Exploring the Influence of Digital Educational Games on Preschool Communication:

Caregiver Perceptions and Children's Development

Emily M. Hill

Department of Communication & Theatre Arts, Old Dominion University

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Dr. Tom J. Socha

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In informal caregiving settings, digital educational games are increasingly employed to engage preschool-aged children. This research proposal explores caregivers' perceptions of the impact these games have on developing communication skills in preschoolers. Given the crucial role caregivers play in selecting and mediating digital game content, understanding their perceptions is vital. for determining the effectiveness of these games in fostering early communication development. The purpose of this research proposal is to explore the relationship between caregivers' perceptions and the perceived impact of digital educational games on children's communication skills.

Literature Review

Caregiver-Child Mediation of Digital Devices

The role of digital devices in early childhood settings has transformed the dynamics of caregiver-child interactions. Digital device implementation introduces both opportunities and challenges that influence developmental trajectories. Caregivers frequently employ these tools both as engagement aids and educational supplements, yet their overuse brings about concerns of dependency and potential developmental delays (Lev & Elias, 2020). Digital media, serving as both facilitators and barriers to developmental progress, necessitate a critical examination of how these technologies are integrated into daily routines (Elias et al., 2021). Furthermore, differentiating the types of content preschool-aged children are consuming is not usually explored with depth in the literature, and isolation of the content types is necessary.

Elias et al. (2021) emphasize the necessity for caregivers to navigate the dual roles that digital devices play. These tools can enhance educational content delivery and provide interactive learning experiences, however, there is a risk they may supplant physical and interactive play for preschoolers that is essential for development. This dual use highlights the need for a balanced approach to digital media, ensuring that devices support rather than hinder developmental progress.

Impacts of Excessive Digital Interaction

Research indicates that an over-reliance on digital devices may impede the natural development of communication skills and emotional regulation (Gou & Perceval, 2023; Rasmussen et al., 2016; Hinkley et al., 2017). Digital interactions, while potentially enriching, can detract from unstructured play which is vital for developing problem-solving skills and non-verbal communication cues (Marsh et al., 2016). The tendency to use digital devices as "digital pacifiers" can lead to socioemotional delays, as these interactions often do not provide the multi-sensory experiences that traditional play offers (Elias et al., 2021, p. 276).

Furthermore, the passive consumption of content can lead to reduced instances of active engagement and conversation between the caregiver and child, which are critical for language development and emotional bonding (Marsh et al., 2016). The mediated nature of these interactions, through screens, can create barriers to the spontaneous and responsive interactions that nurture close relationships and emotional understanding.

Caregiver Strategies in Mediating Digital Content

Effective mediation by caregivers is crucial in harnessing the potential benefits of digital devices while mitigating their risks. Nguyen and Nguyen (2016) explore various strategies

employed by caregivers to manage children's digital consumption. These include setting clear guidelines about screen time, choosing age-appropriate and educational content, and co-engaging with the media to foster interactive experiences and discussions. This active participation not only enhances the educational value of digital content but also helps maintain a healthy balance between digital and physical activities.

The interaction strategies that caregivers adopt can significantly influence how children perceive and engage with digital media. Daley (2022) points out that children view device usage as a communal activity, often inviting participation from caregivers or peers. This insight underscores the importance of caregivers not only monitoring but also actively participating in digital activities. This can transform solitary screen time into an opportunity for guided learning and social interaction.

The Role of Digital Media in Socio-Emotional Development

The impact of digital media on the socio-emotional development of preschool children remains a contested domain, with studies highlighting both potential benefits and drawbacks. Gou and Perceval (2023) provide a nuanced view of how screen time correlates with socio-emotional delays. Their findings suggest that while limited, structured use of digital devices can be beneficial, excessive and unguided screen time is associated with notable delays in socio-emotional development. These delays are particularly concerning at a developmental stage where children are supposed to master the basics of emotional regulation and empathy.

Summary

The latest research underscores the significant role of caregiver perceptions regarding digital educational games and their impact on preschool communication development. Research

highlights the duality of digital devices to serve as both facilitators of interactive learning and sources of passive entertainment, which may impede developmental progress if not properly managed. The efficacy of these digital tools in educational settings is heavily influenced by how caregivers mediate their use, making it crucial to understand their attitudes toward technology and its observed effects on children, leading to the research question below.

RQ1: How do caregivers' perceptions of digital educational games evolve over time, and how do these changing perceptions influence their views on the impact of these games on their preschool-aged children's communication skills?

