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Positive and Negative Impacts of Technology Use in Young Children: The Need for Parents to Learn How to Guide Their Children in Using Technologies

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Abstract

Nowadays, with the ever-growing number of technological innovations, the biggest challenge for parents while raising their children is monitoring their exposure to technology and screen time. Parents are expected to be well-informed and keep their children away from excessive exposure to technology, and this approach may be in line with the experience of parents who grew up without being surrounded by all kinds of technology. Parents still imagine a childhood world for their children free of all technologies and screens. However, in doing so parents often do not consider that children learn a lot from being exposed to technological applications and innovations. In addition, children also learn skills that are crucial in succeeding in the new world in which technology is the cornerstone. Instead, the debate should revolve around the creation of positive attitudes about the use of technology. Children should be oriented toward the use of technology for personal benefits, respectively in raising cognitive, emotional, and physical capacities. They should also be oriented toward self-orientation, self-research, and fulfilment of their needs and interests. If technology is used without parental control, lengthy exposure to technology can be manifested in various negative cognitive and emotional ways. The child may suffer consequences such as depression, anxiety, difficulty concentrating, obesity, reduced success in school, etc. This is a literature review paper that will shed light on better practices for parents.

Key words: *child development; parent involvement; screen time; technology.*

Introduction

Technology is without doubt the greatest innovation of this century. Technology is rapidly becoming a crucial part of human life, but there are also dilemmas about the benefits and risks of using technology in general and especially about its use in young learners. Evidently, researchers have already begun to emphasize the role of technology in all aspects of human life. Technology is being strongly integrated even in the values and attitudes of families (Oliveira, 2020).

The Cambridge Dictionary (The Cambridge Dictionary, 2023) gives a broad definition of the notion of technology, stating that one meaning of the word technology is actually the application of new scientific discoveries including computers, iPads, tablets, etc., or more specifically, the use of these devices for the development of scientific knowledge in various fields. Television as a technical tool is considered separate from other technological tools (UNICEF, 2017). According to Plowman and McPake (2012), the term technology refers to devices such as computers, telephones, televisions, laptops, notepads, DVDs, and many others, from which games, activities, texts, and other opportunities for education or entertainment are derived, and it always refers to hardware and software parts (Warner et al., 2018). Meanwhile, children are a category that not only has access to and is exposed to technological innovations but also tends to use these tools regularly. Secondly, the presence of technological tools and the unrestricted use of these innovations by young learners is becoming one of the main challenges to the child's education and development in the family.

Relying on the curricular documents, we understand that the integration of technology from early childhood is scheduled and planned in a very constructive way. Children must be skilled in the use of technology since this is also related to concepts such as "open society" and "globalism". This means that it is an indisputable requirement of the contemporary time (Core Curriculum for Early Childhood Education 0-5 years old, 2018). The use of technique and technology nowadays means the creation of skills matching various developments that the 21st century is bringing, a century which is developing based on the creation of skills in the use of technology (Weber & Greiff, 2023).

Parents must clearly understand the impact of each of the technical and technological devices on the child's learning first. They also must be self-researchers capable of identifying and classifying the tools and content with positive and negative impacts on their children (Todd, 2015). Parents seem to have clear goals for determining their child's technology-oriented practices. The goal of a genuine orientation is closely related to fostering socialization of young learners by supporting child development in terms of cognitive, social, and emotional aspects. Fortunately, an abundance of programs can be managed and controlled by the parents while the child uses them. Technology and its use by children are developing in different modalities which are based on some characteristics of the child who will use it, including age, experience,

duration, and gender. Due to all these novelties, technology has found its place design, learning access, and content (Hsin et al., 2014).

Zahra and Alanasi (2019) argue that childhood experiences of parents and children are fundamentally different. More specifically, parents have led their lives opposite to what their children do today. They were involved in a lot of outdoor activities, lots of physical activities, and imaginary play. Today's trend of children's games is drastically different. The difference between generations represents different life perspectives and various preferences as well. These perspectives might have an impact on the parents' empathy toward the challenges faced by children who use technological tools on a daily basis.

Parents' education, besides economic status, has a fundamental role in their perspective on the applicability of technology and, eventually, in the classification and supervision of technology use by the children. A study carried out by Hsin, Li, and Tsai (2014) emphasized the relationship between the technological skills and difficulties that resulted within the sample, where according to the analysis, several factors have been identified that had an impact, among them economic status, cultural aspect, social context and an education level of the parents. It has been proven that in cases where children have both parents with a lower education level, they watch more TV, while children who have a father with a higher education level spend more time on the computer, compared to children who do not have a father with a higher education level. It has also been emphasized that the values with which parents were raised affect the motivation or discouragement of their children to watch television or to engage in other activities (Jabbar et al., 2019).

Development and maintenance of social and emotional skills

The formation and development of social skills begin very early. Children need to be exposed to different social environments to develop the skills of interacting with themselves and others. The very definition of early social and emotional development expects children to create relationships with others and create their own experiences (Darling-Churchill & Lippman, 2016). The appropriate use of technique and technology will help to develop and maintain the child's social skills, even though from the initial point of view, it may seem that it is the opposite. Research done by Zhu and Lee (2021) confirmed that interacting with other children while playing computer games will affect the children's social behaviour and social skills, which means that these children will also strengthen communication skills, coordination skills, and problem-solving skills.

According to the study done by Zahra and Alanazi (2019), the paramount emotional and social skills development of new generations occurs while they are briskly moving from one technological device to another. Meanwhile, Floegel, Elias, and Lemish (2021) claim that nowadays children use mobile devices everywhere, even in public places,

which means that they are preventing themselves from interacting with parents and the environment they are staying in. On the other hand, the conclusions reached by Boyd (2014) in his research are different. According to him, children interact with each other even while using technology. Such cooperation, which also leads to the development of the child's social aspect, comes from the interactive nature of entertainment or the game being played. In general, it is concluded that children benefit from digital technology since it creates an opportunity for interaction, enabling children constant contact with each other, increasing the contact they have with others, and in this way developing their social skills (UNICEF, 2017). Limone and Toto (2022) concluded that children who are greatly exposed to technology have exhibited negative psychological and emotional behaviour which is a critical situation that should be dealt with. Even according to the perspective and findings of Wilkinson et al. (2021), technology also has an impact on anxiety and depression in children.

Development of cognitive skills

The adequate use of technology can improve the quality of life since digital skills can be considered a driving element for increasing cognitive activities (Giacomo, Ranier & Lacasa, 2017). According to Giacomo et al. (2017), technology is a phenomenon that is developing rapidly and leaves a lot of space to be applied in in the right way, including work management and a health aspect. It allows us to obtain vast information concerning health and it also has the educational benefit which affects the growth of the learning process. The great power of development and the possibility that each user of technology can share information or content on certain platforms show another dimension of the difficulties that parents can encounter while trying to protect and preserve identity, privacy, and social aspects - their children's emotional well-being.

Nowadays, several ongoing trends derived from the technique and use of technology have assumed global proportions, and children follow these trends. The most frequent clicks that children make are related to entertainment, namely videos or fun games, over which parents should have control because of the content that those videos may have and the message that each of them may convey. Cecilia et al. (2015) have analysed the impact of the games that children play using technology and their impact on the cognitive performance of children. According to the results obtained, the appropriate exposure of children to technology improves cognitive flexibility and increases learning, which leads to autonomy of use and the improvement of learning skills in the future. The intellectual benefits that the child receives from the use of technology include: "educating through cartoons about discipline, good behaviour, encouraging the desire to research more, accessing educational-interactive materials, using this technology for globalization, learning foreign languages, the benefit of new knowledge, learning through play, exposure to different learning strategies, exposure to new cultures, the opportunity to develop imagination and the opportunity to be used as a research tool" (Jabbar et al., 2019; p. 77).

