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Character Education in Muslim Families to Counter the Negative Effects of Digital Technology in the Era of Industry 4.0

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Abstract

Objective: This study examines the methods applied by Muslim families in dealing with the impact of technological advances on early childhood in the Industrial 4.0 era, especially in the Surakarta area. **Theoretical framework:** This research is based on the theory of the social impact of technology and childcare in the Muslim family environment, highlighting the importance of the role of the family in shaping behavior and fortifying children from the negative impacts of technology. **Literature review:** discusses the influence of technology on early childhood development, the role of parents in religious value-based parenting, and strategies that can be applied in dealing with technological developments in the digital era. **Methods:** This study uses a descriptive qualitative method with the stages of data reduction, data presentation, and conclusion drawn, through observation and interviews with 10 Muslim families in Surakarta. **Results:** This study shows that Muslim families apply various methods such as preventive measures, supervision of technology use, free children to play outside with peers, being selective in choosing appropriate applications for children, providing examples of good behavior in the use of technology, and limiting the time of use of technology for children. **Implication:** this research highlights the importance of the active role of the family in accompanying and directing children in using technology wisely to minimize its negative impacts. **Novelty:** this research lies in its specific focus on the practice of raising Muslim families in the Industrial 4.0 era in the local context of Surakarta, as well as on the identification of concrete methods applied by parents in dealing with digital challenges in early childhood.

Keywords: muslim family education, digital technology impact, early childhood development, parental supervision, character formation.

INTRODUCTION

The rapid advancement of digital technology in the era of Industry 4.0 has significantly reshaped early childhood experiences, especially in how children interact, learn, and develop

socially. While numerous studies have examined the cognitive and psychological effects of digital media use among young children, particularly the adverse consequences such as behavioral problems, reduced social interaction, sleep disturbances, and emotional disorders, few have focused on how families—especially Muslim families—strategically respond to these challenges within a religious and cultural framework. Existing literature predominantly discusses the role of digital literacy, screen time limitations, and the psychological consequences of technology overuse in general parenting contexts. However, there is limited research that specifically investigates Islamic parenting approaches and the application of character education within Muslim families as a proactive strategy to counteract the negative effects of digital technology on young children. The spiritual, moral, and behavioral components that are central to Islamic family values are often overlooked in mainstream child development studies [1]–[3].

Moreover, while some studies have acknowledged the role of parents in mediating technology use, they often generalize parental methods without exploring the nuances found in religiously observant households. The local context of Surakarta, Indonesia—a region with a strong Muslim cultural identity—also remains underexplored in terms of how its communities navigate digital parenting challenges while maintaining Islamic values. This research attempts to fill that gap by offering an in-depth, qualitative investigation into the concrete methods employed by Muslim families in Surakarta to minimize the negative impacts of digital technology on early childhood development. It provides insight into parenting strategies that are grounded in Islamic principles, such as role modeling, moral instruction, emotional supervision, and spiritual engagement. By doing so, this study contributes to the broader discourse on culturally responsive parenting in the digital age, offering practical implications for both academic research and educational policy in predominantly Muslim societies [4]–[6].

The changes of the times are happening very quickly in Indonesia, as can be seen from the increasingly advanced technological advances in all areas of life. The use of technology has become a necessity because it makes life easier for humanity, especially the younger generation known as the digital natives. According to the Indonesian Children's Medical Association, "The younger generation known as the digital native generation is the name of the generation that today is familiar with digital media and electronic media from birth". According to the results of a survey conducted by the Ministry of Communications and Information, the number of Internet users in Indonesia is mostly the young generation. Kominfo explains that the number of Internet users is 213.63 million people by 2022. Of that number, 80% are children and adolescents [7]–[11].

Technology has a huge influence on the lives of younger generations; it can even change their personalities, mindsets, and behaviors. Hasanah that the negative impact of gadgets greatly affects the mental health of children, so that their social life becomes less good, and children can experience sleep disorders, obesity, aggression, chubbiness, addiction, and so on. This is in line with the opinion of Mustafaoğlu et al, that excessive use of gadgets poses a variety of health risks, including developmental problems, musculoskeletal problems, lack of physical activity, obesity, and inadequate sleep quality. The other negative impact of the use of technology is demonstrated by Divan et al, which states that excessive exposure to gadgets in children hurts child development, as it affects brain development, brain function can decrease due to radiation exposure from gadgets, so it can lead to behavioral problems in children. These behavioral problems are difficult for a child to emulate with non-technological toys, can impede a child's ability to speak, and cause social behavior disorders such as children preferring to stay at home rather than play with peers [12].

Another longitudinal study found that children who watched television more than 3 hours a day had behavioral problems such as hyperactivity, uncontrolled emotions, and problems in socializing at the age of 7 compared to children watching television less than 1 hour a day [13]. Also argues that technology hurts everyday life, especially for children who have easy access to technology at home, resulting in children becoming passive individuals and

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reluctant to socialize [14]. Parents play an important role in shaping the child's personality until the child grows into a responsible adult. Sunarto Argues that parents are the most important component in the early stages of children's education. Therefore, a child's personality development is largely determined by what is given by parents [15]–[17]. As regulated by Act No. 35 of 2014 on the protection of children, it reads: "Parents must nurture, build, educate, protect, nurture and exploit the potential of children according to their abilities, talents, and interests". According to the law, it is very clear that parents are the primary educators in their families. For that, parents must protect their children from all kinds of disturbances, including the negative impact of technological advances. The children of the 4.0 industrial age have been familiar with technology from an early age, such as information and communication technology, which consists of several types, namely visual, audio-visual, and printed media [18]–[20].