This research question aims to assess the perceptions of caregivers regarding digital educational content for preschool-aged children to determine the implications of their views on communication skills. This study is anticipated to provide insights that will inform the development of guidelines designed to maximize the educational benefits of digital games, ensuring they promote active and engaging learning experiences for preschoolers while mitigating potential deficits in other developmental skills. By addressing the gaps highlighted in the literature, the research question will contribute to the development of evidence-based practices aimed at enhancing communication skills in young children through the careful integration of digital tools within early learning environments.

Methodology

This study employs a longitudinal mixed-methods approach to comprehensively investigate how caregiver perceptions of digital educational games evolve over time and their subsequent impact on the communication skills of preschool-aged children. By integrating both quantitative surveys and qualitative interviews over multiple time points, the research aims to

capture both the immediate and long-term effects of digital tools on child development. This strategy enables a nuanced examination of dynamic changes in caregiver attitudes and their direct influence on preschool learning environments.

Participants

Approximately 200 caregivers of preschool-aged children will be recruited using stratified random sampling to ensure a representative cross-section of various socioeconomic statuses, educational levels, and ethnic backgrounds. This sampling strategy is crucial to generalize findings across diverse populations. Additionally, 20 caregivers showing diverse responses in the initial survey will be selected through purposeful sampling for the qualitative phase. This selection will focus on gaining deeper insights from caregivers who exhibit significant changes in perception over time, providing valuable case studies on the longitudinal impact of digital game usage.

Instrumentation

The research instruments include a dual set of tools designed for both quantitative and qualitative data collection. The quantitative component features a structured survey questionnaire that includes Likert-scale items, ranking tasks, and multiple-choice questions designed to measure the perceived impact of digital games on children's communication abilities. This survey will be administered at multiple intervals to track changes in caregiver perceptions over time. The qualitative component will utilize a semi-structured interview guide to explore in-depth the evolving strategies, observations, and attitudes of caregivers toward the use of digital educational games. These interviews will prompt caregivers to reflect on their experiences and changes in their views, providing a rich narrative context to the statistical data.

Procedures

Recruitment will occur through online platforms, including parenting forums and social media, as well as through partnerships with early childhood education centers to ensure broad and inclusive participant outreach. All participants will be thoroughly briefed on the study's objectives and their rights, with detailed informed consent obtained to assure transparency and confidentiality. Quantitative data will be collected through online surveys distributed at designated intervals throughout the study period. Qualitative interviews will be conducted remotely via platforms like Zoom or telephone to accommodate participant preferences, ensuring comfort and convenience while maintaining data integrity through secure, encrypted communications.

Data Analysis

Quantitative analysis will involve both descriptive statistics to outline general trends and more complex inferential techniques like longitudinal data analysis to explore developmental trajectories and changes in caregiver perceptions over time. Qualitative data will be subjected to thematic analysis, where responses are coded to identify emerging patterns and themes related to caregivers' evolving perceptions. Combining these analyses will provide a comprehensive view of how digital interventions can be optimized to support early childhood communication development effectively.

Limitations

Acknowledged limitations include the potential for volunteer bias, where individuals more engaged with digital technology may be more likely to participate, and the inherent challenges of self-report data, which can be susceptible to bias toward socially desirable

responses. Additionally, variations in interpretation due to linguistic and cultural diversity among participants might affect the clarity and reliability of the data.

Ethical Considerations

Strict ethical protocols will be followed to protect the confidentiality and privacy of participants, with all personal identifiers being anonymized and data securely encrypted. The study will be reviewed and approved by an Institutional Review Board (IRB) to ensure adherence to ethical standards, emphasizing the protection of vulnerable populations and the integrity of the research process.

Significance of Study

The significance of this research lies in its ability to provide a nuanced understanding of caregiver perceptions regarding the use of digital educational games and their influence on preschool children's communication development. By delving into these perceptions, the study seeks to bridge the gap between theoretical research and practical applications, offering valuable insights that could guide the creation of developmentally appropriate digital content. The findings are expected to contribute to the formulation of guidelines that encourage the effective integration of digital tools in early childhood education, thus enhancing educational outcomes.

Furthermore, by examining the socio-emotional and cognitive impacts observed by caregivers, the study will illuminate areas needing further exploration and intervention, thus facilitating a broader understanding of the optimal roles of technology in early childhood learning environments. This study's exploration of caregiver perspectives not only enriches the

academic discourse but also empowers educators and policy-makers to implement strategies that

are informed by those directly engaged with children's daily educational experiences.

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