Parents' responsibility and control over the technique and technology used by their children

Parents should be aware of the enormous responsibility they have towards their children and the control they should take to oversee the nature of what children are watching and the amount of time children spend using technology. Parents should be careful when setting the rules regarding the use of technique and technology because the compromises that can be made on both sides can be misinterpreted and misused. Therefore, parents should set rules in a joint decision with their children about using technology. These rules must be obeyed by both parties, parents and children, so before the boundaries are set, there must be compromises (Hiniker et al., 2016). The biggest mistake that parents can make is to set rules and expect them to be applied only by children. Children learn based on observation, therefore parents should set a good example for children, and they should not spend too much time using technology either.

With the increasing concerns regarding the length of screen time, various software programs have been developed to assist parents in controlling the duration and content of what their child is watches or games the child plays. Some types of software that parents can use to monitor and protect their children are Google Family Link, Kids Place Parental Control, Nordon Family, FamiSafe, as well as Android applications for time monitoring (Stoev & Sarmah, 2023).

The positive influence of technique and technology on children

Parents are undoubtedly the main ones responsible for the quality and duration of their children's exposure to and use of technology. They should be aware of the content limitations of what their children are watching. Appropriate content presented through technique and technology has benefits for children, because it promotes progress in all areas of child development. In terms of a positive impact, we can also emphasize development small muscles, since children use their small muscles as they manipulate various objects such as technological devices and robotics (Karel et al., 2020), or as they touch screens and manipulate objects resulting in various actions (Maria Weber & Greiff, 2023). It has been suggested in other studies that if children watch television every day, read, and do physical activities with their parents, they tend to reach a higher level of linguistic and cognitive development, compared to children who do these activities only once or twice a week (Lee, Spence & Carson, 2017).

To be used for learning – Using technology under parental supervision can be directed to learning new things. If applied with such a purpose, it is very beneficial for the child as it gives him a vast opportunity to visually understand what he has learned. The use of technology for this purpose, all types of technology, means the possibility of integrating as many senses as possible which will help in the proper perception

of the received information. Research has shown that children learn best from direct sources (OECD, 2019).

To be used to study – According to curriculum documents, children should be encouraged to be self-researchers. Through the utilization of technology, they can explore, understand new things, make comparisons, develop their critical thinking, and create their own opinions supported by arguments. Developing a child's skill of being a self-researcher is a key responsibility of the parent, which means that parents should guide children in research with the use of technology. This will help expand their intellectual range. Developing such skills in children is also a responsibility of teachers. Researchers have concluded that the use of technology for studying is beneficial to children, but at first, there must be clear instructions from the teacher or instructor so that children could gain proper knowledge and develop critical thinking (Malakar & Begum, 2024), as well as improve and develop competencies that determine the subject (Radovic, 2023), until using technology for studying becomes a regular activity for children.

Develop multi-functional skills – Human beings tend to develop multi-functional skills. Even curricular documents are oriented towards the creation of multi-functional skills that last a lifetime. In this context, the immersion of the child in technology and various technical devices enables the child to communicate, become educated, have fun, and facilitate social interaction and work (Wood et al., 2016). Performing some functions, particularly of a cognitive nature, facilitates the child's work process and interaction with others.

Creating problem-solving and decision-making skills – The opportunities created by technology provide space for children to develop their logical and constructive problem-solving skills. Solving problems using technology implies the power of logic, algorithms, abstraction, and precision (Angeli et al., 2016). A more concrete description states that by using technology the child is empowered to create artifacts, redefine ways of thinking and discipline, and learn different learning practices (Angeli et al., 2016). The child is allowed to create and recreate different forms that have a logical basis and at the same time raise their creativity further. At the elementary level, different philosophies consider that not creating ready-made forms promotes the child's creative development, leaving room for the child's creativity, imagination, and desire to progress. Therefore, problem-solving is usually conceptualized as the knowledge and skills required to work effectively, even in complex and non-trivial situations (Rausch &Wuttke, 2016).

Impact on language development – Children's language development is related to the ability to speak and the ability to understand. Language is the basis of communication and is equally important when using technology. Even if we are dealing with small age groups of children who do not know how to write and read through technical and technological means, they understand the ways of expression, communicate in spoken form with different people, can also converse with artificial intelligence (such

as Siri, Google Assistant, etc.) and in this form receive various information (Maria Weber & Greiff, 2023).

Impact on social-emotional development – Children can learn in various ways and develop their socio-emotional aspect through everyday life experiences. By using different types of technology or media, children will be a step ahead to widen their social and emotional skills (John & Bates, 2024). This is closely related to the age of the child and especially if the games they have chosen are appropriate in terms of educational nature. Among the socio-emotional problems that can be manifested are: "addiction, mania, emotional attachment, increased aggressiveness, mixed feelings, development of bad temper, impact on emotional well-being" (Jabbar et al., 2019, p. 77).

Parental control over technique and technology - The American Academy of Paediatrics recommends that parents and caregivers watch videos together with children, as using technology with children can increase the children's attention to the content they are watching (Gottschalk, 2019). Parents can apply various forms of software to track their child's activities.

Development of critical thinking and creativity - Creativity has been a much-discussed notion in psychology for decades. Nevertheless, it has been described as an illusory concept (Kupers et al., 2018) since with the right technological equipment, creativity might be developed even further, until its virtual implementation. The content of information received through technology can be different, so the individual must also have critical thinking that correlates with correctness, the nature of the information, and the source of information (Van Laar et al., 2020). Creativity is related to the construction of new things and usable ideas, services, or processes. Consequently, these things must be potentially usable (Amabile, 1988; Oldham & Cummings, 1996; Van Laar et al., 2020).

The negative impact of technique and technology on children

Technology and its use are everywhere, so it is critical to use it properly. We can say that there are different reflections and manifestations in different children provoked by the same phenomenon that derives from technique. These differences between children can be identified as excess or inadequate use of technique. Mustafaoglu et al. (2018) claim that children should not be exposed to technology that could negatively affect their individual problem-solving. The child's position in front of technology for indefinite period can cause the child's addiction to it. Wu et al. (2023), in their research on the digital experience of children and the brain, have concluded that long exposure to technology can have an impact on frontal, parietal, temporal, and occipital lobes of the brain, as well as brain connection with other networks. Parents and children must have strong and established relationships, trust each other, and provide support and motivation. According to the study by Moawad and Ebrahem (2016), the longer the children are exposed to technological devices, the more social interaction distance is

created with their parents. Consequently, the level of attachment of the child to the parent decreases.

Decreased ability to concentrate – Focusing on technology reduces the level of children's ability to concentrate on learning school things or to concentrate while talking to parents and family members. The informal use of technology, especially playing various games, is associated with many cognitive changes such in visual-spatial skills, speed of processing, and concentration (Gottschalk, 2019), while addiction to it affects the closure of the child to others.

Potential risk of loss of privacy – Parents should know how to explain to their children what personal privacy is and why it should be preserved. It is important to be aware of the risk of losing privacy as there is a considerable number of techniques and social networks, and the instances of the so-called media "phishing", which all steal the data of the user. There are also cases of phishing on mobile phones or other devices, and there is a potential risk that posts are shown on social networks without the person's approval. There is a dangerous exposure of children to online commercial videos that promote violence and cyber pornography. There is also a rapid distribution of private pictures, usually those that come from different social media (Arnetta et al., 2023). This means that children can very easily become victims of Internet exposure as a result of being involved in different games or the inability to define media or social media as dangerous sources for them. In other words, children's privacy and safety are almost completely in their parents' hands (Zon & Lipsey, 2020), since it is the responsibility of the parent to supervise their child and to help him. It is very important for parents to refrain from judging their children and to be supportive in any situation that the child may be going through.