The role of parents is essential in the process of supporting the use of technology by children in a family. In the age of globalization, parents have their respective responsibilities in the educational process of their children. However, often the role of a mother as an educator at home is replaced by a nurse. This, of course, cannot be ignored just because education, guidance, supervision, and affection from parents will have a positive impact on children [21], [22]. Technological advances have a profound impact on children's lives, so the role of parents is essential in supporting children in the use of technology in everyday life. Parents can pursue technological advances in educating their children by monitoring and giving instructions on how to use technology properly and correctly; therefore parents must have sufficient knowledge related to the management of the use of technology to their children so that the usage of technology has a positive impact on their children. This view is in line with the findings of Hammer et al, who stated that parents at home have a role in supporting the use of technology which is an important start in increasing the positive impact of technology on children [23]–[26].

In addition to the role of parents in general, it turns out that parents from Muslim families have their ways of minimizing the negative impact of technological advances on their children, as demonstrated by Zahrotunissa that Moslem family education focuses on strengthening Islamic religious identity, growing awareness of digital, and being a good and positive example to children. Muslim family education in the digital age offers broad access to religious knowledge, fosters a deeper understanding of Islam, and encourages children to engage in religious activities so that children can navigate the digital world better with Islamic values [27]–[29].

The Moslem family tip in dealing with the negative impact of technology other than the above is that Moslem parents strive to be more digitally intelligent, introduce concepts of morality to their children, and build moral values by controlling their children's interaction with digital things that smell. Moslem parents also endeavor to educate their children by giving Islamic counsel, attention, and educating with targhib and tarhib. This is in line with a study conducted by Astuti et al, which states that to prevent the negative impact of the use of technology on children, Moslem families must instill Islamic educational values that include the aspects of akidah, worship, and ak mortality in children. Based on the background that has been presented, the researchers are interested in conducting research related to the use of technology in early childhood under the title "Moslem family methods on the impact of digital technological advances in the era of Industry 4.0 on early children in Surakarta". The researchers used Moslem family subjects to dig deeper into related concepts of Islamic concepts in the application of everyday life [27]–[29].

LITERATURE REVIEW

The rapid advancement of digital technology in the era of Industry 4.0 has significantly transformed many aspects of human life, including early childhood development. Children born in this digital generation are often exposed to gadgets, internet-based platforms, and electronic media from a very young age. While technology offers educational benefits and

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easy access to information, excessive and unsupervised use has been shown to affect children's cognitive, emotional, and social growth. Common concerns include reduced attention span, delayed speech development, decreased social interaction, and disrupted sleep patterns. These concerns are particularly pressing in early childhood, a stage that is foundational to shaping lifelong behavior and personality [30].

In response to this growing issue, scholars and practitioners have turned attention toward the role of the family in mediating children's interaction with technology. Families are recognized as the primary environment in which children learn values, behavior, and social skills. Thus, the responsibility to supervise, guide, and limit technology use falls primarily on parents. In this context, parenting strategies become essential in determining whether digital exposure becomes a positive or negative influence in a child's life. Character education within the family has emerged as an effective approach to mitigating the risks posed by technology. Through consistent modelling, supervision, and reinforcement of values such as discipline, empathy, and responsibility, parents can shape children's attitudes toward the use of digital media. Parents who actively engage in their children's digital activities, limit screen time, and provide alternative learning experiences contribute to healthier emotional and social development [31]–[34].

Particularly within Muslim families, religious values offer an added framework for guiding children's behavior. Islamic teachings emphasize moral education, respectful communication, and spiritual development, all of which are relevant in building resilience against negative external influences, including harmful digital content. Muslim parents often integrate religious instruction, prayer routines, and prophetic examples to cultivate children's awareness and self-control. These spiritual components, when combined with educational and emotional strategies, provide a comprehensive system for character formation in the digital age. Despite growing awareness of these methods, research remains limited in contextualizing how Muslim families specifically implement character education to respond to technological challenges. There is a need to explore how cultural and religious values intersect with parenting practices, particularly in Muslim-majority regions such as Indonesia. This study addresses that need by exploring concrete strategies employed by Muslim families in Surakarta to counter the negative effects of technology, with a focus on fostering character and emotional development in early childhood [31]–[34].

Table 1. Literature Review

Theme	Summary Description
Impact of Digital Technology	Early exposure to gadgets can affect children's cognitive, emotional, and social development—causing issues like poor focus, delayed speech, and isolation.
Role of the Family	The family serves as the primary environment for learning values and behavior. Parents are responsible for guiding and supervising technology use.
Character Education at Home	Modeling discipline, empathy, and responsibility helps mitigate risks. Active parental involvement fosters healthier emotional and social development.
Islamic Parenting Perspective	Muslim families apply religious values—moral teachings, prayer habits, and prophetic examples—to build children's spiritual and emotional resilience.
Research Gap	Limited studies focus on how Muslim families implement character education in response to digital challenges, especially in the Indonesian context.

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METHODOLOGY

This study employed a qualitative descriptive method to explore the strategies and approaches used by Muslim families in addressing the negative impacts of digital technological advances on early childhood in the context of the Industry 4.0 era. The purpose of using this method was to gain a comprehensive and in-depth understanding of the real experiences, behaviors, and attitudes of Muslim parents in Surakarta, Indonesia, specifically in managing the influence of digital media on children aged 4 to 6 years old. The qualitative descriptive approach was chosen because it allows the researcher to describe phenomena as they occur naturally, without manipulating variables. This method is particularly effective for exploring social issues and cultural practices, such as parenting and family education, within a specific community. The goal was not to test hypotheses but to present a clear and factual representation of how Muslim families perceive, respond to, and manage the effects of technological exposure on their young children [35], [36].

