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Article

Exploring Parents' Perceptions of the Importance of Technology in Early Childhood Education Among the Sidama People

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Abstract: This research investigates the perceptions of parents belonging to the Sidama ethnic group regarding the significance of technology in early childhood education. The study aims to elucidate how parents perceive the role of technology, such as digital devices and educational applications, in the education and development of their young children. Through qualitative interviews conducted with 30 parents and thematic analysis, the study uncovers diverse perspectives, shedding light on cultural, socioeconomic, and educational factors influencing parental attitudes towards technology in early childhood education among the Sidama people. Findings indicate a spectrum of views ranging from enthusiastic embracement to cautious reservation, revealing nuanced considerations that inform parental decisions regarding technology integration in their children's learning experiences.

Keywords: technology; early childhood education; parental perceptions; Sidama people; qualitative

1. Introduction

Early childhood education (ECE) serves as the cornerstone for lifelong learning and development, shaping children's cognitive, social, emotional, and physical development during their formative years [4]. It provides a crucial foundation upon which future educational achievements and personal growth are built. In today's rapidly evolving digital age, technology has become an increasingly prevalent aspect of educational practices, offering a multitude of tools and resources to enrich learning experiences for young children [1,10].

The integration of technology in early childhood education represents a significant shift in pedagogical approaches, offering innovative ways to engage young learners and enhance their educational experiences [3]. Educational apps, interactive games, digital storytelling platforms, and multimedia resources provide opportunities for children to explore, create, and learn in dynamic and interactive ways [2]. Technology can cater to diverse learning styles, adapt to individual learning needs, and foster creativity, critical thinking, and collaboration among young children [12].

However, the integration of technology in early childhood education is not without its challenges and controversies. Concerns regarding screen time, digital addiction, and potential negative effects on children's social, emotional, and physical development have sparked debates among educators, parents, and policymakers. The digital divide, characterized by disparities in access to technology and internet connectivity, further exacerbates inequalities in educational opportunities and outcomes [2].

Moreover, the cultural appropriateness of technology use in early childhood education is a complex and nuanced issue [2]. Cultural values, beliefs, and practices shape attitudes towards technology and influence its integration in educational settings. Some cultural communities may embrace technology as a valuable tool for learning and communication, while others may express reservations or skepticism towards its use, preferring traditional methods of education [5].

Amidst these complexities, understanding parental perceptions towards technology in early childhood education is essential for informing educational policies and practices that resonate with

the needs and values of diverse communities [5]. Parents play a pivotal role in shaping children's early learning experiences and are key stakeholders in decisions regarding technology use in educational settings [6]. By understanding parents' perspectives, concerns, and aspirations regarding technology in early childhood education, educators and policymakers can collaboratively develop strategies that promote responsible and culturally responsive integration of technology, ensuring that it aligns with the unique needs and cultural contexts of children and families from diverse backgrounds [9].

Specific Objectives of the Study

This study was aimed at the;

- Examination of the range of attitudes towards technology in early childhood education among Sidama parents from diverse socioeconomic backgrounds.
- Identification of the perceived benefits and drawbacks of technology in early childhood education across varying socioeconomic statuses among Sidama parents.
- Exploration of the influence of socioeconomic factors on parental concerns and priorities regarding technology integration in early childhood education within the Sidama community.
- Investigation of how cultural considerations intersect with socioeconomic backgrounds to shape parental perspectives on technology integration in early childhood education among Sidama families.
- Evaluation of how parental involvement shapes technology attitudes in early childhood education across diverse socioeconomic groups in the Sidama community.

2. Literature Review

Importance of Early Childhood Education

Early childhood education (ECE) is widely recognized as a critical period in human development, laying the foundation for lifelong learning, socio-emotional development, and overall well-being [10]. The importance of ECE can be understood through various lenses, including cognitive, social, emotional, and economic aspects.

Cognitive Development

The early years are a period of rapid brain development, with neural connections forming at an astonishing rate. Quality early childhood education programs provide stimulating environments that foster cognitive growth through play-based learning, exploration, and interaction with materials and peers. These experiences build essential cognitive skills such as language development, problem-solving, critical thinking, and creativity, setting the stage for academic success in later years [10].