Obesity and physical development – The passivity caused by prolonged exposure to technical equipment and technology is directly related to the child's lack of physical activity, another factor leading to child obesity. If we focus on and conduct a review of the Core Curriculum for Early Education 0-5 years old (2018), we can understand the great importance of the physical and motor development of children that is emphasized in it. According to this document (Core Curriculum for Early Childhood Education 0-5 years old, 2018), physical and motor development is very rapid in the first three years of a child's life as muscles and bones develop, while in the period of 3-6 years, it continues strengthening and the skeletal system matures. These are the fundamental factors important for concentration of children in many activities that require movement. In short, the physical harms that a child with high technology exposure can experience are: "neck and back pain, fatigue, mental health problems, vision problems, laziness, obesity, lack of exercise, and a loss of interest in traditional games (Jabbar et al., 2019:78)".

Detrimental impacts on achievement - Potentially, children who have long screen time may a priori have lower success in school due to the engagement that school subjects require at home. In the study carried out by Negdahlet al. (2020), it was

concluded that if children use technology to learn, they will increase their success in school, considering that learning through technology helps in a wider perception of information. However, if the child uses technology to escape from the responsibility of learning, their school success will be lower.

Bullying - Bullying is a problem that crosses social boundaries and results in social destruction and emotional trauma. It includes low self-esteem, low academic performance, depression, and in certain cases even violence and suicide (Connolly, 2014). According to Englander (2019), cyberbullying is just like traditional bullying, but it is difficult to examine its prevalence due to the degree of variability and estimation. Therefore, to avoid bullying, parents should educate their children, convey what they are watching, teach them to protect their identity and other personal data, and also teach them how to maintain privacy and censor their personal information.

Depression – Depression has been detected in many studies. This type of disorder in children comes as a result of the child's uncontrolled exposure to technology. Ferguson (2017) has discovered a positive relationship between feelings of depression and delinquency, identified only in children who have more than six hours of screen time. In a study by Hoge et al. (2017), there is a connection between digital media, especially social media, and depression. This can be taken for granted because depression, outside the use of technology, affects children who are reserved, do not have organized schedules in their lives, and do not feel responsible for their obligations, which eventually takes its toll.

Delay in social and emotional development – Studies have shown that frequent use of technology can affect emotional development of children. According to a study conducted by Zahra and Alanazi (2019), approximately two thirds of the sample of children have depicted levels of emotional difficulties, obstacles related to sleep problems, social isolation, and lack of social skills, and these problems can lead to other psychological problems such as diversity, narcissism, depression, and others. According to Mousas et al. (2018), such disorders can be caused by the emotional experiences that children undergo while they are focused on technology, e.g. while playing a game, where during the game the child is unable to separate the real aspect from the unreal one. Concentration based on emotions affects the fluctuations of the socio-emotional aspect of the child.

The risk of increased aggressiveness – Aggression can increase in children if they are exposed to technology that conveys inappropriate messages and does not correspond to the age of the child watching it. Children also learn based on observation and experience. Technological devices enable them to experience new things and accept whatever actions they offer. It is in human nature to expect a closure, regardless of the non-educative message that can be conveyed by a piece of information or an action. In the content that children watch, a moment is constantly repeated, and the risk of accepting that information as commonplace increases. It is always a risk to learn

certain information, regardless of the nature or content of that information, game, or other technological interaction.

In their study on the length of children's screen time and on children's aggressive behaviour, Keikha et al. (2020) concluded that children and adolescents who have longer screen time are more at risk of increased aggressiveness, i.e. violent behaviour, which includes physical beating, victimization, and harassment. It is obvious that electronic devices can develop children's aggressiveness (Ma, 2024), and if the content is violent, there are more opportunities for aggressive behaviour in children (Inanli & Metindogan, 2023).

Sleep disorders – Sleep quality is very important for a productive day, so based on the research conducted by Fuller et al. (2017), there is a correlation between sleeping and using technology, and the worst case is when children use technology during their bedtime. If sleeping time is short and its quality is weak, the person's activities next day will not be successfully performed. So, in cases of excessive screen time, the child will have lower performance, and feel anxiety and a higher level of stress (Cabral et al., 2022). On the other hand, based on the conclusions reached by Ramirez et al., (2021), sleep has an impact on performance in children, but they are not two directly related elements. According to their research results (Ramirez et al., 2021), children's screen time is much longer during the weekend. Children stay in front of technological devices until the late hours, which causes them to have sleep disorders, and this is consequently reflected in their poor performance.

Digital dementia – Digital dementia is another potential negative impact of prolonged use of technology. This notion was used for the first time in 2007 (Lodha, 2019). Spitzer (2014) used it referring to the excessive use of technology, which has an impact on the individual's breakdown of cognitive abilities. For example, Spitzer claims that when someone excessively plays different games using technology, the information that the person receives will be replaced by other information, resulting in a lower level of understanding (Preiss, 2014). Digital dementia is also defined as the influence on "learning style, thinking style, memory, and life experience" (Chen, 2020, p. 74). On the other hand, according to Manwell et al. (2022), cortical networks and associated cognitive-behavioral abilities may cause abnormal development later on, during adulthood. Also, digital dementia can be identified with the same symptoms as those of Alzheimer's, and it can occur as a result of the overuse of technology in the past (Sandu & Nistor, 2021). All the factors that are mentioned above related to digital dementia come as a result of technology addiction that people may have, regardless of age (Horoszkiewicz, 2022).

Discussion and conclusion

In an ever-developing and changing world, parents need to be involved and learn more about technological innovations in order to understand what is available and accessible to their child and be able to give constructive advice as well as effectively

monitor technology use. As described above, technology is an inevitable need that includes two conflicting sides – the individual can have both benefits and damage. When we talk about children, the decision on what technique and technology they should use is set by parents. One of the first parents' dilemmas is when their children should have a technological device for the first time. Such a dilemma must be overcome since children must live according to their mental and chronological age and the environment in which they live, understand the environment and its functioning, but not necessarily possess technical or technological equipment.

It is very good that parents have the possibility of controlling and monitoring their child's usage of technology and parents should know that parental control and continuous observation while their child is exposed to technique and technology is necessary. Setting a screen time schedule is a necessity. Such procedures make children more organized, help them learn and respect the concept of time, and respect the deadlines set by parents. Based on the research of Janssen et al. (2014), it has been claimed that excessive control and excessive protection of children by the parent can have negative consequences on the child's development. Monitoring of children's screen time should be reduced (UNICEF, 2017). From this, we understand that parents must be social, correct, and fair concerning their children.

Wood et al. (2016) maintain that parents and children establish good relationships when they share technological equipment because this interaction ensures parents' access to the learning process of their children. More specifically, it enables parents to monitor learning and assist children's verbal, physical, cognitive, social and emotional development. On the other hand, parents can analyse the content offered, see the needs of their child to develop in a certain developmental area, including the social, emotional, cognitive, or physical area, and, based on these needs, to determine the games or videos which would help their children to develop. Parents should also focus on the financial aspect of the programs and games that are offered through technology. They need to keep these purchases under control, eventually blocking open purchases that their children can make without specific permission for banking data. Another potential risk in these cases is the theft of bank data by people who deal with virtual theft, which also includes bank cards.

Taking into consideration the fact that parents may have different levels of education, various ages, and different professions, Akgun (2023) found a connection between the parents' levels of education, various ages, different professions, and screen time. Parents should not set terms for their children regarding various purchases or the length of screen time according to school success, since children should be clear about the tasks and responsibilities that school requires and not get used to such compromises.