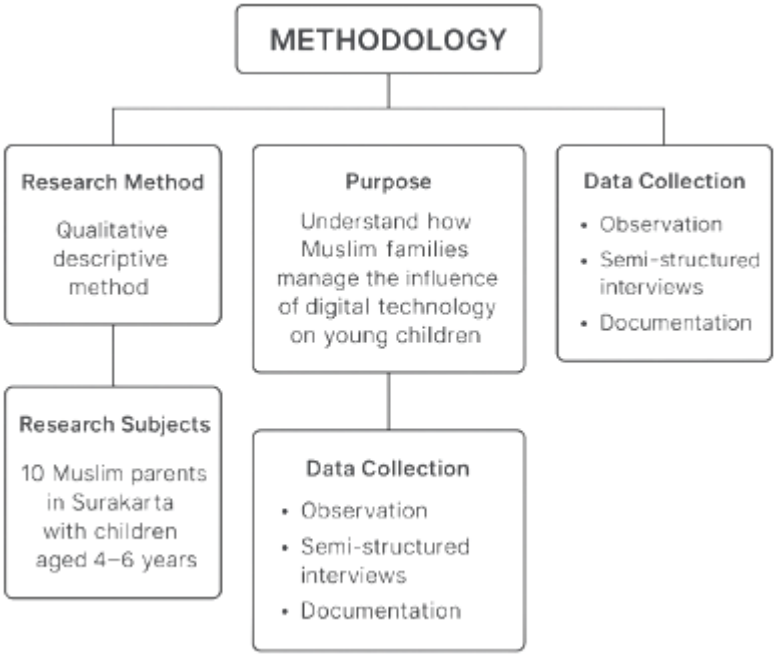

Figure 1. Research Methodology

The research subjects consisted of 10 Muslim parents residing in Surakarta, each having at least one child aged between 4 and 6 years. The selection of participants was done purposively to ensure relevance and richness of data. These participants represented diverse socioeconomic backgrounds and household settings, providing a broader perspective on family practices. To collect data, the researchers utilized three primary techniques: observation, interviews, and documentation. Observations were conducted to examine the daily parenting behaviors and the environmental context in which children interacted with digital technologies. These observations allowed the researchers to witness how parents implemented strategies such as supervision, limitation of screen time, and encouragement of outdoor or religious activities. The main data collection method, however, was the semi-structured interview. This technique enabled researchers to explore topics deeply while maintaining flexibility in how questions were posed. In contrast to structured interviews, semi-structured interviews allowed parents to express their experiences and perspectives freely, leading to richer and more nuanced responses. Interview questions covered areas such as rules for gadget use, emotional and religious guidance, digital content monitoring, and parental modeling behavior [35], [36].

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Each interview lasted between 30 to 60 minutes and was conducted in an informal and respectful manner to ensure participant comfort and openness. Notes were taken, and in some cases, audio recordings were made with participant consent to ensure data accuracy. In addition to interviews and observations, documentation was used to support the data. This included reviewing materials such as daily schedules, parenting notes, or any visual evidence (e.g., photos of learning environments or children's activity logs) provided by participants. The collected data were analyzed using qualitative data analysis procedures, including data reduction, data display, and conclusion drawing. Data were categorized thematically to identify recurring patterns and unique parenting strategies. The analysis focused on uncovering how Islamic values influenced family practices in addressing technological challenges and shaping children's character in a digitalized environment [37]–[39].

RESULTS AND DISCUSSION

Based on the results of interviews with 10 respondents, the following results were obtained:

Interviews with Mrs. Septi

Mrs. Sept is a housewife with two children, the first child is 4 years old, while the second child is 1.5 years old. Based upon the interviews conducted, the method used in minimizing the negative impact of technological advances on the development of early childhood is preventive methods, which means it does not introduce early conscious gadgets, Mrs. Septi also does not have a television at home, and the child constantly watching television, it is better to play with her mother and father. The cell phone that Mrs. Septi owns is used only to call people when they need it, and not to play with the cell phone when she's around her child. The results of this interview are in line with the results of research conducted by Aryati that preventive methods are one of the methods considered effective in minimizing the negative impact of digital technology use by children, so the use of gadgets would be better only when necessary, with a certain time limit [40].

Interviews with Mrs. Umi

Mrs. Umi is a housewife with two children; the first child is 7 years old, while the second child is 4 months old. Based on an interview with Mrs. Umi, the method used to minimize the negative impact of technological advances on early childhood development is limiting the use of gadgets. The gadget was only given one hour a day to her first child; it was under parental supervision, and for her second child, who was four months old, Mrs. Umi chose never to give her screentime. In line with Mrs. Septi, Mrs. Umi also chose not to have television at home because of the fear that her child would watch television all the time, become passive in socializing, and forget to study at home. The results of an interview with Mrs. Umi are in line with the results of a study conducted by Putri, which stated that the way to minimize the impact of using gadgets is by limiting the use of gadgets and giving time limits when children use gadgets [41].

Interviews with Mrs. Rizka

Mrs. Rizka is a housewife with a child. Based on an interview with Mrs. Rizka, the method used to minimise the negative impact of technological advances on children's development is by providing educational toys to children. So Mrs. Rizca's home has a place made specifically for children to play. They are also prepared to share toys that can train various aspects of children's development, ranging from religious and moral values to cognitive, language, motor, physical, and art. While the child plays, Mrs. Rizka sets herself up to do the same when she isn't busy. Even when she's busy doing her homework, she keeps watching the child from a distance and as often as she can. With this, Mrs. Rizka wants her son not to know the gadget further; the gadget is only used to call relatives or friends. The results of an interview with Mrs. Rizka are in line with the results of a study conducted by

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Nugroho et al, which states that monitoring and monitoring children in the use of gadgets is essential to reduce the impact of the negative impact of gadget use [42].

Interviews with Mrs. Tia

Mrs. Tia is a housewife with three children, the first child is eight years old, the second child is five years old, and the third child is three years old. Based on the interview with Mrs. Tia, the method used to minimize the negative impact of technological progress on child development is by freeing the child to play outside with his peers. So when Mrs. Tia`s first daughter is playing with her friends, her sisters are also asked to play with her brother, or otherwise not, her brothers can also be friends with her peers, this method is considered very effective because socializing with her peers makes the children unaddictive to gadgets, and many benefits can be obtained by the child, i.e. the child becomes independent, joyful, and the ability to socialize becomes better. The results of an interview with Mrs. Tia are in line with the results of a study conducted by Amalia & Diana, which stated that asking children to socialize with peers and their surroundings is one of the parents' strategies in addressing the impact of gadget use on early childhood social development [43].

