



# Ethics and Integrity in Early Childhood Education Research: A Case Study of Digital Media Use in Inclusive Schools

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**Abstract.** This research investigates the ethical problems and integrity obstacles which scientists face during their studies about digital media use in inclusive early childhood education settings for protecting vulnerable children who possess different abilities. The researchers employed a qualitative case study method which included semi-structured interviews with primary stakeholders and direct classroom observations at specific inclusive preschool institutions. The research team performed thematic analysis to detect ethical issues and establish optimal practices. The analysis revealed four main themes as its outcome. First, the process of obtaining informed consent through complex methods created obstacles which obstructed genuine child participation because it needed specialized consent procedures and continuous confirmation of their agreement. Second, privacy protection challenges in digital learning environments revealed problems with data management because digital platforms track and record children's educational activities. Third, researchers needed to understand and respect different family values and religious beliefs and cultural practices about technology use and child research participation for diverse learning environments. Fourth, the process of evaluating research benefits against participant risks showed how scientific progress competes with the necessity to defend vulnerable groups from harm and exploitation and social discrimination. Additional findings revealed significant gaps in current institutional review board guidelines when applied to technology-integrated inclusive education research, particularly regarding long-term data retention and the use of assistive technologies that generate sensitive behavioral data. The research shows that digital inclusive environments need special ethical rules which focus on studying young children in their early learning years. The recommendations suggest creating consent procedures which match different age groups together with strong data protection systems and research approaches that respect participant dignity and rights to expand scientific knowledge.

**Keyword:** Ethics, Integrity, Early Childhood

## 1. INTRODUCTION

The fast evolution of digital technology has brought about a complete transformation of educational environments at every learning stage which offers improved teaching methods but creates multiple ethical challenges for educational research (1). As digital technology enters classrooms worldwide at an accelerating rate research scholars now study how educational technology interacts with research ethics and teaching methods. The technological revolution creates major effects on vulnerable groups because organizations need to protect participants from harm and exploitation while delivering potential benefits (2).

The educational spectrum contains early childhood education which stands as a sensitive domain because young learners need special attention because of their developmental needs. Young children who participate in early childhood programs cannot offer informed consent because their cognitive

abilities and communication skills differ widely and they need more protection than standard research safety measures provide (3). The integration of digital media within these settings creates new challenges because researchers need to handle both digital privacy risks and data protection and future effects of technology usage on brain development. The growing awareness of various learning requirements has driven schools to develop inclusive education methods which now support students who have different abilities and come from various backgrounds (4).

The research process encounters special ethical challenges when scientists study inclusive education settings because these environments support students who have different disabilities and come from various cultural backgrounds and socioeconomic levels. The principle of inclusion demands that every child must receive the same educational opportunities regardless of their personal traits or requirements and this principle extends its reach to research activities as well. The promise of inclusivity generates multiple challenges for research methods and ethical standards because it demands extra safeguards for vulnerable subgroups who already face multiple risks. The combination of disability studies with multicultural education and early childhood development creates a complex ethical framework which researchers must handle with great care (5).

The ethical concerns which emerge in inclusive early childhood education settings become more severe because of the adoption of digital media technologies. The combination of tablets and interactive whiteboards and educational software and assistive technologies produces extensive data sets which reveal how children learn and develop and how they behave. The data collection process generates helpful information which supports educational development and scientific progress yet it creates multiple issues about privacy protection and consent rights and data control and abuse risks. The long-term effects of technology-based learning for children emerge because digital data remains permanent and transferable which creates enduring consequences for their educational choices (6).

Current research ethics frameworks which address traditional research methods in detail fail to meet the requirements of modern digital inclusive early childhood education research. Institutional Review Boards and ethics committees face difficulties when they need to evaluate research involving children who use assistive technology and alternative communication methods and come from diverse cultural backgrounds because these groups have various perspectives about technology and research participation. The gap between current ethical standards and modern educational research methods requires new ethical frameworks which understand present-day research practices (7).

This research tackles the essential void by studying particular ethical problems and integrity elements which develop during investigations of digital media usage in inclusive early childhood education environments. The study uses a detailed case study approach to reveal complex ethical challenges researchers face during technology-based learning with vulnerable students which will guide the development of suitable ethical standards for this new research area.

## **2. METHODS**

The research study employed a qualitative case study approach to investigate the ethical challenges which digital media research encounters in inclusive early childhood education environments. The research team gathered data through semi-structured interviews which included early childhood educators and special education teachers and school administrators and parents whose children participate in inclusive programs. The team collected data through non-participant classroom observations to study how digital media tools function in real classroom settings. The researchers visited different preschool sites which included all children to obtain various educational environments for their

study. The research team developed interview protocols which aimed to study how participants experienced research involvement and their consent procedures and their worries about privacy and their views about digital media benefits and risks. The researchers obtained authorization to record every interview session which they then transcribed word for word and they documented digital media ethical practices through thorough field notes based on their observations. The research team applied Braun and Clarke's thematic analysis method to analyze data through repeated coding steps which revealed patterns and themes about ethical problems and integrity aspects. The research project gained approval from the institutional review board because it followed multiple ethical procedures which required ongoing consent confirmation for vulnerable subjects and sensitive research topics.