Evidently, at a time when technological innovations shape the way we live, parents must understand that technology is here to stay. Considering the positive impacts of technology on the development of young learners, parents must learn skills on how to best guide their children in using technological innovations, as opposed to entirely

stopping the use of technology. While parents may opt to entirely prohibit technology use based on their experiences of a world where such technological innovations did not exist, in applying this prohibition they are limiting the development of skills that are necessary in an era of technological innovations.

Even for the arguments, facts, and data presented above, the first recommendation will be for educational institutions, ministries, and others to take initiatives for training or sharing information with parents about technology through focus groups and other forms of meetings or even by using different media or social media to inform parents and the whole population on the positive and negative sides of the use of technology.

In a nutshell, parents should set clear rules for the screen time of their children, to be role models for their children in the adequate use of technology, do research and read more about online safety, install monitoring tools for their children's technology tools, and above all, guide children in the use of technology for personal, academic, social and emotional development.

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Pozitivan i negativan utjecaj tehnologije na djecu mlađe dobi: roditelji moraju naučiti kako usmjeravati djecu prilikom korištenja tehnologije

Sažetak

U današnje vrijeme, kada broj tehnoloških inovacija svakim danom raste, roditeljima je najveći izazov pratiti koliko su im djeca izložena tehnologiji i koliko vremena provode ispred ekrana. Od roditelja se očekuje da budu dovoljno informirani kako bi spriječili prekomjernu izloženost djece tehnologiji, a takav pristup uglavnom odgovara iskustvima roditelja koji su odrastali u doba kada ovakva tehnologija nije postojala. Roditelji još uvijek zamišljaju da će njihova djeca provesti djetinjstvo bez tehnologije i ekrana. Međutim, pri tome često ne uzimaju u obzir činjenicu da djeca mogu puno naučiti kada koriste aplikacije i tehnološke inovacije. Osim toga, djeca također uče vještine koje su ključne za uspjeh u modernom svijetu u kojemu je tehnologija kamen temeljac. Stoga bi se rasprava trebala fokusirati na izgradnju pozitivnih stavova o korištenju tehnologije. Djecu treba usmjeravati na korištenje tehnologije za osobnu dobrobit, odnosno razvoj kognitivnih, emocionalnih i fizičkih sposobnosti te ih usmjeriti na samoorijentaciju, samoistraživanje i ispunjavanje vlastitih potreba i interesa. Ako se tehnologija koristi bez roditeljskoga nadzora, dugotrajna izloženost može imati kognitivne i emocionalne posljedice. Na primjer, dijete može pasti u depresiju, biti anksiozno, teško se koncentrirati, biti pretilo te imati slab uspjeh u školi. Ovaj pregledni rad ima za cilj predstaviti učinkovitije pristupe koje roditelji mogu primijeniti u odgoju svoje djece.

Ključne riječi: *djetetov razvoj, tehnologija; uključenost roditelja, vrijeme provedeno ispred ekrana.*

Uvod

Tehnologija je, bez sumnje, najveća inovacija ovoga stoljeća, koja velikom brzinom postaje neizostavan dio ljudskoga života. Međutim, postoje također i dileme kada se radi o prednostima i rizicima korištenja tehnologije općenito, a posebno kada govorimo

o tome kako ju koriste učenici mlađe dobi. Znanstvenici su već počeli naglašavati ulogu tehnologije u svim aspektima ljudskoga života jer se ona čvrsto integrira čak i u obiteljske vrijednosti i stavove (Oliveira, 2020).

Cambridgeov rječnik (The Cambridge Dictionary, 2023) daje široku definiciju pojma tehnologije, navodeći da jedno njegovo značenje podrazumijeva primjenu novih znanstvenih otkrića poput računala, iPada, tableta i sl., ili konkretnije, podrazumijeva korištenje tih uređaja za razvoj znanstvenih spoznaja u različitim područjima. Smatra se da televizor kao uređaj nije jedan od tehnoloških uređaja (UNICEF, 2017). Prema Plowmanu i McPakeu (2012), pojam tehnologija podrazumijeva uređaje kao što su računala, telefoni, televizori, prijenosna računala, bilježnice, DVD-i itd., iz kojih proizlaze igre, različite aktivnosti, tekstovi i druge mogućnosti za obrazovanje ili zabavu, a uvijek sadrži i hardverski i softverski dio (Warner i sur., 2018). Djeca su skupina koja ne samo da ima pristup i da je izložena tehnološkim inovacijama, već i redovito koristi te uređaje. Nadalje, prisutnost tehnoloških uređaja i neograničeno korištenje tehnoloških inovacija od strane mlađih generacija postaje jednim od glavnih izazova u obrazovanju i djetetovu razvoju u obitelji.

Iz kurikula je vidljivo da je integracija tehnologije planirana na vrlo konstruktivan način već od ranoga djetinjstva. Djeca moraju biti vješta u korištenju tehnologije jer je ona ključna za otvoreno društvo i globalizam. To znači da je tehnologija nezaobilazan zahtjev koje suvremeno društvo postavlja pred nas (Temeljni kurikulum za rani odgoj i obrazovanje 0-5 godina, 2018). Korištenje tehnike i tehnologije u današnje vrijeme zahtijeva razvoj vještina koje odgovaraju raznim dostignućima 21. stoljeća, za koje je razvoj vještina za upotrebu tehnologije ključan (Weber i Greiff, 2023).

Roditelji prvo moraju razumjeti kakav utjecaj svaki uređaj i tehnologija imaju na proces djetetova učenja. Moraju biti sposobni samostalno istraživati te prepoznati i klasificirati uređaje i sadržaje na one koji imaju pozitivan i na one koji imaju negativan utjecaj na njihovu djecu (Todd, 2015). Čini se da roditelji imaju jasne ciljeve za pravilno usmjeravanje djece tijekom korištenja tehnologije. Cilj ispravnoga usmjeravanja jest potaknuti socijalizaciju mlađih učenika i pružiti podršku u procesu razvoja djeteta i njegovih kognitivnih, društvenih i emocionalnih komponenti. Srećom, roditelji mogu kontrolirati i upravljati mnogobrojnim računalnim programima koje dijete koristi. Tehnologija i način na koji ju djeca koriste razvijaju se u različitim modalitetima baziranima na nekim djetetovim osobinama koje tehnologiju koristi (dob, iskustvo, spol i vrijeme korištenja). Upravo zbog svih novina koje donosi, tehnologija je našla svoje mjesto u dizajniranju, pristupu učenju te sadržaju koji se uči (Hsin i sur., 2014).

Zahra i Alanasi (2019) tvrde da su djeca i roditelji imaju jako različita iskustva iz djetinjstva. Roditelji su živjeli potpuno drugačije od svoje djece u današnje vrijeme. Bili su uključeni u niz fizičkih aktivnosti i imaginarne igre. Današnji trend u dječjim igrama bitno se razlikuje. Međugeneracijska razlika predstavlja različite životne perspektive i preferencije koje mogu utjecati na empatiju roditelja prema izazovima s kojima se suočavaju djeca koja se svakodnevno koriste tehnološkim uređajima.

