

The Impact of Online Learning on Children's Education and Optimisation Strategies

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Abstract: With the rapid development of technology, online education has become the new normal for children's learning. This study provides an in-depth study of the positive and negative impacts of online education on children and makes some recommendations. The study found that online education provides children with opportunities to improve their digital literacy, and helps them adapt to the learning environment in the digital age. Secondly, although online learning breaks through children's time and location constraints and increases flexibility in learning, there are a range of negative impacts. Issues such as reduced social interaction, distraction, and uneven coverage of educational resources require attention. To address these issues, this study makes recommendations to optimize the online learning experience, including adding real-time interactive elements, designing lively and interesting educational content, and providing rich and diverse learning resources. In addition, fostering children's self-directed learning skills, teamwork and creative thinking were also deemed crucial. Finally, this study appeals to the collaborative efforts of families and schools to focus on children's performance in online learning through clear learning plans and monitoring mechanisms. At the policy level, it is recommended that quality standards and regulatory bodies for online education be established to address the imbalance of educational resources and ensure that children's privacy is effectively protected.

Keywords: Online learning, Children's education, technical literacy

1. Introduction

In today's digital age, the rapid development of technology is changing people's way of life, and one of the most significant changes is online learning in education [1]. Especially after the occurrence of COVID-19, online education has become more popular and its impact on children has gradually attracted widespread attention [2]. As a vulnerable group in society, children are more vulnerable to various potential risks than adults [3]. The emergence of online education is the result of the transformation of social informatization and the process of globalization. The advent of the internet has expanded children's educational opportunities, giving them access to a variety of tailor-made learning materials through online platforms. Over the past few years, the growth of online education platforms has led to a significant increase in the size and influence of children's online learning [4]. However, there are many uncertainties in the field. The impact of online education on children is intricately linked to the educational framework for the future of society and children's personal development. Extensive research on this topic has not only enhanced research's understanding of

children's educational environments in the digital age, but has also provided a solid foundation for strengthening educational policy and practice. This study aims to explore the positive and negative effects of online education on children to gain a more comprehensive understanding of the impact on children's growth and development in this growing learning environment.

2. The Beneficial Impact of Online Education on Children

2.1. Technical Literacy Enhancement

Online learning effectively enhances children's technological literacy by introducing advanced learning tools and platforms [5]. Online learning provides interactive and visually vivid learning materials that stimulate children's interest in learning [6]. By interacting with computers, smartphones, and other devices, children not only passively receive information during the learning process, but also improve their digital skills through practical operation. Online education relies on advanced technological tools that enable children to develop technological literacy while learning. Children can become digitally proficient through the use of electronic devices, learning software, and online tools. Most importantly, through online learning, children are exposed to a diverse range of subjects, including programming and graphic design, laying the foundation for the development of future professionals in the field of science and technology. This has far-reaching implications for children's future career choices and development and prepares them for the technological development of future society.

2.2. Learning Flexibility

While traditional education models have limitations in time and space, online learning provides children with more flexible learning opportunities, enabling them to organize the time and place of learning more autonomously according to individual differences [7]. Children can learn at the most appropriate time according to their biological clocks and learning habits. This contributes to more efficient learning as different children may exhibit better learning in the morning, afternoon or evening. Online learning makes education more personalized and caters to the learning pace of different children. Online education breaks down geographical constraints and gives children access to a wealth of educational resources across the globe. They can learn online from different cultures, backgrounds and countries. This helps to develop children's international outlook and enables them to better adapt to a globalized society. While traditional learning methods may be constrained by factors such as geography and transport, online learning enables children to access a wealth of learning resources via the Internet anytime, anywhere. The flexibility of this mode of learning applies to children in cities as well as being able to benefits students in remote areas [8]. Flexibility in learning enables children to better coordinate their studies with other activities such as sports and arts [9]. This helps to develop the whole child and enables him/her to make progress in several areas.

2.3. Personalised Learning

Each child is a unique individual with differences in learning styles and abilities. By introducing the concept of personalized learning, online learning makes education more relevant to children's needs and improves the effectiveness and depth of learning [9]. Telli argues that distance learning can also provide standardized but tailored education to a wider audience at a lower cost without the constraints of time and space [10]. Online learning platforms often use intelligent algorithms to tailor learning programs to children by analyzing their learning history and performance. Such personalized learning paths enable each child to master knowledge at a pace that suits his or her learning, thus improving learning outcomes. Personalized learning focuses on tapping and developing children's strengths and

interests [1]. Online learning platforms usually offer a rich variety of subjects and programs, and children can choose their learning direction according to their interests. This helps to stimulate children's learning initiative and develop their self-driven learning ability. Through online learning, children can choose subject combinations more flexibly, thus breaking the boundaries of traditional subject divisions [7]. This helps to develop an interdisciplinary mindset and improve children's overall quality.

