

The impact of pandemic on preschool education

Ziyu YE

University of Glasgow, Glasgow G11 6EH, UK

Abstract: The pandemic has profoundly impacted early childhood education, disrupting traditional models and accelerating online learning. This paper examines the impact of the pandemic on children's mental health, social skills, and learning outcomes, highlighting challenges of educational inequity such as unequal resource distribution and the increased family education burdens. It reviews practical responses, including mixed teaching models, enhanced parental involvement, and shared educational resources. The study proposes policy recommendations to promote digital equity, strengthen teachers' digital skills, and provide psychological support for children and families, emphasizing that while pandemic posed significant challenges, it also fostered innovation in education.

Key words: early childhood education; pandemic; online learning; family education; mental health; educational equity

1 Introduction

The pandemic, a profound global public health crisis, has significantly disrupted early childhood education. As a critical stage for children's cognitive, emotional, and social development, early education relies heavily on interactive, play-based, and face-to-face teaching. The sudden shift from offline to online learning during the pandemic exposed major challenges: Is online education suitable for young learners? Can family education effectively replace school-based learning? Are educational resources equitably distributed across regions and social groups? Concerns about children's mental health and social development also emerged due to prolonged disruptions.

This paper analyzes the impact of the pandemic on early childhood education, highlighting changes in educational models, the increased burden on families, and issues of equity. It evaluates the short- and long-term effects on children's development and examines coping strategies adopted by families and institutions. Additionally, it explores the differences between online and traditional education while offering policy recommendations to address similar crises in the future. By providing empirical and theoretical insights, the study aims to support policymakers, educators, and families in fostering sustainable and equitable development in early childhood education.

2 Direct impact of pandemic on early childhood education

2.1 Changes in teaching forms

During the pandemic, kindergartens around the world shut down, shifting to online education as a temporary solution. However, early childhood education relies heavily on teacher-student interaction and peer communication, which online platforms struggle to replicate [1]. Traditional activities like group games, role-playing, and hands-on tasks, essential for children's cognitive, emotional, and social growth, are difficult to implement effectively online. Limited interactivity and short attention spans make online education challenging, demanding significant creativity and effort from educators [2].

Additionally, online education highlights inequalities in access to technology. Urban families often provide tablets and webcams, while rural or low-income families lack basic internet or devices, widening the education gap. Even in equipped homes, young children require constant parental supervision, posing significant challenges for working parents. These issues reveal the limitations of online education in addressing the unique needs of early childhood learning.

2.2 Uneven distribution of educational resources

Pandemic has magnified educational disparities, particularly between urban and rural areas and socio-economic groups. Urban kindergartens, with better digital tools and resources, quickly adopted online education, while rural schools lacked facilities and technical capacity [3]. Teacher training also varies; urban teachers are often skilled in digital instruction, while rural teachers may rely on basic recorded videos or text, limiting interaction and effectiveness. Additionally, high-income families provide better support for children's online learning, whereas low-income families, constrained by work demands and limited resources, struggle to do so. These disparities exacerbate inequalities in children's academic and social development.

2.3 Key issues in child development

The pandemic has profoundly impacted children's development in mental health, social skills, and cognitive growth. Many children have experienced emotional issues like anxiety, loneliness, and irritability due to reduced peer interaction and outdoor activities, particularly in families facing financial or work pressures [4]. Social skill development has also been hindered, as prolonged isolation deprived children of opportunities to learn collaboration, sharing, and conflict resolution in kindergarten environments.

Children's cognitive development lagged due to the fact that online education lacked the interactivity of traditional teaching. Activities like hands-on science experiments or team-based projects are challenging to replicate at home, especially in low-income families where parents may lack the educational resources to support their children. Addressing these setbacks in the post-pandemic era through policy interventions and innovations to create equitable and inclusive learning environments is an urgent challenge for the global education community.

3 Challenges and adaptations of family education

During the pandemic, families shifted from a supporting role to the primary educational setting [5]. With kindergartens closed or online, parents assumed greater teaching responsibilities, often feeling overwhelmed by the demands of guiding children's learning. Dual-income families faced heightened pressure, struggling to balance work and child care, leading to poor learning outcomes. Conflicts over learning resources and schedules further strained family dynamics.

Economic and cultural disparities significantly affected education quality. High-income families provided better learning environments, such as internet access and study spaces, while low-income families lacked these resources. Parents with higher literacy levels designed creative learning activities, while less literate parents relied solely on school-provided online courses, limiting children's development.

The pandemic also strained family relationships, with parents prioritizing academic progress over children's emotional needs, creating tension and negatively impacting mental health. To cope, some families shared caregiving responsibilities or participated in community-led resource-sharing initiatives. Local governments and NGOs offered psychological support and education guidance to alleviate stress.

The pandemic highlighted the importance of family education while exposing gaps in resources and capabilities. Future policies must support families, especially those with limited resources, through training, resource allocation, and strengthened home-school cooperation to foster children's holistic development.

4 Coping strategies of early childhood education institutions

4.1 Innovation of teaching methods

Facing challenges, early childhood institutions adopted hybrid teaching, combining short video lessons with online interactive activities to engage children at home. To address attention issues, game-based courses embedded teaching into fun activities. Additionally, institutions used social media and messaging tools to share resources, suggest schedules, and track progress, strengthening home-school connections and providing parents with professional guidance.

4.2 Promotion of educational equity

During the pandemic, early childhood institutions addressed educational inequities through innovative measures [6]. Some kindergartens provided tablets or internet devices to families lacking digital resources, while governments established learning centers with safe spaces for online learning. To support rural and remote areas, institutions and NGOs developed low-tech teaching resources, such as paper learning packages and audio broadcasts, ensuring basic education access for families without internet connectivity. These solutions effectively bridged gaps in educational equity.