Stručna sprema roditelja, uz ekonomski status, ima ključnu ulogu u tome kako percipiraju primjenu tehnologije, kako klasificiraju tehnologiju i kako nadziru svoju djecu dok provode vrijeme pred ekranima. Studija koju su proveli Hsin, Li i Tsai (2014) pokazala je da postoji veza između tehnoloških vještina i poteškoća unutar uzorka. U analizi je utvrđeno nekoliko čimbenika koji su imali veliki utjecaj: ekonomski status, kulturološki aspekt, društveni kontekst i razina obrazovanja roditelja. Dokazano je da djeca koja imaju oba roditelja s nižom stručnom spremom više gledaju TV, dok djeca koja imaju oca s visokom stručnom spremom više vremena provode za računalom u odnosu na djecu koja nemaju oca s visokom stručnom spremom. Također je naglašeno da vrijednosti s kojima su roditelji odgajani utječu na to koliko djeci dozvoljavaju ili brane da gledaju televiziju i da se bave drugim aktivnostima (Jabbar i sur., 2019).

Razvoj i održavanje socijalnih i emocionalnih vještina

Formiranje i razvoj socijalnih vještina počinje vrlo rano. Djeca moraju biti izložena različitim društvenim okružjima kako bi razvila vještine interakcije sa samima sobom i s drugima. Sama definicija ranoga socijalnog i emocionalnog razvoja podrazumijeva da će djeca graditi odnose s drugima i stjecati vlastita iskustva (Darling-Churchill i Lippman, 2016). Pravilna upotreba tehnike i tehnologije pomoći će u razvoju i održavanju djetetovih socijalnih vještina, iako se na prvi pogled može činiti da je suprotno. Istraživanje koje su proveli Zhu i Lee (2021) potvrdilo je da interakcija djece s drugima dok igraju računalne igrice utječe na ponašanje djece u društvu i na socijalne vještine, što znači da će ta djeca ojačati i komunikacijske vještine, vještine koordinacije i vještine rješavanja problema.

Prema studiji koju su proveli Zahra i Alanazi (2019), najvažniji razvoj emocionalnih i društvenih vještina novih generacija događa se dok brzo prelaze s jednoga digitalnog uređaja na drugi. No, Floegel, Elias i Lemish (2021) tvrde da djeca danas koriste mobilne uređaje posvuda, pa čak i na javnim mjestima, što znači da je njihova interakcija s roditeljima i okolinom u kojoj borave onemogućena. S druge strane, zaključci do kojih je došao Boyd (2014) u svojem istraživanju su drugačiji. On tvrdi da djeca međusobno komuniciraju čak i dok koriste tehnologiju. Takva suradnja, koja omogućava razvoj djetetove socijalne komponente, proizlazi iz interaktivne igrice ili zabave. Općenito se može zaključiti da djeca imaju korist od digitalne tehnologije jer ona pruža priliku za interakciju, pomaže im da budu u stalnom međusobnom kontaktu, povećava broj kontakata s drugima i tako razvija socijalne vještine djece (UNICEF, 2017). Limone i Toto (2022) došli su do zaključka da djeca koja su jako izložena tehnologiji imaju loše ponašanje te psihološke i emotivne posljedice, što je ozbiljna situacija s kojom se treba pozabaviti. Prema studiji koju su proveli Wilkinson i sur. (2021), tehnologija utječe i na anksioznost i depresiju kod djece.

Razvoj kognitivnih vještina

Adekvatna uporaba tehnologije može poboljšati kvalitetu života jer se digitalne vještine mogu smatrati pokretačkom snagom za povećanje kognitivnih aktivnosti (Giacomo, Ranier i Lacasa, 2017). Prema Giacomu i sur. (2017), tehnologija je fenomen koji se brzo razvija i ostavlja mnogo prostora za adekvatnu primjenu, uključujući poslovni i zdravstveni aspekt. Omogućava nam da dođemo do brojnih informacija o zdravlju, a ima i obrazovnu korist jer utječe na napredak u učenju. Velika moć razvoja tehnologije i mogućnost da svaki korisnik može dijeliti informacije ili sadržaj na određenim platformama pokazuju još jednu dimenziju poteškoća s kojima se roditelji mogu susresti pokušavajući zaštititi i očuvati identitet, privatnost i društvenu domenu svoje djece, tj. njihovo emocionalno dobrostanje.

Nekoliko je aktualnih trendova koje djeca prate proizašlo iz uporabe tehnike i tehnologije, a ti su trendovi poprimili globalne razmjere. Djeca najčešće otvaraju sadržaje vezane za zabavu, odnosno videozapise ili zabavne igrice, nad kojima bi roditelji trebali imati kontrolu zbog sadržaja i poruka koje svaki tih videozapisa može prenijeti. Cecilia i sur. (2015) analizirali su utjecaj igara koje djeca igraju pomoću tehnologije i njihov utjecaj na kognitivne mogućnosti djece. Prema dobivenim rezultatima, primjereno izlaganje djece tehnologiji poboljšava kognitivnu fleksibilnost i učenje, što vodi k autonomiji u korištenju tehnologije i unaprjeđenju vještina učenja u budućnosti. Intelektualne dobrobiti koje dijete stječe korištenjem tehnologije uključuju „educiranje o disciplini i lijepom ponašanju kroz crtane filmove, poticanje želje za istraživanjem, pristup interaktivnim obrazovnim materijalima, korištenje nove tehnologije za globalizaciju, učenje stranih jezika, korist od novoga znanja, učenje kroz igru, izloženost različitim strategijama učenja, izloženost novim kulturama, mogućnost razvijanja mašte i mogućnost korištenja tehnologije kao istraživačkoga sredstva" (Jabbar i sur., 2019, str. 77).

Odgovornost i kontrola roditelja nad tehnikom i tehnologijom koju djeca koriste

Roditelji bi trebali biti svjesni goleme odgovornosti koju imaju prema svojoj djeci, potrebe kontrole sadržaja koji djeca gledaju te vremena koje djeca provode ispred ekrana. Trebaju biti oprezni pri postavljanju pravila o korištenju tehnike i tehnologije jer se ustupci obiju strana mogu pogrešno protumačiti i zloupotrijebiti. Zato bi roditelji zajedno s djecom trebali postaviti pravila o korištenju tehnologije, a tih bi se pravila trebale pridržavati obje strane. Stoga se kompromisi trebaju napraviti prije postavljanja granica (Hiniker i sur., 2016). Najveća je pogreška roditeljaje to što očekuju da će samo djeca poštivati pravila koja postave. No, djeca uče putem promatranja pa roditelji trebaju biti dobar primjer djeci i ne provoditi previše vremena pred ekranima.

Postoji velika zabrinutost zbog sve dužeg vremena koje djeca provode pred ekranima pa su izrađeni su različiti računalni programi koji pomažu roditeljima u kontroli toga vremena, sadržaja koje njihovo dijete gleda ili igrica koje igra. Neki računalni programi

namijenjeni roditeljima kako bi nadzirali i zaštitili svoju djecu su Google Family Link, Kids Place Parental Control, Nordon Family, FamiSafe, kao i Android aplikacije za praćenje vremena koje djeca provode pred ekranom (Stoev i Sarmah, 2023).

Pozitivan utjecaj tehnike i tehnologije na djecu

Roditelji su nedvojbeno najodgovorniji za kvalitetu sadržaja koje njihova djeca konzumiraju putem tehnologije i za duljinu trajanja vremena koje provode na taj način. Trebali bi znati da je potrebno ograničiti vrste sadržaja koje njihova djeca gledaju. Adekvatan sadržaj prezentiran pomoću tehnologije može biti koristan za djecu jer potiče napredak u svim područjima njihova razvoja. Jedan od pozitivnih utjecaja jest razvoj fine motorike budući da djeca koriste sitne mišiće dok upravljaju različitim digitalnim uređajima i robotikom (Karel i sur., 2020) i dok dodiruju ekrane. Tako mogu uočiti što se događa kada nešto pritisnu na tim uređajima (Maria Weber i Greiff, 2023). U nekim drugim istraživanjima pokazalo se da ako djeca svaki dan gledaju televiziju, čitaju i bave se fizičkim aktivnostima sa svojim roditeljima, dostižu višu razinu jezičnoga i kognitivnoga razvoja, u usporedbi s djecom koja se ovim aktivnostima bave samo jednom ili dvaput tjedno (Lee, Spence i Carson, 2017).