Interviews with Mrs. Lestari

Mrs. Lestari is a single mother with three children. The first was nine years old, and the second and third were five years old. Lestari's mother is also a working mother, so communication with her son is very limited, that is, in the afternoon when she comes home from work. When working, Mrs. Lestari's children will be cared for by her grandmother after school. Mrs. Lestari`s method of minimizing the negative impact of technological advances is to limit the giving of gadgets to her child, which is in line with the opinion of some other respondents in this study. Although her mother is a working mother, she is also committed to accompanying her child when using the gadget, so anything she does or watches through the gadget should be under her supervision, because many negative things can affect her child from the advances of technology, for example, when her child sees unpleasant content from social media. The results of an interview with Mrs. Lestari are in line with the results of a study conducted by Wahyudi & Sukmasari, which states that parental supervision is crucial in efforts to prevent the negative influence of technology on children [44].

Interviews with Mrs. Tri Susilowati

Mrs. Tri has a child. Based on an interview with the mom Mrs. Tri obtained information that her son was allowed to watch TV and HP since the age of two and always allowed her child to use the digital device when her child asked for it. Mrs. Tri is very concerned about the impact of the overuse of digital devices on her child because the child has difficulty responding to people around when they are asked to communicate and are all alive with the gadget, therefore the method considered effective by Mrs. Tri minimizing the negative impact of technology is by a selective way in choosing applications that are accessible to the child and also multiply the child's activities outside the home so that the child does not use the gadget often. The results of the interview with Mrs. Tri are in line with the results of research carried out by Novitasari which states that the way that parents can do in supporting the intensity of the use of gadgets in children is selectively by selecting appropriate and appropriate applications, inviting children to do positive things outside the home also includes strategies in minimizing the use gadget by children [45].

Interviews with Mrs. Luluk Sholihah

Mrs. Luluk has a five-year-old son who, based on an interview with her mother, was informed that her son has been given access to gadgets, tablets, or even television from the age of three to four hours a day. According to Mrs. Luluk, the negative impact of technology is very worrying, as a child becomes forgotten about time in religious studies because of constantly playing with gadgets, but Mrs. Luluk took the positive side of using gadgets as an up-to-date learning medium. The method used by Mrs. Luluk in minimizing the impact of technology is to be a role model for the child because the child imitates what the people

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around him do, so she also begins to reduce the use of gadgets and multiply religious activities like teaching in the cottage every afternoon. The results of an interview with Mrs. Luluk are in line with the results of research conducted by Fahrurrozi & Sutrisno, which states that being a role model for children is the right way to minimize the negative impact of the use of technology in the digital age [46].

Interviews with Mrs. Heny Lestari

Mrs. Heny has a five-year-old child. Based on an interview with her mother, she learned that her son has been given access to gadgets, television, and tablets since she was one year old. Mrs. Heny argues that digital technologies like gadgets have a lot of negative impacts, such as the child having difficulty sleeping, and also the child gets slow in responding to conversations with others. Therefore, Mrs. Heny has a method of minimizing the impact of digital technology on the child by providing support when the child uses digital technology so that the child is always in the hands of the parents. The results of interviews with Heny's mother are in line with the results of research conducted by Tasya & Masyitoh, which stated that parental support to children is effective in preventing the negative impact of technology, with parental assistance having shown that they provide empathy, support and positive feelings to children [47].

Interviews with Mrs. Uswatun Khasanah

Mrs. Uswa has a four-year-old son. Based on the results of an interview with Mrs. Uswa obtained information that she began to give access to gadgets and television to the child from the age of 2 because surrounded by the house of the mother, all children were given access to use the gadgets and watch television. Mrs. Uswa was very concerned about the negative impact of technology because the child became angry when not given access to play with the gadget, but the mother has not been able to discontinue the use of gadgets to children for reasons of a lot of homework, so the child remains calm when playing with his gadget, yet the mother still tried to apply the appropriate methods to minimize the impact of the gadget used by the son boss by encouraging the child to be active in socialization and always invite the children to play outside the house. The results of an interview with Mrs. Uswa are in line with a study conducted by Sutriyatna, which shows that bringing children to play out of the house is one of the most effective methods of forgetting gadgets [48].

Interviews with Mrs. Wulan

Mrs. Wulan has a six-year-old son. Based on an interview with Mrs. Wulan, who was informed that Mrs. Wulan began to give access to the use of technologies such as gadgets and television when the child was two years old, this was done because Mrs. Wulan was a working mother and gave her child to her aunt. Mrs. Wulan assessed that the use of gadgets in children has a lot of negative impacts because children should play outside the house with their friends. Also, the impact of other uses of digital technology is that it can make children suffer from eye pain when technology use is unrestricted, as well as children can have severe sleep problems. Therefore, Mrs. Wulan has several methods that can be given to their children the negative impact of digital use can be minimized by setting time constraints and providing support and supervision to children when using digital technology. The results of an interview with Mrs. Wulan are in line with the research conducted by Nurhidayah, et al, which shows that parents have a special role can preventing children from becoming addicted to gadgets by providing appropriate support, supervision, and communication [49].

Table 2. Results and Discussion

Respondent	Parenting Method	Explanation
Mrs. Septi	Preventive Method	Does not introduce gadgets early, no television at home, uses phone only when necessary, prefers direct interaction and play with parents.
Mrs. Umi	Limiting & Supervision	Limits gadget use to 1 hour/day under supervision, no TV at home, avoids screen time for infants.