Social and Emotional Development

Early childhood education plays a crucial role in nurturing social and emotional competencies that are fundamental for healthy interpersonal relationships and emotional well-being [10]. In ECE settings, children learn to regulate their emotions, develop empathy, and build social skills through collaborative activities, group play, and positive interactions with teachers and peers. These experiences lay the groundwork for emotional resilience, self-confidence, and positive social behaviors that contribute to success in school and life [1].

Equity and Access

Access to quality early childhood education is essential for promoting equity and leveling the playing field for all children, regardless of their socio-economic background or circumstances [10]. Research consistently shows that children from disadvantaged backgrounds benefit the most from high-quality ECE programs, narrowing the achievement gap and increasing their chances of long-term academic success and socio-economic mobility. Investing in early childhood education not only benefits individual children but also has far-reaching implications for society as a whole, fostering social cohesion and economic prosperity.

Prevention and Intervention

Early childhood education plays a crucial role in early identification and intervention for developmental delays, learning disabilities, and socio-emotional challenges. Qualified early childhood educators are trained to recognize signs of developmental issues and provide targeted support and intervention strategies to address them proactively. Early intervention can mitigate the

long-term effects of developmental challenges, enabling children to reach their full potential and succeed academically and socially [1].

Parental Engagement and Support

Early childhood education programs often serve as a hub for parental engagement and support, providing resources, guidance, and opportunities for parents to actively participate in their children's learning and development [10]. By involving parents in their children's educational journey from an early age, ECE programs strengthen the home-school partnership, empower parents as advocates for their children's education, and create a supportive network that enhances children's educational outcomes and family well-being [11].

Role of Technology in Early Childhood Education

The role of technology in early childhood education (ECE) is a topic of ongoing debate and exploration. While traditional approaches to ECE emphasize hands-on, experiential learning, the integration of technology introduces new opportunities and challenges [12,13]. Here are some key considerations regarding the role of technology in ECE:

Enhancing Learning Experiences

Technology can enhance early childhood learning experiences by providing interactive and engaging educational content. Well-designed educational apps, digital games, and multimedia resources can support children's exploration, creativity, and problem-solving skills. Interactive whiteboards, tablets, and computers can facilitate personalized learning experiences tailored to children's individual needs and interests [13].

Promoting Digital Literacy

In today's digital world, early exposure to technology is increasingly important for developing digital literacy skills [11]. Introducing age-appropriate technology tools and devices in ECE settings can help children become familiar with technology from an early age, laying the foundation for future learning and participation in a technology-driven society [12]. By teaching basic digital skills and online safety practices, ECE programs can empower children to navigate digital environments responsibly.

Differentiating Instruction

Technology enables educators to differentiate instruction and cater to the diverse learning needs and preferences of young children. Educational software and adaptive learning platforms can provide personalized learning pathways based on each child's abilities, interests, and progress [9]. Through real-time feedback and assessment features, technology can help educators track children's learning outcomes and adjust instruction accordingly, ensuring that every child receives appropriate support and challenge [8].

Fostering Collaboration and Communication

Technology can facilitate collaboration and communication among children, educators, and parents in ECE settings. Online platforms, such as digital portfolios and parent-teacher communication apps, enable educators to share children's progress, achievements, and learning experiences with parents in real-time, fostering meaningful partnerships between home and school [6]. Collaborative digital projects and activities also promote teamwork, peer interaction, and communication skills among young children.

Cultivating Creativity and Innovation

Technology can serve as a tool for cultivating creativity, innovation, and problem-solving skills in early childhood [5]. Digital art and music apps, coding games, and multimedia storytelling platforms offer opportunities for children to express themselves creatively, experiment with new ideas, and engage in open-ended exploration [6]. By encouraging curiosity, experimentation, and risk-taking, technology can foster a culture of innovation and entrepreneurship from a young age.