Upotreba tehnologije u svrhu učenja – Tehnologija se pod nadzorom roditelja može koristiti za učenje novih stvari. Ako se primjenjuje s tim ciljem, vrlo je korisna jer djetetu pruža priliku da vizualno razumije ono što je naučilo. Takva upotreba tehnologije omogućava integraciju većega broja osjetila koja će pomoći u pravilnoj percepciji primljenih informacija. Istraživanja su pokazala da djeca najbolje uče iz izravnih izvora (OECD, 2019).

Upotreba tehnologije tijekom procesa učenja – Prema kurikulu, djecu treba poticati na samostalno istraživanje. Pomoću tehnologije mogu istraživati, razumjeti nove stvari, uspoređivati, razvijati kritičko mišljenje i izgrađivati vlastite stavove koje mogu potkrijepiti argumentima. Odgovornost je roditelja da kod djece stvore naviku samostalnoga istraživanja, što znači da ih trebaju usmjeravati na istraživanje pomoću tehnologije. Time će se razviti njihove intelektualne sposobnosti. Nastavnici imaju tu istu odgovornost. Istraživanja su pokazala da je upotreba tehnologije u svrhu učenja djeci jako korisna, ali im prije toga koraka nastavnici moraju dati jasne upute kako bi stekla odgovarajuće znanje, razvila kritičko razmišljanje (Malakar i Begum, 2024) te unaprijedila i razvila kompetencije bitne za određeni predmet (Radović, 2023). Nastavnici ih trebaju u tom procesu voditi sve dok im upotreba tehnologije u svrhu učenja ne postane uobičajena aktivnost.

Razvoj višestrukih vještina – Ljudska bića teže razvoju višestrukih vještina. Čak su i kurikuli usmjereni na stvaranje višestrukih vještina koje se stječu za cijeli život. U tom kontekstu, ulazak djeteta u svijet tehnologije i upotreba raznih uređaja omogućuju djetetu komunikaciju, obrazovanje i zabavu te olakšavaju društvenu interakciju i rad (Wood i sur., 2016). Neke funkcije, posebno one kognitivne prirode, olakšavaju djetetov proces rada i interakciju s drugima.

Stvaranje vještina bitnih za rješavanje problema i donošenje odluka – Mogućnosti koje pruža tehnologija otvaraju djeci prostor za razvoj logičkih vještina i vještina konstruktivnoga rješavanja problema. Rješavanje problema pomoću tehnologije podrazumijeva korištenje logike, algoritama, apstraktnoga mišljenja i preciznosti (Angeli i sur., 2016). U nešto konkretnijem opisu navodi se da upotreba tehnologije osnažuje dijete za stvaranje artefakata, redefiniranje načina razmišljanja i discipline te ga upoznaje s različitim načinima učenja (Angeli i sur., 2016). Dijete ima priliku stvarati i kopirati različite obrasce koji imaju logičku podlogu, a ujedno dodatno razvijaju djetetovu kreativnost. Razne filozofije polaze od toga da će dijete ostvariti bolji kreativni razvoj ako ne stvara neke postojeće oblike, tj. ne kopira nešto, jer će tako imati više prostora za razvoj kreativnosti, mašte i želje za napretkom. Stoga se rješavanje problema obično shvaća kao znanje i vještine potrebne za učinkovit rad, čak i u složenim i neuobičajenim situacijama (Rausch i Wuttke, 2016).

Utjecaj na razvoj jezika – Jezični razvoj djece povezan je sa sposobnošću govora i sposobnošću razumijevanja. Jezik je temelj komunikacije, a jednako je važan i pri korištenju tehnologije. Čak i ako se radi o dobnim skupinama male djece koja još ne znaju pisati i čitati kada se koriste raznim uređajima, ona razumiju načine izražavanja, komuniciraju u govornom obliku s različitim ljudima, a mogu i razgovarati s umjetnom inteligencijom (npr. Siri, Google Assistant) i na taj način primati različite informacije (Maria Weber i Greiff, 2023).

Utjecaj na socijalno-emocionalni razvoj – Djeca mogu učiti na različite načine i razvijati svoju socijalno-emocionalnu komponentu kroz iskustva stečena u svakodnevnom životu. Kroz upotrebu različitih vrsta tehnologije ili medija djeca će biti napredna i razvijati svoje socijalne i emocionalne vještine (John i Bates, 2024). Taj je napredak usko povezan s dobi djeteta, a posebno ako su igre koje je odabralo primjerene u obrazovnom smislu. Neki socijalno-emocionalni problemi koji se mogu pojaviti su: „ovisnost, manija, emocionalna povezanost, povećana agresivnost, pomiješani osjećaji, ljutnja, što utječe na emocionalnu dobrobit" (Jabbar i sur., 2019, str. 77).

Roditeljska kontrola nad tehnikom i tehnologijom – Američka pedijatrijska akademija preporučuje roditeljima i skrbnicima da gledaju videozapise zajedno s djecom jer takva upotreba tehnologije može bolje usmjeriti dječju pozornost na sadržaj koji gledaju (Gottschalk, 2019). Roditelji mogu koristiti različite računalne programe za praćenje aktivnosti svoje djece.

Razvoj kritičkoga mišljenja i kreativnosti - Kreativnost je pojam o kojem se puno raspravlja u psihologiji već desetljećima. Usprkos tome, opisuje se kao iluzoran koncept (Kupers i sur., 2018), jer bi se uz odgovarajuću opremu kreativnost mogla dalje razvijati, sve do virtualne implementacije. Sadržaj informacija dobivenih pomoću tehnologije može biti raznolik, pa je potrebno imati kritičko mišljenje koje je u skladu s nekim moralnim načelima te s prirodom i izvorom informacije (Van Laar i sur., 2020). Kreativnost je povezana s izgradnjom novih stvari i korisnih ideja, usluga ili procesa,

koji moraju biti potencijalno upotrebljivi (Amabile, 1988; Oldham i Cummings, 1996; Van Laar i sur., 2020).

Negativan utjecaj tehnike i tehnologije na djecu

Tehnologija je svuda oko nas te je iznimno važno koristiti ju na ispravan način. Upotreba iste tehnike i tehnologije kod različite djece može izazvati različita razmišljanja i pojave. Te su razlike posljedica pretjerane ili neadekvatne upotrebe tehnike. Mustafaoglu i sur. (2018) tvrde da djeca ne bi trebala biti izložena tehnologiji koja bi mogla negativno utjecati na njihove vještine rješavanja problema. Ako dijete koristi tehnologiju jedno duže vrijeme, može postati ovisno o njoj. Wu i sur. (2023) u svojoj studiji o dječjem digitalnom iskustvu i njegovom utjecaju na mozak zaključili su da dugotrajna izloženost tehnologiji može utjecati na frontalni, parijetalni, temporalni i okcipitalni režanj mozga, kao i na povezanost mozga s ostalim mrežama. Roditelji moraju uspostaviti jako dobar odnos sa svojom djecom, imati povjerenja u njih te im pružati podršku i motivirati ih. Prema studiji koju su proveli Moawad i Ebrahem (2016), što djeca više koriste tehnološke uređaje, to je njihova interakcija s roditeljima manja. Tako dolazi do sve manje privrženosti djece roditeljima.