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Mrs. Rizka	Educational Substitution & Monitoring	Provides educational toys, designates play space, monitors child even while busy, avoids unnecessary gadget use.
Mrs. Tia	Outdoor Play with Peers	Encourages children to play outside with friends/siblings, helps children avoid gadget addiction and improves social skills.
Mrs. Lestari	Limiting & Supervision	Sets time limits for gadget use, supervises content, works full-time but maintains communication and control over gadget access.
Mrs. Tri	Selective Content & Outdoor Activity	Selects safe applications, minimizes overuse by encouraging outdoor play, recognizes impact of excessive gadget use on communication skills.
Mrs. Luluk	Role Modeling & Religious Activity	Reduces own gadget use as an example, encourages religious routines to replace screen time, uses technology only for learning.
Mrs. Heny	Supervision & Emotional Support	Supervises closely during gadget use, provides emotional support to avoid negative effects like sleep problems and poor communication.
Mrs. Uswa	Social Encouragement & Outdoor Play	Encourages children to socialize and play outside to prevent gadget addiction despite early exposure due to family environment.
Mrs. Wulan	Time Limitation, Support, and Supervision	Working mother, limits screen time, emphasizes supervision and communication, recognizes negative health and behavior impacts of unrestricted gadget use.

In-Depth Analysis: Muslim Family Methods in Addressing the Negative Impact of Digital Technology on Early Childhood in the Industry 4.0 Era

The rapid development of digital technology in the era of Industry 4.0 presents both opportunities and challenges for families raising young children. On one hand, digital devices offer access to educational content and tools for communication and entertainment. On the other hand, unregulated and excessive exposure to gadgets, smartphones, and televisions can negatively affect children's cognitive, emotional, social, and spiritual development. The results of this study, which involved interviews with 10 Muslim parents in Surakarta, reveal various family-based methods used to mitigate the adverse impacts of technology on children aged 4–7 years. One of the most commonly used approaches identified is the preventive method, which involves avoiding the early introduction of gadgets. For example, Mrs. Septi avoids exposing her young children to digital screens altogether. She and her husband intentionally removed the television from their home and only use their cell phones when necessary. This method reflects a proactive effort to eliminate dependency on gadgets before it begins. It also fosters greater interpersonal bonding between parents and children and prioritizes quality time in the home environment.

A second method involves limiting and supervising gadget use, as practiced by Mrs. Umi and Mrs. Lestari. These mothers establish clear rules about when, how long, and under what conditions their children may use technology. The time limit—typically no more than one hour per day—is always accompanied by parental supervision. Content is filtered and screen time is balanced with offline activities. This method helps children learn self-control while ensuring that technology does not dominate their developmental experiences. Another notable strategy is providing alternative educational stimulation, as demonstrated by Mrs. Rizka. Instead of gadgets, she equips her home with educational toys and creates a designated play area. She maintains close physical and emotional presence while her child is engaged in play, even while performing household tasks. This method enhances creativity, cognitive growth, and fine motor development, while simultaneously reducing the likelihood of gadget dependency.

Outdoor socialization with peers is also emphasized as a beneficial alternative to screen time. Mrs. Tia actively encourages her children to play outside with friends and siblings, believing that peer interaction builds independence, improves communication skills, and

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reduces the attraction to digital media. This method aligns with the social nature of early childhood development and counters the isolating effects of excessive gadget use. A more nuanced strategy is selectivity in digital content, applied by Mrs. Tri. Recognizing the inevitability of some level of gadget exposure, she carefully curates what her child accesses. Educational and age-appropriate applications are allowed, while harmful or overstimulating content is avoided. She also combines this approach with outdoor activities to keep screen time minimal and meaningful. This method reflects a balanced perspective—neither completely rejecting technology nor surrendering to it.

Role modeling stands out as a powerful method in shaping children's behavior. Mrs. Luluk exemplifies this by deliberately reducing her own screen time in front of her child and redirecting attention to religious activities such as Quran recitation or attending Islamic study groups. This method underscores that children often emulate what they see, and parents must demonstrate the behaviors they wish to cultivate in their children. The importance of emotional support and supervision is also stressed by respondents such as Mrs. Heny and Mrs. Wulan. While acknowledging that complete avoidance is not always practical—especially for working mothers—they ensure that gadget use is accompanied by empathy, presence, and boundaries. For instance, Mrs. Wulan gives her child gadget access while she is working, but sets limits and checks in regularly. She also emphasizes offline interaction and encourages playing with friends to maintain social balance.

In more challenging circumstances, such as in the case of Mrs. Uswatun, family and environmental factors play a significant role. Her child was introduced to gadgets early due to the influence of neighboring children and household demands. However, she still seeks to counteract potential harms by inviting her child to play outside and engage in social interactions. This demonstrates that even in less ideal conditions, parents can implement meaningful interventions to redirect their children's focus away from screens. Across all respondents, a common theme emerges: the central role of the family as the first and most critical educational environment. Muslim parents in this study see technology not only as a tool but also as a challenge that requires conscious, value-based guidance. They apply religious teachings, ethical reasoning, and emotional awareness to shape their children's character amidst a highly digitalized world. In summary, the various strategies identified—preventive approaches, time limitation, supervision, selective exposure, outdoor engagement, role modeling, and emotional support—represent a holistic effort by Muslim families to raise morally grounded, emotionally intelligent, and socially healthy children. These methods are deeply rooted in Islamic values and local cultural wisdom, and they offer a meaningful alternative to Western-dominated frameworks of digital parenting. As technology continues to advance, such family-based approaches serve as crucial models for preserving childhood integrity in the digital age.