4.3 Improvement of teachers' professional competence

The sudden outbreak of the epidemic has introduced new demands for preschool teachers. The rise of online teaching models forced teachers to quickly master digital tools and adapt content to the online environment [7]. Some preschools offer online training for teachers on using video conferencing tools, designing activities for young children, and evaluating their learning.

At the same time, teachers' mental health issues have gained more attention. During the pandemic, teachers faced increased work pressure while adapting to new teaching methods. Some educational institutions have started offering psychological support, such as online group discussions for sharing coping strategies or one-on-one counseling with psychologists. These measures not only improve job satisfaction but also help teachers support children's psychological development.

Early childhood education institutions have shown resilience and innovation in responding to the challenges of pandemic. From promoting blended learning models and enhancing educational equity to improving teachers' professional abilities, these strategies have effectively alleviated the short-term impact of the pandemic and provided valuable lessons for future educational improvements. However, long-term integration of these experiences into systemic reforms is still needed to better address future crises.

5 Long-term impact of pandemic on early childhood education

5.1 Transformation of education model

The impact of pandemic on early childhood education goes beyond short-term adjustments in teaching methods and may lead to long-term changes in education models. The widespread use of online education during the pandemic has made hybrid teaching (combining online and offline) a growing trend [8]. While the applicability of online education in early childhood is controversial, it offers new possibilities, such as using digital resources like language apps and virtual museum tours to complement classroom learning.

However, challenges remain for the long-term success of this model. First, the digital divide may exacerbate inequalities, as technology resources may be concentrated in developed areas, leaving children in remote regions marginalized. Second, integrating technology with the core principles of early childhood education, which values interactivity and hands-on experiences, is crucial [9]. Future blended learning models must focus on creating more interactive, engaging content, rather than simply digitizing traditional lessons.

5.2 Far-reaching effects on mental health and social development

The pandemic has had lasting effects on children's mental health and social development. Early childhood is crucial for emotional regulation and social skills, and long-term isolation may hinder these abilities. Studies suggest that social deficits during the pandemic can lead to higher anxiety and difficulties in teamwork and conflict resolution later in life [10].

Changes in the family environment, such as increased economic pressure or disrupted routines, have also negatively impacted children's emotional stability and sense of security. These effects may require long-term intervention, such as school counseling or social support systems. Kindergartens can help children express their emotions and rebuild trust in peer relationships by offering mental health courses and emotional education activities.

5.3 Redefinition of socialization process

The pandemic has altered the socialization process of young children, as prolonged isolation and increased online interactions have changed the way children develop social skills. Kindergartens, traditionally a place to learn social rules and build peer relationships, now face challenges as virtual interactions rise. The effectiveness of online socialization as a replacement for face-to-face communication remains unclear [11].

As offline activities resume, children may experience "social restart" issues, such as discomfort in group settings. Educators and parents must work together to help children regain social skills by gradually increasing social opportunities and creating safe environments.

The long-term impact of pandemic on early childhood education presents both challenges and opportunities. Educational models must balance technological advancements and equity, while mental health and social skill development require multi-level support. Future early childhood education should be more resilient, adaptable, and focused on the holistic development of children.

6 Discussion and suggestion

The pandemic has highlighted disparities in early childhood education, including unequal resource distribution, lack of home-school cooperation, and teachers' weak digital skills, which have created opportunities for improvement, such as strengthening resource allocation, especially in rural areas, providing necessary hardware like Internet devices, and supporting disadvantaged children with financial assistance for educational resources. Community-led models, such as mobile kindergartens, can also create more opportunities in low-resource areas.

Home-school cooperation is becoming increasingly important, but in the future, it needs to be more systematic with better coordination of goals and strategies. The online or offline educational training for parents and real-time platforms for school updates can help strengthen this partnership. Community collaboration can further reduce educational pressure on families through resource sharing and support groups.

The pandemic revealed that many teachers lacked digital teaching skills. Regular training in digital tools, online course design, and psychological support is essential for improving teaching quality. Additionally, providing platforms for resource sharing and offering psychological support for teachers can enhance their professional happiness and effectiveness.

Mental health education for children is increasingly important. Kindergartens can offer activities like art, music, and role-playing to help children express emotions, while counselors can assess and provide support for children in need. Parents should also receive mental health education to better support their children's emotional well-being.

7 Conclusion

The pandemic has had a profound impact on early childhood education, exposing the limitations of online learning, highlighting disparities in resources between urban and rural areas, and affecting children's mental health, social skills, and cognitive development. However, it has also driven innovations, such as blended learning models, stronger home-school

collaboration, and increased focus on educational equity.

In the long term, the pandemic has prompted a reevaluation of early childhood education goals. While educational technology offers new possibilities, the balance between technology and educational equity remains a challenge. Ongoing attention should be paid to children's mental health and social development with the support of multi-level systems. Improving teachers' professional skills and building psychological support systems are also crucial for the future.

Ultimately, the pandemic presents an opportunity for reflection and reform in early childhood education. Future education systems must be more flexible, inclusive, and resilient to crises, with a focus on equity, home-school cooperation, teacher development, and mental health support. Multi-party collaboration can help transform early childhood education in the post-pandemic era, providing better support for children's growth and development.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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About the author

Ziyu Ye (1997--), female, Baotou, Inner Mongolia, is a postgraduate student in higher education at the University of Glasgow. She graduated from the University of Toronto, Canada, with a Bachelor of Arts degree (Media Studies and International Development Studies) and is now studying in the University of Glasgow higher education postgraduate.