Smanjena sposobnost koncentracije – Fokusiranost na tehnologiju smanjuje razinu koncentracije kod djece i za vrijeme učenja u školi i za vrijeme razgovora s roditeljima i članovima obitelji. Neformalno korištenje tehnologije, posebno igranje raznih igrica, povezano je s brojnim kognitivnim promjenama u vizualno-prostornim vještinama, brzini obrade informacija i koncentraciji (Gottschalk, 2019), dok ovisnost o tehnologiji izaziva zatvorenost djeteta prema drugima.

Potencijalni rizik od gubitka privatnosti – Roditelji bi trebali objasniti svojoj djeci što je privatnost i zašto je treba čuvati. Važno je biti svjestan rizika od gubitka privatnosti jer postoji znatan broj tehnika i društvenih mreža te puno tzv. medijskoga „phishinga", kojima se od korisnika kradu podatci. Postoje i slučajevi krađe identiteta putem telefona ili drugih uređaja, a postoji i potencijalni rizik da se objave na društvenim mrežama pojave bez odobrenja vlasnika. Opasno je i to što su djeca na internetu izložena komercijalnim videozapisima koji promiču nasilje i pornografiju. Privatne slike se iznimno brzo distribuiraju, pogotovo one koje su dostupne na raznim društvenim mrežama (Arnetta i sur., 2023). To znači da djeca vrlo lako mogu postati žrtve izloženosti internetu zbog toga što igraju *online* igre ili zbog toga što ne mogu odrediti koji su mediji ili društvene mreže opasne kao izvor informacija. Drugim riječima, privatnost i sigurnost djece gotovo je u potpunosti u rukama roditelja (Zon i Lipsey, 2020) jer je njihova odgovornost kontrolirati i nadzirati svoju djecu i pomagati im. Vrlo je važno da se roditelji suzdrže od kritiziranja i da djeci budu podrška u svemu što prolaze.

Pretilost i tjelesni razvoj – Pasivnost uzrokovana dugotrajnom izloženošću tehnici i tehnologiji izravno je povezana s nedostatkom tjelesne aktivnosti djeteta, što je još jedan od uzroka koji dovode do pretilosti djeteta. Osvrnemo li se na Temeljni kurikulum za

rani odgoj i obrazovanje djece 0-5 godina (2018), možemo shvatiti kolika je važnost tjelesnoga i motoričkoga razvoja djece koji se u tom kurikulu posebno naglašavaju. Prema ovom dokumentu (Core Curriculum for Early Childhood Education 0-5 years old, 2018), tjelesni i motorički razvoj je vrlo brz u prve tri godine djetetova života jer se razvijaju mišići i kosti. No, u dobi od 3 do 6 godina nastavlja se jačanje i sazrijevanje koštanoga sustava, što je važno za koncentraciju tijekom mnogobrojnih aktivnosti koje zahtijevaju kretanje. Ukratko, dijete koje jako puno koristi tehnologiju može doživjeti fizička oštećenja kao što su „bol u vratu i leđima, umor, mentalni problemi, problemi s vidom, lijenost, pretilost, nedostatak tjelovježbe i gubitak interesa za tradicionalne igre" (Jabbar i sur., 2019, str. 78).

Štetni utjecaji na postignuća - Potencijalno, djeca koja provode puno vremena ispred ekrana mogu *a priori* imati slabiji uspjeh u školi zbog zadaće koju moraju odraditi kod kuće. U studiji koju su proveli Negdahlet i sur. (2020) došlo se do zaključka da ako djeca koriste tehnologiju u svrhu učenja, poboljšat će uspjeh u školi, s obzirom na to da učenje pomoću tehnologije olakšava percipiranje informacija. No, ako dijete koristi tehnologiju kako bi pobjeglo od odgovornosti učenja, tada će njegov uspjeh u školi biti slabiji.

Zlostavljanje – Zlostavljanje je problem koji prelazi društvene granice i rezultira društvenom destrukcijom i emocionalnom traumom. Zlostavljanje uglavnom uključuje nisku razinu samopoštovanja, nisku akademsku uspješnost, depresiju, a u određenim slučajevima čak i nasilje i samoubojstvo (Connolly, 2014). Englander (2019) navodi da je zlostavljanje putem interneta slično tradicionalnom zlostavljanju, ali je teško ispitati njegovu učestalost jer se javlja u različitim varijantama i različito se procjenjuje. Stoga, kako ne bi došlo do situacije u kojoj su djeca zlostavljana, roditelji bi trebali educirati svoju djecu, pokazati im koja je poruka onoga što gledaju, učiti ih da zaštite svoj identitet i druge osobne podatke te da čuvaju svoju privatnost.

Depresija – Depresija je uočena u mnogim studijama. Ova vrsta poremećaja kod djece posljedica je nekontrolirane izloženosti djeteta tehnologiji. Ferguson (2017) je u svoje m istraživanju otkrio pozitivnu vezu između osjećaja depresije i delinkvencije, utvrđenu samo kod djece koja pred ekranima borave dulje od šest sati. U studiji koju su proveli Hogea i sur. (2017) uočena je povezanost između digitalnih medija, posebno društvenih mreža, i depresije. To se može smatrati činjenicom jer se depresija, kada nije uzrokovana upotrebom tehnologije, javlja kod djece koja su rezervirana, koja nemaju organiziran raspored u životu i ne osjećaju se odgovornima za svoje obveze, a na kraju to ima visoku cijenu.

Zastoj u socijalnom i emocionalnom razvoju – Studije su pokazale da česta upotreba tehnologije može utjecati na emocionalni razvoj djece. Prema studiji koju su proveli Zahra i Alanazi (2019), otprilike 2/3 djece od koje se uzorak sastojao opisalo je različite oblike emocionalnih poteškoća, probleme sa spavanjem, socijalnu izolaciju i manjak socijalnih vještina, a ti problemi mogu dovesti do drugih psiholoških problema kao što

su različitost, narcizam, depresija itd. Mousas i sur. (2018) smatraju da takvi poremećaji mogu biti uzrokovani emocionalnim iskustvima koja djeca stječu dok su fokusirana na tehnologiju, npr. tijekom igranja igrice, kada dijete nije u stanju razlikovati stvarni život od nestvarnoga. Koncentracija koja ovisi o emocijama utječe na promjene u socijalno-emocionalnom razvoju djeteta.

Rizik od povećane agresivnosti – Razina agresivnosti može znatno porasti kod djece koja su izložena tehnologiji koja prenosi neprimjerene poruke i koja ne odgovara dobi djeteta koje ju koristi. Djeca također uče na temelju promatranja i iskustva pa im tehnološki uređaji omogućavaju da iskuse nove stvari i sve što nude. U ljudskoj je prirodi očekivati da svaka aktivnost ili događaj ima svoj kraj, bez obzira na to ima li poruka koja se prenosi ili radnja koja se izvodi edukativnu vrijednost ili ne. No, u sadržajima koje djeca gledaju, trenutak se može neprestano ponavljati te postoji rizik da djeca počnu vjerovati da je tako i u stvarnosti. Razumijevanje određene informacije uvijek predstavlja rizik, bez obzira na sadržaj te informacije, igre ili interakcije.

U studiji Keikha i sur. (2020) o vremenu koje djeca provode pred ekranom i agresivnom ponašanju djece pokazalo se da su djeca i adolescenti koji duže vremena provode pred ekranom izloženiji riziku od povećane agresije, tj. nasilničkoga ponašanja. Ono uključuje fizičko nasilje, viktimizaciju i maltretiranje. Očito je da elektronički uređaji mogu povećati agresivnost kod djece (Ma, 2024). Kada je sadržaj koji se konzumira nasilan, veći su izgledi da će se djeca agresivno ponašati (Inanli i Metindogan, 2023).