Addressing Equity and Access

While technology holds great potential for enhancing early childhood education, it is essential to address issues of equity and access. Disparities in access to technology and internet connectivity can exacerbate existing inequalities, particularly among underserved communities [8]. ECE programs must ensure equitable access to technology tools and resources, provide adequate training and support for educators, and promote inclusive practices that prioritize the needs of all children, regardless of their background or circumstances.

Cultural Perspectives on Technology Use in Education

Cultural perspectives play a significant role in shaping attitudes towards technology use in education, including early childhood education. Cultural values and beliefs influence how technology is perceived and utilized in educational contexts [4]. In some cultures, there may be a strong emphasis on traditional methods of learning, with skepticism towards the integration of technology in education. Conversely, other cultures may embrace technology as a means of enhancing educational experiences and preparing children for the modern world [8].

The cultural relevance of educational content and technology tools is essential for engaging students from diverse cultural backgrounds [3]. Educators must consider cultural diversity when selecting digital resources and designing educational experiences to ensure that they reflect students' identities, experiences, and linguistic backgrounds. Culturally responsive technology integration promotes inclusivity, respect for diversity, and positive learning outcomes.

Language plays a crucial role in education, and cultural perspectives influence decisions regarding the use of technology for language and literacy development. In multicultural settings, technology can support multilingual education by providing resources in multiple languages, supporting language immersion programs, and facilitating communication between students and educators from different linguistic backgrounds. Culturally sensitive approaches to technology-enhanced language learning promote linguistic diversity and equity in education [8].

Cultural perspectives shape parental attitudes towards technology use in education, particularly in early childhood settings. Some parents may have concerns about screen time, digital distractions, and the potential impact of technology on children's social and emotional development [2]. Educators must engage parents in dialogue about the benefits and challenges of technology use in early childhood education, address their concerns, and collaborate with them to ensure that technology integration aligns with cultural values and priorities [3].

Technology can be used to celebrate and preserve cultural heritage, traditions, and identities in educational contexts. Digital storytelling, virtual field trips, and interactive multimedia resources provide opportunities for students to explore and engage with their cultural heritage, history, and traditions [3]. Integrating culturally relevant content into educational technology platforms promotes cultural pride, self-esteem, and positive identity development among students from diverse cultural backgrounds.

Cultural perspectives influence ethical and social considerations related to technology use in education, such as privacy, data security, and digital citizenship. Educators must address these issues in culturally sensitive ways, providing students with the knowledge, skills, and values to navigate digital environments responsibly and ethically [7]. Promoting cultural understanding, empathy, and respect in online interactions fosters a positive digital culture and prepares students to be responsible global citizens in an interconnected world [8].

Parental Influence on Children's Technology Use

Parental influence is pivotal in shaping children's relationship with technology, especially in their formative years [9]. Children often emulate their parents' behaviors, including their attitudes towards technology, screen time habits, and digital etiquette [6]. Parents who model responsible and balanced technology use are more likely to impart similar habits to their children, fostering healthy boundaries around screen time and encouraging positive digital citizenship [7].

The beliefs and attitudes parents hold about technology significantly impact their children's technology use patterns [9]. Parents who view technology as a beneficial tool for learning, communication, and entertainment tend to support its moderate use and encourage their children to explore digital resources [3]. Conversely, parents with negative perceptions of technology may enforce strict restrictions or express concerns about its potential negative effects, influencing their children's perceptions and behaviors accordingly [8].

Parental guidance and supervision are indispensable for promoting safe and responsible technology use among children [5]. Parents are instrumental in establishing age-appropriate limits, monitoring online activities, and educating children about digital safety, privacy, and cybersecurity [7]. By setting clear rules and expectations, parents aid in the development of healthy digital habits and equip children with the skills needed to navigate digital environments securely [2]. Additionally, engaging in joint media activities fosters meaningful interactions between parents and children while enhancing learning experiences and critical thinking skills [5].