CONCLUSION

This study aimed to explore the strategies used by Muslim families in Surakarta, Indonesia, to mitigate the negative effects of digital technology on early childhood in the context of the industry 4.0 era. Through qualitative descriptive methods, including interviews, observations, and documentation involving ten Muslim parents of children aged 4 to 7 years, the study successfully identified several key parenting methods that reflect both cultural and religious values in guiding children's interaction with technology. The findings reveal that Muslim families have adopted a variety of preventive and proactive methods to address digital challenges. One of the primary approaches is the preventive method, which includes limiting early exposure to gadgets and avoiding unnecessary use of digital devices, particularly for very young children. Some families even choose to remove television sets from their homes entirely, replacing screen time with more interactive and relational family activities. This method reflects a conscious effort by parents to reduce dependency on technology and prioritize face-to-face interaction and emotional bonding. Another widely practiced approach is the surveillance method, in which parents closely monitor their

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children's digital usage. This includes supervising the type of content children access, controlling screen time, and ensuring that devices are only used under adult guidance. Such supervision helps protect children from harmful online content while encouraging responsible use of technology. The study also highlights the importance of allowing children to play freely outdoors with peers. This traditional practice remains highly effective in promoting social skills, physical activity, and emotional regulation. By encouraging outdoor play, parents provide their children with alternative, non-digital forms of engagement that contribute to healthy development. A further method is being selective in choosing digital applications that are age-appropriate and educational. Parents reported carefully curating content to ensure that children are exposed only to programs that align with family values and developmental needs. In some cases, religious educational content was chosen to reinforce Islamic teachings. Being a positive role model emerged as another influential method. Children tend to imitate the behaviors of adults around them, especially their parents. Several participants in this study made conscious efforts to reduce their own gadget usage in front of their children, thereby setting an example of balanced and mindful technology use. Lastly, setting clear time limits for digital use is commonly practiced. By restricting the duration of screen exposure, families aim to prevent overuse, reduce the risk of gadget addiction, and maintain a balanced daily routine that includes religious learning, physical activity, and quality family interaction. In conclusion, this study underscores the crucial role of Muslim families in navigating the complex landscape of digital technology while preserving their children's character, health, and faith-based values. The methods identified—rooted in religious awareness, cultural wisdom, and practical parenting—offer valuable insights for families, educators, and policymakers seeking to promote responsible technology use and holistic child development in the digital age.

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Author Contribution

All authors contributed significantly to this research. The first author conceptualized the study and led the interviews. The second author supported the literature review and field coordination. The third author assisted with data analysis and interpretation. The fourth author contributed to the psychological framework and final manuscript revision. All authors reviewed, approved, and take full responsibility for the accuracy and integrity of this manuscript.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article. All research processes were conducted independently, without influence from any commercial or funding agency. The views expressed are solely those of the authors and do not reflect the official stance of their affiliated institutions.

REFERENCES

[1] T. Z. Haq, "Pola Asuh Orang Tua Dalam Perilaku Sosial Generasi Millenial Ditinjau Dari Neurosains," *Al-Mada J. Agama, Sos. dan Budaya*, vol. 3, no. 1, pp. 88–108, 2020, https://doi.org/10.31538/almada.v3i1.609.

[2] A. Pratiwi and E. N. K. Asyarotin, "Implementasi literasi budaya dan kewargaan sebagai solusi disinformasi pada generasi millennial di Indonesia," *J. Kaji. Inf. Perpust.*, vol. 7, no. 1, pp. 65–80, 2019, https://doi.org/10.24198/jkip.v7i1.20066.

[3] A. Faqih, "MAZHAB GOOGLE: Nalar Fikih Generasi Z dan Fatwa Shopping di SMAN 2 Lamongan dan MA 'Matholi'ul Anwar' Lamongan," *TA'LIM J. Stud. Pendidik. Islam*, vol. 6, no. 2, pp. 140–172, 2023.

[4] S. D. Ramadani, "Internet Dan Perilaku Seksual Remaja Pesisir Madura: Studi Cross Sectional Di Desa Branta," *J. Din. Sos. Budaya*, vol. 21, no. 2, p. 91, 2019, https://doi.org/10.26623/jdsb.v21i2.1621.

[5] S. Chalim and E. O. M. Anwas, "Peran Orangtua dan Guru dalam Membangun Internet sebagai Sumber Pembelajaran," *J. Penyul.*, vol. 14, no. 1, pp. 33–42, 2018, https://doi.org/10.25015/penyuluhan.v14i1.19558.

[6] E. Kurniasari and D. N. Suhartini, "Hubungan penggunaan smartphone dengan kualitas dan kauntitas tidur pada remaja di desa arolipu tahun 2022," vol. 1, no. 1, pp. 24–31, 2022.

[7] T. N. Faridah, D. A. Dewi, and Y. F. Furnamasari, "Meningkatkan Karakter Generasi Muda di Era 5 . 0 Melalui Pembelajaran Pendidikan Kewarganegaraan," *J. Pendidik. Tambusai*, vol. 5, no. 20, pp. 7310–7314, 2021.

[8] S. Widiyono, "Pengembangan Nasionalisme Generasi Muda di Era Globalisasi," *Populika*, vol. 7, no. 1, pp. 12–21, 2019, https://doi.org/10.37631/populika.v7i1.24.

[9] E. Agus, "Pengaruh Globalisasi Terhadap Nilai Nasionalisme Generasi Muda," *Iuris Stud. J. Kaji. Huk.*, vol. 2, pp. 26–33, 2021, https://doi.org/10.55357/is.v2i1.75.

[10] D. Yuniarni, L. Lukmanulhakim, A. Linarsih, D. Miranda, and H. Halida, "Pengembangan Buku Saku Panduan Penggunaan Gadget untuk Optimalisasi Perkembangan Anak Usia Dini," *J. Obs. J. Pendidik. Anak Usia Dini*, vol. 7, no. 3, pp. 2820–2828, 2023, https://doi.org/10.31004/obsesi.v7i3.4145.

[11] S. Setianingsih, "Dampak Penggunaan Gadget Pada Anak Usia Prasekolah Dapat Meningkatan Resiko Gangguan Pemusatan Perhatian Dan Hiperaktivitas," *Gaster*, vol. 16, no. 2, p. 191, 2018, https://doi.org/10.30787/gaster.v16i2.297.