Poremećaji spavanja – Kvaliteta sna vrlo je važna za produktivan dan. Prema istraživanju koje su proveli Fuller i sur. (2017), postoji korelacija između spavanja i upotrebe tehnologije. Najgora je situacija ona u kojoj djeca koriste tehnologiju u vrijeme kada bi trebala spavati. Ako je vrijeme spavanja kratko, a njegova kvaliteta loša, sljedećega dana ono neće uspješno obavljati svoje zadatke. Dakle, u slučajevima kada pred ekranom provede previše vremena, dijete će biti manje uspješno u obavljanju zadataka, osjećati anksioznost i višu razinu stresa (Cabral i sur., 2022). S druge strane, kako su zaključili Ramirez i sur. (2021), spavanje utječe na uspješnost u izvršavanju zadataka, no to nisu dva izravno povezana elementa. Prema rezultatima njihova istraživanja (Ramirez i sur., 2021), djeca vikendom provode puno više vremena pred ekranom, čak i do kasnih noćnih sati. Posljedica su problemi sa spavanjem i slaba uspješnost u obavljanju zadataka.

Digitalna demencija – Digitalna demencija još je jedan mogući negativan rezultat dugotrajnoga korištenja tehnologije. Taj se pojam prvi puta pojavio 2007. godine (Lodha, 2019). Spitzer (2014) ga koristi kada govori o prekomjernoj upotrebi tehnologije, što dovodi do kolapsa kognitivnih sposobnosti. Na primjer, Spitzer tvrdi da kada netko previše upotrebljava tehnologiju za igranje igrica, informacija koju ta osoba prima bit će zamijenjena drugom informacijom, a rezultat je niži stupanj razumijevanja (Preiss, 2014). Digitalna demencija definira se i kao utjecaj na „stil učenja, stil razmišljanja, pamćenje i životno iskustvo" (Chen, 2020, str. 74). S druge strane, prema Manwellu i

sur. (2022), kortikalne mreže i povezane kognitivno-bihevioralne sposobnosti mogu kasnije, u odrasloj dobi, uzrokovati abnormalni razvoj. Također, digitalna demencija ima iste simptome kao i Alzheimerova bolest, a može se javiti i kao rezultat prekomjerne upotrebe tehnologije u prošlosti (Sandu i Nistor, 2021). Svi gore navedeni čimbenici povezani s digitalnom demencijom rezultat su ovisnosti o tehnologiji, bez obzira na to koliko je osoba stara (Horoszkiewicz, 2022).

Rasprava i zaključak

U suvremenom svijetu koji se stalno razvija i mijenja, roditelji moraju biti uključeni u odgoj svoje djece i biti upoznati s tehnološkim inovacijama kako bi mogli razumjeti kakvi su sadržaji dostupni djeci, dati im konstruktivne savjete i učinkovito nadzirati upotrebu tehnologije. Kao što je gore opisano, tehnologija je neizbježna i potrebna, a uvijek postoje dva različita gledišta – korisnik od nje može imati i korist, ali i štetu. Kada govorimo o djeci, odluku o tome koju će tehniku i tehnologiju dijete koristiti donose roditelji. Jedna od prvih dilema roditelja je kada bi prvi put njihova djeca trebala imati nekakav digitalni uređaj. Takvu dilemu treba odmah riješiti jer djeca moraju živjeti u skladu sa svojom mentalnom i kronološkom dobi, ali i okolinom u kojoj žive, razumjeti tu okolinu i način na koji ona funkcionira, a ne nužno posjedovati tehnološke uređaje.

Vrlo je dobro, čak i neophodno, to što roditelji mogu kontrolirati i nadzirati kako dijete koristi tehnologiju. Potrebno je i odrediti vrijeme kada dijete može koristiti tehnologiju. Ovakvi postupci čine djecu organiziranijom, uče ih poštivati vremenska ograničenja i roditeljska pravila. Na temelju rezultata istraživanja koje su proveli Janssen i sur. (2014) uočeno je da prevelika kontrola i zaštita od strane roditelja može imati i negativne posljedice na djetetov razvoj pa bi trebalo reducirati roditeljsku kontrolu nad upotrebom tehnologije kod djece (UNICEF, 2017). Iz toga se može zaključiti da bi roditelji trebali biti društveni, korektni i pošteni prema djeci.

Wood i sur. (2016) smatraju da roditelji i djeca uspostavljaju dobre odnose kada dijele tehnološke uređaje jer ta interakcija roditeljima omogućava uvid u dječji proces učenja. Preciznije rečeno, omogućava roditeljima da prate proces učenja i pomažu djeci u verbalnom, fizičkom, kognitivnom, socijalnom i emocionalnom razvoju. S druge strane, roditelji mogu analizirati ponuđeni sadržaj i vidjeti koje su potrebe njihovog djeteta kako bi ostvarilo napredak u određenom razvojnom području, uključujući socijalno, emocionalno, kognitivno ili fizičko područje te na temelju toga odrediti igrice ili videozapise koji pomažu razvoju djece. Roditelji bi također trebali voditi računa i o financijskom aspektu računalnih programa i igrica koje tehnologija nudi. Kupovinu bi trebalo kontrolirati, a čak i blokirati mogućnosti da djeca lako mogu obaviti *online* kupovinu, bez davanja ikakvih bankovnih podataka. Drugi potencijalni rizik u ovim slučajevima je krađa bankovnih podataka od strane ljudi koji se bave virtualnom krađom, uključujući i podatke o bankovnim karticama.

Uzimajući u obzir činjenicu da roditelji mogu imati različitu stručnu spremu i profesije te biti različite dobi, Akgun (2023) je uočio vezu između stručne spreme roditelja,

njihove dobi i profesije i vremena koje provode koristeći tehnologiju. Roditelji ne bi smjeli ucjenjivati djecu kupovinom različitih stvari ili duljinom vremena koje mogu provesti pred ekranom na temelju školskoga uspjeha, jer bi djeci trebalo biti jasno koje sve odgovornosti i zadatke škola postavlja pred njih i ne navikavati se na kompromise.

Očito je da u vrijeme kada tehnološke inovacije određuju način našega života roditelji moraju shvatiti da je tehnologija neizbježna. S obzirom na njezine pozitivne utjecaje na razvoj mlađih učenika, roditelji moraju naučiti kako najbolje usmjeravati svoju djecu u korištenju tehnoloških inovacija, umjesto da potpuno prestanu koristiti tehnologiju. Ako roditelji odluče potpuno zabraniti upotrebu tehnologije na temelju svojih iskustava stečenih u svijetu kada takva tehnologija nije postojala, ograničit će kod djece razvoj vještina koje su neophodne u vremenu tehnoloških inovacija.

Na temelju navedenih argumenata, činjenica i podataka mogu se izraditi preporuke za obrazovne ustanove i nadležna ministarstva da preuzmu inicijativu i organiziraju za roditelje edukacije o tehnologiji kroz fokus grupe i razne druge oblike sastanaka, ili čak putem medija i društvenih medija. Na taj bi se način roditelje i širu populaciju informiralo o prednostima i nedostatcima upotrebe tehnologije.

Ukratko rečeno, roditelji bi djeci trebali postaviti jasna pravila o tome kada i koliko mogu koristiti tehnologiju, biti im uzori u tome, istraživati i čitati o sigurnosti na internetu, koristiti alate za nadzor sadržaja koje dijete konzumira na internetu te, najvažnije od svega, usmjeravati djecu da koriste tehnologiju za osobni, akademski, socijalni i emocionalni razvoj.