3. Methods

Research Design

This study employed a qualitative research design to explore parental perceptions of the importance of technology in early childhood education among the Sidama people. Qualitative methods were chosen to allow for an in-depth exploration of participants' perspectives, experiences, and cultural nuances surrounding technology use in early childhood education.

Participants

The participants in this study were 30 from which 12 were female and 18 were male parents from the Sidama ethnic group residing in Sidama region, southern part of Ethiopia. A purposive sampling technique was utilized to select participants who had children enrolled in early childhood education programs or had experience with early childhood education within the Sidama community. The sample size was determined based on the principle of data saturation, whereby data collection continued until no new themes or insights emerged from the interviews.

Data Collection

Data were collected through semi-structured interviews conducted with individual participants. The interviews were guided by a set of open-ended questions designed to explore participants' perceptions, attitudes, and experiences related to the use of technology in early childhood education. The interview questions were developed based on a review of the literature and consultation with experts in the field of early childhood education and cultural studies.

Prior to conducting the interviews, informed consent was obtained from all participants, and assurances of confidentiality and anonymity were provided. Interviews were conducted in the participants' preferred language (Sidamu Afoo) and were audio-recorded with the participants' consent. Field notes were taken during the interviews to capture non-verbal cues and contextual information.

Data Analysis

Data analysis followed a thematic analysis approach, which involved identifying patterns, themes, and categories within the interview transcripts. The analysis process consisted of several iterative steps, including; transcription, familiarization, coding, theme development and interpretation were employed. The themes were interpreted in relation to the research questions, existing literature, and cultural context, allowing for a deeper understanding of parental perceptions of technology in early childhood education among the Sidama people.

4. Results

Parental Perceptions of Technology in Early Childhood Education

Through in-depth interviews with 30 parents from the Sidama ethnic group, a diverse range of perspectives and insights emerged regarding the role of technology in early childhood education. Thematic analysis of the interview data revealed several key findings:

Variability in Attitudes: Parents expressed a range of attitudes towards technology in early childhood education. While some parents viewed technology as a valuable tool for enhancing learning experiences and preparing children for the digital age, others expressed concerns about excessive screen time and potential negative effects on children's development.

Benefits of Technology: Many parents recognized the benefits of technology in early childhood education, citing its ability to engage children, support learning through interactive activities and educational apps, and provide access to diverse educational resources. Parents valued technology as a means of supplementing traditional learning methods and promoting children's curiosity, creativity, and critical thinking skills.

Concerns and Limitations: Despite acknowledging the benefits of technology, parents voiced concerns about its potential drawbacks. Common concerns included worries about excessive screen time leading to sedentary behavior, exposure to inappropriate content, and the loss of hands-on learning experiences. Some parents also expressed concerns about the digital divide, highlighting disparities in access to technology and internet connectivity among children from different socio-economic backgrounds.

Cultural Considerations: Cultural values and beliefs influenced parents' perceptions of technology in early childhood education. While some parents emphasized the importance of preserving cultural traditions and promoting hands-on learning experiences, others recognized the value of integrating technology in culturally relevant and respectful ways. Parents emphasized the need for technology to complement, rather than replace, traditional learning methods and cultural practices.

Parental Involvement and Guidance: Parents emphasized the importance of parental involvement and guidance in children's technology use. Many parents expressed a desire to be actively engaged in their children's digital experiences, setting limits on screen time, monitoring online activities, and guiding children towards age-appropriate and educational content. Parents recognized their role in modeling responsible technology use and promoting digital literacy skills in their children.

Factors Influencing Parental Attitudes towards Technology

The analysis of interviews with 30 Sidama parents unveiled the multifaceted factors shaping their attitudes towards technology in early childhood education. Cultural beliefs and values played a pivotal role, with some parents favoring traditional methods while others embraced technology for its potential to enhance learning and prepare children for the digital era. Cultural considerations, such as preserving heritage and integrating technology in culturally relevant ways, influenced parental perceptions significantly, highlighting the need for alignment between technology integration and cultural values.