[12] H. A. Divan, L. Kheifets, C. Obel, and J. Olsen, "Cell phone use and behavioral problems in young children," *J Epidemiol Community Heal.*, vol. 66, no. 6, pp. 524–529, Jun. 2012, https://doi.org/10.1136/JECH.2010.115402.

[13] I. Palaiologou, "'Do we hear what children want to say?' Ethical praxis when choosing research tools with children under five," *Early Child Dev. Care*, vol. 184, no. 5, pp. 689–705, 2014, https://doi.org/10.1080/03004430.2013.809341.

[14] F. Gottschalk, "Impacts of technology use on children: Exploring literature on the brain, cognition, and well-being," *OECD Educ. Work. Pap.*, vol. 3, no. 195, pp. 313–316, 2019, https://doi.org/10.1787/e071a505-en

[15] Wahib A, "Konsep Orang Tua Dalam Membangun Kepribadian Anak," *J. Paradig.*, vol. 2, no. 1, pp. 2406–9787, 2015.

[16] S. Rahmah, "Pola Komunikasi Keluarga dalam Pembentukan Kepribadian Anak St. Rahmah UIN Antasari Banjarmasin," *J. Alhadharah*, vol. 17, no. 33, pp. 13–31, 2018, https://doi.org/10.18592/alhadharah.v17i33.2369.

[17] N. Nurmadiah, "Peranan Pendidikan Agama Dalam Keluarga Terhadap Pembentukan Kepribadian Anak-Anak," *Al-Afkar J. Keislam. Perad.*, vol. 1, no. 2, pp. 8–25, 2016, https://doi.org/10.28944/afkar.v1i2.6.

[18] F. Y. Ekici, "Parents' Views on the Use of Technology in the Early Childhood Period," *J. Educ. Train. Stud.*, vol. 4, no. 12, 2016, https://doi.org/10.11114/jets.v4i12.1925.

[19] A. Hermana, "Perlindungan Hukum Terhadap Anak Pengguna Narkotika Dihunbungkan Dengan Undang-Undang Nomor 23 Tahun 2002 Jo. Undang-Undang Nomor 35 Tahun 2014 Tentang Perubahan Atas Undang-Undang Nomor 23 Tahun 2002 Tentang Perlindungan Anak," *J. Ilm. Galuh Justisi*, vol. 4, no. 2, p. 241, 2017, https://doi.org/10.25157/jigj.v4i2.318.

[20] K. A. Nasution, "Sanksi Terhadap Pelaku Penculikan Anak Menurut Nomor 35 Tahun2014 Tentang Perlindungan Anak Dan Hukum Islam," *J. EduTech*, vol. 5, no. 1, pp. 37–44, 2019, https://doi.org/10.30596/edutech.v5i1.2760.

[21] H. Perbowosari and I. Sudarsana, *The Role of Parents to Educate Their Children in Technology Advancement*. Research Gate Publication, 2019. https://doi.org/10.4108/eai.27-4-2019.2286849.

[22] L. Asmawati, "Peran Orang Tua dalam Pemanfaatan Teknologi Digital pada Anak Usia Dini," *J. Obs. J. Pendidik. Anak Usia Dini*, vol. 6, no. 1, pp. 82–96, 2021, https://doi.org/10.31004/obsesi.v6i1.1170.

[23] M. Hammer, K. Scheiter, and K. Stürmer, "New technology, new role of parents: How parents' beliefs and behavior affect students' digital media self-efficacy," *Computers in Human Behavior*, vol. 116. in Computers In Human Behavior, vol. 116. 2021. https://doi.org/10.1016/j.chb.2020.106642.

[24] F. D. Purwaningtyas, Y. Septiana, H. Aprilia, and G. Candra, "Dampak Penggunaan Gadget Terhadap Perkembangan Psikologi Pada Anak Sekolah Dasar," *J. Psikol. Wijaya Putra*, vol. 4, no. 1, pp. 1–9, 2023, https://doi.org/10.38156/psikowipa.v.

[25] M. Ngafifi, "Kemajuan Teknologi Dan Pola Hidup Manusia Dalam Perspektif Sosial Budaya," *J. Pembang. Pendidik. Fondasi dan Apl.*, vol. 2, no. 1, pp. 33–47, 2014, https://doi.org/10.21831/jppfa.v2i1.2616.

[26] K. A. Triana *et al.*, "Pengaruh Kemajuan Teknologi terhadap Perkembangan Pendidikan Karakter Anak Sekolah Dasar," vol. 7, pp. 24623–24627, 2023.

[27] A. Zahrotunnisa, "The Urgency of Muslim Family Education in the Digital Era," in *The 6th International Conference on Islamic Studies*, 2023, pp. 149–159.

[28] M. Rahman, "Multikulturalisasi Pendidikan Islam Sejak Dini di Era Digital," *Fikrotuna*, vol. 7, no. 1, pp. 818–833, 2018, https://doi.org/10.32806/jf.v7i1.3172.

[29] I. N. Andriyani, "Pendidikan Anak dalam Keluarga di Era Digital," *Fikrotuna*, vol. 7, no. 1, pp. 789–802, 2018, https://doi.org/10.32806/jf.v7i1.3184.

[30] E. Zuni, "Islamic Parenting in Education of Children's Conduct in The Digital Era," *EDU-RELIGIA J. Keagamaan dan …*, vol. 4, no. 2, pp. 80–85, 2021, [Online]. Available: http://e-jurnal.unisda.ac.id/index.php/edureg/article/view/3404%0Ahttp://e-jurnal.unisda.ac.id/index.php/edureg/article/download/3404/2175

[31] R. Astuti, Erni Munastiwi, and Muqowim, "Digital Parenting: Utilizing Technology to Instill Islamic Education Values in Young Children," *TADRIS J. Pendidik. Islam*, vol. 17, no. 2, pp. 365–379, 2022, https://doi.org/10.19105/tjpi.v17i2.7468.

