters of education [63-90] as well as AI, STEM & Robotics bring educational procedures into a whole new level [91-95]. Finally, games transform education into a very friendly and enjoyable experience [96-99].

Additionally, the enhancement of ICTs with theories and models of consciousness, metacognition, mindfulness, meditation, emotional intelligence and empathy [100-121] as well as taking into consideration the environmental and nutritional factors affecting all stakeholders of education [54-57], elevate educational practices and transform the role and abilities of parents as active members of school communities and the society as a whole.

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