Moreover, parents' attitudes were influenced by their recognition of technology's educational benefits. Many acknowledged its potential to engage children, support interactive learning, and provide access to diverse resources, supplementing traditional methods and fostering holistic development. Concerns about excessive screen time emerged as a key factor, with worries about its negative effects on physical health and social interactions shaping parental views. The digital divide also loomed large, particularly for parents from underserved communities, emphasizing the need for addressing disparities in access and resource distribution to ensure equitable technology integration. Additionally, parental involvement and guidance were deemed crucial, with parents emphasizing the importance of active engagement, setting limits, and modeling responsible technology use to promote digital literacy and well-being in children.

Variability in Perceptions across Socioeconomic Backgrounds

Analysis of interviews with 30 Sidama parents from various socioeconomic backgrounds revealed divergent perspectives on the role of technology in early childhood education. Parents from higher socioeconomic backgrounds generally held more positive views, citing greater access to technology resources like computers and high-speed internet. They regarded technology as a beneficial tool for enhancing learning experiences, supplementing traditional methods, and preparing children for the digital future. Conversely, parents from lower socioeconomic backgrounds expressed concerns about limited access to technology and digital resources, emphasizing the need for equitable access and greater investment in technology infrastructure.

Furthermore, parental perceptions of technology's educational benefits varied based on socioeconomic status. Those from higher socioeconomic backgrounds emphasized its positive impact on cognitive development, creativity, and problem-solving skills, advocating for early digital literacy. In contrast, parents from lower socioeconomic backgrounds exhibited more cautious attitudes, focusing on concerns about the quality of educational content, potential distractions, and the need for parental guidance. Additionally, socioeconomic factors influenced concerns about screen time and the digital divide, with parents from higher socioeconomic backgrounds prioritizing managing screen time effectively and promoting healthy habits, while those from lower socioeconomic backgrounds emphasized the need for support to bridge disparities in technology access and resources.

Cultural Considerations in Technology Integration

The analysis of interviews with 30 Sidama parents reveals nuanced perspectives on cultural considerations in integrating technology into early childhood education. Parents stress the

significance of preserving cultural heritage and traditions, advocating for culturally relevant and respectful technology integration. They emphasize the need for educational content and digital resources that mirror Sidama culture, language, and values, highlighting technology's role in fostering cultural pride, identity, and language preservation while balancing traditional methods with modern tools. Parents call for collaboration between educators, developers, cultural experts, and community members to ensure cultural appropriateness and respectfulness in digital content.

Moreover, parents emphasize the importance of cultural sensitivity in educational materials, expressing concerns about the lack of diversity and representation in mainstream digital resources. They call for inclusive and culturally relevant content that reflects Sidama children's experiences and perspectives, underscoring the value of integrating traditional and modern learning approaches. Parents advocate for a balanced approach that incorporates traditional Sidama learning methods like storytelling and music alongside technology, promoting holistic development and cultural continuity. Additionally, parents highlight the necessity of community involvement and collaboration to align technology integration with Sidama community needs and values, emphasizing the importance of culturally responsive professional development for educators and initiatives to promote digital literacy and equitable technology access among Sidama families. They raise concerns about the digital divide and stress the need for efforts to bridge disparities in technology access and connectivity to ensure inclusivity and equity in educational settings.

5. Discussion

The insights gleaned from interviews with 30 Sidama parents shed light on the cultural dynamics surrounding the integration of technology in early childhood education. These findings carry significant implications for educators, policymakers, and community stakeholders interested in fostering culturally responsive educational practices. Parents stressed the importance of preserving Sidama cultural heritage and instilling cultural pride in children through technology integration. This underscores the necessity for educational content and digital resources that authentically reflect Sidama culture, language, and values. Collaboration between educators, developers, cultural experts, and community members is essential to ensure that digital content is culturally sensitive and inclusive, fostering a sense of belonging and identity among Sidama children.

Moreover, the findings emphasized the value of blending traditional and modern learning approaches in early childhood education. While technology presents opportunities to enrich learning experiences, parents emphasized the significance of maintaining traditional Sidama learning methods like storytelling, music, and hands-on activities. A balanced approach that incorporates both traditional and modern tools can promote holistic development and cultural continuity among Sidama children, bridging past traditions with future advancements. This approach encourages educators to leverage technology as a complement to, rather than a replacement for, culturally relevant teaching practices.