The positive impacts of improved technological literacy, increased learning flexibility and personalised learning have made online learning a major contributor to children's education. In the future, as technology continues to innovate and online learning platforms continue to improve, these positive impacts will provide children with even better and more diverse learning experiences and promote their holistic development in the knowledge society.

3. Negative Effects of Online Education on Children

3.1. Reduced Social Interaction

Nowadays, more and more students are participating in online learning, but this is bound to raise concerns about children's social problems [11]. The traditional form of classroom education allows for face-to-face communication and interaction between students and teachers, and between students and students. Relationships can be built between teachers, students, and classmates through this interaction. However, students learn independently in online learning, and the online teaching form is not conducive to communication between teachers and students, which makes today's students lack many opportunities to develop communication skills [5]. At the same time, the limited opportunities for such communication in online learning may impede the development of children's communication skills [1]. And long periods of online learning may cause children to be disconnected from actual social situations and lose opportunities to build friendships in the real world. Facing a screen instead of face-to-face interaction may make children feel uncomfortable when interacting with people and affect them. The development of healthy social relationships [7]. At the same time, reduced social interaction can lead to children's lack of experience in conflict resolution and teamwork. Group discussions and group work in the classroom are often important ways to develop children's sense of teamwork and problem-solving skills, but these opportunities are lacking in online learning and therefore affect children's development.

3.2. The Attention Challenge

Extended utilization of electronic gadgets for online education may pose a challenge to children's focus. Online learning often requires children to stare at an electronic screen for long periods, which differs from the varied forms of teaching and learning in a traditional classroom and may have a negative impact on children's attention to learning [12]. Too much information on an electronic screen can lead to distraction and difficulty in concentration. In a traditional classroom setting, the teacher's explanations, the content on the blackboard, and the interactions among classmates help to maintain children's attention to learning. In contrast, the reduction of these elements in online learning may make children more vulnerable to external distractions [13]. In addition, the autonomous nature of online learning may make it difficult for children to self-control their study time and easy for them to become addicted to electronic devices. Excessive use of electronic devices may lead to eyestrain myopia and distraction in children [5]. In addition, the widespread use of screen media is often cited as a possible cause of sleep deprivation in children and adolescents [14]. Children are particularly susceptible to this light because of their larger pupil size and more transparent lens [15]. These physical and physiological problems can affect children's learning outcomes and overall health [5]. Prolonged use of electronic devices may lead to children's resistance to traditional paper books. There

are differences between reading paper books and reading text on an electronic screen, and overreliance on electronic devices may cause children to miss out on cognitive experiences gained through traditional reading

3.3. Uneven Coverage of Educational Resources

Although online education has opened up more possibilities for children's learning in some lagging areas, the development of online learning has made it possible for children to have access to a wider range of educational resources [16]. Telli says that online education contributes to equalizing educational opportunities by providing standardized but tailored education to a wider audience at a lower cost without the constraints of time and space [10]. At the same time, this model brings another degree of imbalance in educational resources. Children face unequal access to online learning resources in different regions and under different family conditions. Children in some remote areas may find it difficult to enjoy quality online learning resources due to network connectivity problems [17]. Relatively low internet coverage in rural or remote areas compared to urban areas may lead to significant differences in children's access to educational resources [2]. The family's financial situation is a factor that influences a child's online learning experience. Better family finances often provide children with better and more advanced learning equipment, and these devices and faster networks provide children with better learning. Families with limited financial means may face constraints and struggle for their children to take full advantage of the educational resources provided by online learning. This disparity also leads to inequities in children's access to education and resources, which in turn affects the fairness of their future progress. In addition, it will exacerbate disparities in schooling between urban and rural areas and between different economic conditions [18].

3.4. Children's Privacy Challenges

The popularity of online education has led to an increasing concern about children's privacy online. Protecting children's privacy is not only related to children's rights and interests, but also to the overall environment of social education [19]. Online education can put students at risk of identity theft, bullying, harassment, and other forms of harm. Protecting children's privacy is a fundamental responsibility that aims to safeguard the rights and well-being of vulnerable groups. When children use online education platforms, they need to provide personal information, which may lead to the leakage of children's privacy [3]. At the same time, there is a large amount of information with capital attributes, such as advertisements, etc., in online education platforms, which leads to children being exposed to tailored advertisements or using their information for unethical business activities [4]. In addition, there are online education systems that collect data on student activities to track and evaluate their learning progress. However, if this surveillance is not properly restricted, it can lead to unwarranted intrusions into student privacy.