[32] S. Gussevi and N. A. Muhfi, "Tantangan Mendidik Generasi Milenial Muslim di Era Revolusi Industri 4.0," *Paedagog. J. Pendidik. Dan Stud. Islam*, vol. 2, no. 01, pp. 46–57, 2021, https://doi.org/10.52593/pdg.02.1.05.

[33] M. Muyassarah, "Pengaruh Perkembangan Teknologi Terhadap Cara Mendidik Anak Dan Dampaknya Terhadap Budget Keuangan Keluarga Muslim," *BERDAYA J. Pendidik. dan Pengabdi. Kpd. Masy.*, vol. 1, no. 1, pp. 1–14, 2019, https://doi.org/10.36407/berdaya.v1i1.101.

[34] A. Rahman, "Pengaruh Negatif Era Teknologi Informasi Komunikasi pada Remaja (Perspektif Pendidikan Islami)," *J. Stud. Pendidik.*, vol. XIV, no. 1, pp. 18–35, 2016.

[35] M. Mulyadi, "Penelitian Kuantitatif Dan Kualitatif Serta Pemikiran Dasar Menggabungkannya [Quantitative and Qualitative Research and Basic Rationale to Combine Them]," *J. Stud. Komun. dan Media*, vol. 15, no. 1, pp. 128–138, 2019, https://doi.org/10.31445/jskm.2011.150106.

[36] M. Ali, "Teknik Analisis Kualitatif," *Makal. Tek. Anal. II*, pp. 1–7, 2006, [Online]. Available: http://staffnew.uny.ac.id/upload/132232818/pendidikan/Analisis+Kuantitatif.pdf

[37] M. M. Ali, T. Hariyati, M. Y. Pratiwi, and S. Afifah, "Metodologi Penelitian Kuantitatif Dan Penerapannya Dalam Penelitian," *Educ. J.*, vol. 2, no. 2, pp. 1–6, 2022.

[38] S. W. Purwanza dkk., *Metodologi Penelitian Kuantitatif, Kualitatif dan Kombinasi*, no. March. 2022.

[39] Rahmi, "Metode Penelitian Kuantitatif untuk Penulisan Karya Ilmiah," *J. Univ. Indones.*, pp. 1–52, 2022, [Online]. Available: https://eprints2.undip.ac.id/id/eprint/5849/1/210422_Kuantitatif%281%29.pdf

[40] T. Aryati, "Kontrol Sosial Orang Tua kepada Anak Balita dalam Penggunaan Gadget di Desa Wukirsari Imogiri Bantul," *Jurnal Pendidikan Sosiologi*, vol. 6, no. 4. pp. 1–11, 2017.

[41] Y. Rismala, Aguswan, D. E. Priyantoro, and Suryadi, "Dampak Penggunaan Gadget Terhadap Perkembangan Sosial Anak Usia Dini," *El-Athfal J. Kaji. Ilmu Pendidik. Anak*, vol. 1, no. 01, pp. 46–55, 2021, https://doi.org/10.56872/elathfal.v1i01.273.

[42] R. Nugroho, I. K. A. J. Artha, W. Nusantara, A. D. Cahyani, and M. Y. P. Patrama, "Peran Orang Tua dalam Mengurangi Dampak Negatif Penggunaan Gadget," in *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, vol. 6, no. 5, 2022, pp. 5425–5436. https://doi.org/10.31004/obsesi.v6i5.2980.

[43] A. R. Adwiah and R. R. Diana, "Strategi Orang Tua dalam Mengatasi Dampak Penggunaan Gadget terhadap Perkembangan Sosial Anak Usia Dini," in *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, vol. 7, no. 2, 2023, pp. 2463–2473. https://doi.org/10.31004/obsesi.v7i2.3700.

[44] H. S. Wahyudi and M. P. Sukmasari, "Teknologi Dan Kehidupan Masyarakat," in *Jurnal Analisa Sosiologi*, vol. 3, no. 1, 2018, pp. 13–24. https://doi.org/10.20961/jas.v3i1.17444.

[45] N. Novitasari, "Strategi Pendampingan Orang Tua terhadap Intensitas Penggunaan Gadget pada Anak," *Al-Hikmah Indones. J. Early Child. Islam. Educ.*, vol. 3, no. 2, pp. 167–188, 2019, https://doi.org/10.35896/ijecie.v3i2.77.

[46] Fahrurrozi and Sutrisno, "Pendampingan Orang Tua dalam menghadapi Era Digital bagi Siswa SD Setiabudi Kecamatan Karet Jakarta Selatan," *J. Pemberdaya. Sekol. Dasar*, vol. 1, no. 1, pp. 19–22, 2018, [Online]. Available: http://hdl.handle.net/11617/10214

[47] M. R. Tasya and S. Masitoh, "Pendampingan Orang Tua Kepada Anak Dalam Mencegah Dampak Negatif Dari Gadget," *J. Ris. Mhs. Dakwah dan Komun.*, vol. 2, no. 5, p. 229, 2020, https://doi.org/10.24014/jrmdk.v2i5.10556.

[48] E. Sutriyatna, *Sosialisasi Dampak Penggunaan Gadget Terhadap Anak-anak (Studi Kasus: Warga Rw.05 Kelurahan Pondok Petir)*, vol. 1, no. 1. KOMMAS: Jurnal Pengabdian kepada Masyarakat, 2020. [Online]. Available: http://openjournal.unpam.ac.id/index.php/kommas/article/view/4616

[49] I. Nurhidayah, J. G. Ramadhan, I. Amira, and M. Lukman, *Peran Orangtua dalam Pencegahan Tergadap Kejadian Adiksi Gadget pada Anak*, vol. 4, no. 9. Anak: Literatur Review. Jurnal Ilmu Keperawatan Jiwa, 2021.