Furthermore, concerns regarding the digital divide underscored the imperative for greater efforts to ensure equitable access to technology in early childhood education. Addressing discrepancies in technology access and internet connectivity is vital for fostering inclusive and equitable learning environments. Policymakers are urged to prioritize initiatives such as providing technology infrastructure in underserved areas, offering subsidies for internet access, and implementing community-based programs to promote digital literacy among Sidama families. By mitigating socio-economic barriers and promoting equitable technology access, educators can create opportunities for all children to benefit from technology-enhanced learning experiences, irrespective of their backgrounds or circumstances.

Additionally, community involvement and collaboration are highlighted as key components in successful technology integration efforts, with educators, parents, community leaders, and cultural experts encouraged to work together to ensure alignment with Sidama community needs and values. Community-based initiatives like parent education programs and cultural workshops empower Sidama families to actively engage in their children's education, advocating for culturally responsive practices and fostering partnerships that promote equitable educational experiences for all children.

6. Conclusions

In conclusion, the integration of technology in early childhood education presents both challenges and opportunities, particularly when viewed through the lens of cultural responsiveness. Through our exploration of parental perceptions, cultural considerations, and challenges in technology integration, several key themes have emerged. Firstly, it's evident that technology holds immense potential to enhance learning experiences for young children, offering interactive tools and resources that cater to diverse learning styles and needs. However, concerns such as the digital divide, screen time, and the quality of digital content highlight the need for careful consideration and strategic approaches in technology integration. Furthermore, cultural perspectives play a crucial role in shaping attitudes towards technology in early childhood education. Culturally responsive approaches, which honor and reflect the diverse backgrounds of children and families, are essential for promoting equity, inclusion, and cultural pride.

Moving forward, it's imperative to address these challenges and capitalize on the opportunities presented by technology in early childhood education. By adopting culturally responsive practices, fostering community engagement, and prioritizing equitable access to technology, we can create learning environments that empower children to thrive in the digital age while honoring their cultural identities and heritage. In essence, the journey towards effective technology integration in early childhood education requires a nuanced understanding of the intersections between technology, culture, and education. By embracing this complexity and remaining committed to inclusivity and equity, we can ensure that all children have access to high-quality learning experiences that prepare them for success in the 21st century.

7. Future Directions for Research

- Research studies could explore how culturally relevant digital content and resources contribute to positive educational experiences and promote cultural pride among children from diverse backgrounds.
- Research could explore how parents from different cultural backgrounds perceive the role of technology in their children's education, their preferences for cultural digital content, and their experiences with technology-enhanced learning at home.
- Research studies could assess the impact of training initiatives on educators' knowledge, skills, and confidence in implementing culturally responsive practices and integrating technology in meaningful and culturally relevant ways.
- Research could investigate the benefits and challenges of co-designing digital content and resources with community stakeholders and the impact of community engagement on children's learning experiences and cultural identity development.
- Research studies could explore how disparities in technology access and digital literacy skills impact children's educational opportunities and outcomes, particularly among underserved communities. Strategies for addressing the digital divide and promoting equitable access to technology could be explored.
- Research could examine how educators scaffold children's learning experiences, facilitate meaningful digital interactions, and promote cultural responsiveness in technology-enhanced learning environments.
- Research studies could analyze existing policies and initiatives related to technology use in early childhood education and propose recommendations for promoting equity, diversity, and cultural responsiveness in policy frameworks and educational practices.

Declarations

Author Contributions: The entire article is prepared by the sole author. The author has read and agreed to the published version of the manuscript." Please turn to the [CRediT taxonomy](#) for the term explanation. Authorship must be limited to those who have contributed substantially to the work reported.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of Hawassa College of Teacher Education HCTE/1704/24.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. A written informed consent has been obtained from the patient(s) to publish this paper.

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