4. Suggestion

4.1. Optimise the Online Learning Experience

Online educational platforms have the potential to enhance children's learning experience by incorporating real-time interactive features, such as live discussions and online group projects. This can assist in addressing the absence of physical interaction and facilitate the development of social skills. Educational content should be designed to be lively and interesting, in line with children's cognitive characteristics. The use of gamification elements, images, and multimedia resources can make learning more engaging and stimulate children's interest in learning. Some studies have inferred

that the use of appropriately developed apps contributes to children's development, and online education platforms should provide a rich and diverse range of learning resources covering different subjects and areas of interest [20]. This helps to personalize learning and meet children's diverse subject needs and interests. However, overuse and misuse of digital technologies do harm children. Akram and Kumar argue that there needs to be a more balanced narrative of children's interactions with the applications that are the vehicle for online learning. Learning content should focus on practical application, through case studies and hands-on projects that allow children to apply what they have learned to real-world situations, increasing the relevance and depth of their learning [7].

4.2. Home-School Cooperation in Education

As online learning emphasizes self-directed learning, schools, and families should develop children's self-directed learning skills. This includes the formulation of reasonable learning plans, goal setting, as well as self-reflection and adjustment during the learning process. Children are guided to participate in online group projects, discussions, and collaborations to develop their teamwork and communication skills. This helps to compensate for the lack of face-to-face interaction and promotes the development of social skills [12]. The curriculum focuses on developing children's problem-solving and creative thinking skills. They are encouraged to ask questions, find solutions, and achieve innovation through practice to develop creative thinking. Parents can collaborate with schools to establish a well-defined home learning strategy, ensuring that children can engage in online learning within a structured and meaningful home setting [6]. Simultaneously, school teachers and parents can consistently assess children's educational advancement, collectively focus on their online learning achievements, and offer essential guidance and assistance. Parents can expose their children to educational activities, such as science and technology exhibitions and community services, to cultivate their sense of social engagement and overall literacy [8].

4.3. Online Education Policy Norms

To secure the protection of students' rights and interests and the improvement of education quality, it is necessary to establish clear policies and normative guidance for the development of online education in the field of children's education [16]. The government should work with educational institutions to set strict standards for online education. These standards should cover aspects such as the quality of course content, teaching methods, and teacher qualifications. The aim is to ensure that the quality of online learning is comparable to that of traditional education. To ensure compliance with national education policies and regulations and to provide effective educational services to children, the government has the power to set up a special regulatory body that is responsible for monitoring and evaluating the operation of online education platforms [3]. Governments can develop policies to provide free or discounted digital devices and network assistance to students from economically disadvantaged families and remote areas. This will contribute to the equity of online education to a large extent [19]. Online education needs to process a large amount of personal information, so strict privacy protection measures need to be established to protect students' privacy [4]. The government can establish a special complaint channel for online education services to solve problems in the teaching process in a timely manner. The platform will enable students and parents to report any issues they encounter with educational services in a timely manner. In addition, this will help to establish an effective mechanism to address these issues.

5. Conclusion

This study examines the effects of online education on children, emphasizing its favorable capacity to enhance technology literacy, enhance learning adaptability, and facilitate individualized instruction.

Nevertheless, these benefits are accompanied by a range of concerns that must not be overlooked, including the aspect of social contact. Diminished social engagement, challenges in focusing, disparities in educational provisions, and risks to the confidentiality of children. This study emphasizes the benefits of online education in enhancing children's digital literacy and facilitating their adjustment to the learning environment of the digital age. Online learning enhances the educational experience for students by eliminating the limitations of time and location, thereby allowing for greater adaptability to individual needs and increased flexibility. Personalized learning employs sophisticated algorithms to deliver tailored learning programs to children, enhancing the efficiency and comprehensiveness of their learning. On the other hand, reduced social interaction may hinder the development of social skills and teamwork among children, and prolonged use of electronic devices may lead to distraction and eye health problems. Uneven educational resources may exacerbate the education gap between urban and rural areas, rich and poor, while children's privacy is also challenged. For these issues, this study suggests a focus on practical applications in optimizing the online learning experience to stimulate children's interest in learning. Schools and families should work together to develop children's independent learning abilities, teamwork and communication skills. The government and educational institutions should formulate clear policies and norms for online education to ensure that students' rights and interests are safeguarded, to solve the problem of unbalanced educational resources, and to protect students' privacy. In summary, while online education provides children with innovative ways of learning, it has also identified several issues that require attention and resolution. It is hoped that these findings will provide useful guidance for the creation of a healthier and more holistic learning environment for children.

In future studies, more in-depth attention can be paid to the individual differences and needs of children in online learning. Long-term tracking studies can be conducted to observe the developmental trajectories of children in online learning to better understand their learning process and growth. Through these in-depth studies, all sectors of society will be able to gain a more comprehensive and accurate understanding of children's situation in online learning environments, providing stronger support for the formulation of more scientific and effective education policies and teaching strategies.

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