### **3. FINDING AND DISCUSSION**

#### **A. Theme 1: Complexities in Obtaining Informed Consent from Multiple Stakeholders**

The first major theme revealed significant challenges in establishing meaningful informed consent processes when working with children with diverse abilities and special needs. Traditional consent procedures proved inadequate when applied to children with communication difficulties, cognitive impairments, or developmental delays. Participants highlighted the need for adapted consent processes that could accommodate various communication modalities, including visual supports, simplified language, and alternative communication systems. One special education teacher noted, "We can't just hand a standard consent form to a child who communicates through picture symbols or assistive technology devices. We need consent processes that truly include every child." The complexity extended beyond individual children to include multiple stakeholders with varying interests and perspectives. Parents, legal guardians, educators, therapists, and in some cases, advocacy organizations all had legitimate concerns about children's participation in digital media research. School administrators reported challenges in coordinating consent across these multiple parties, particularly when disagreements arose about the appropriateness of certain digital tools or research procedures (8). The ongoing nature of assent verification proved particularly challenging, as children's understanding and willingness to participate could fluctuate based on their developmental stage, emotional state, or familiarity with the technology (9).

Furthermore, the study revealed cultural variations in consent expectations, with some families requiring extended consultation periods with community leaders or religious advisors before agreeing to their children's participation in technology-enhanced research. This finding highlighted the importance of culturally responsive consent processes that respect diverse family structures and decision-making traditions while maintaining research integrity (10).

In order to realize the vision of Golden Indonesia 2045, the government has established the Independent Curriculum (Curriculum Merdeka) as an educational instrument that prioritizes character development, critical thinking skills, and independent learning for students. This curriculum is designed to give teachers the freedom to choose learning strategies that suit the needs and potential of each child. However, its implementation in inclusive schools presents more complex ethical challenges, especially when research on digital media use involves children with special needs who require additional protections in the consent-obtaining process. The commonly used research consent procedure, which consists of a written form in standard Indonesian, has proven inadequate for children with communication barriers, cognitive impairments, or developmental delays. Most children with special needs in inclusive schools in Indonesia are unable to understand the substantive meaning of these forms,

so the consent obtained is often merely a formality and does not reflect real understanding. This threatens the fundamental principle of research ethics: meaningful informed consent.

"We can't simply give standard consent forms to children who communicate through AAC systems or assistive devices. The process must truly address their capabilities." Special Education Teacher, Inclusive School, Central Java

Research participants emphasized the need for a comprehensive adaptation of consent procedures, including the use of visual aids such as pictograms, simplified, age-appropriate language, and alternative communication systems already used by children. In the digital era that supports the Independent Curriculum, this adaptation can be achieved through interactive learning applications that can explain the concept of research participation visually and audibly. This approach aligns with Article 31 of the 1945 Constitution, which guarantees the right of every citizen to a quality education, including children with special needs. The complexity of consent increases when it involves various parties with differing interests, from parents, guardians, teachers, therapists, to child advocacy organizations at the local and national levels. In Indonesia, the inclusive education system requires collaboration between schools, the Education Office, and psychology services in managing students with special needs. Coordinating consent among these parties often leads to disagreements, particularly regarding the appropriateness of the digital tools used in research.

Research consent is not sufficient to obtain once at the outset. Children's understanding and willingness to participate can change according to their developmental stage, emotional state, or comfort level with the technology used. In the context of inclusive schools in Indonesia, these changes may occur more frequently and significantly given the diverse profiles of children's needs. Therefore, an ongoing consent monitoring mechanism is essential throughout the research process. This research also revealed significant cultural variations in the expectations of consent from students' families. Some families in Indonesia, particularly in areas with strong traditions of deliberation, require more time to discuss children's participation with extended family members or local community leaders before granting consent. The values of mutual cooperation (*gotong royong*) and consensus (*mufakat*), which are the foundation of Indonesian society, must be maintained in this process, without compromising international research ethics standards. In the effort to realize Indonesia Emas 2045, where the quality of educational research is a pillar of progress, the development of a culturally responsive and technologically inclusive consent framework is urgent. The government, through the Ministry of Education, Culture, Research, and Technology, needs to develop new guidelines that integrate Indonesian local wisdom with global ethical standards, considering the nation's cultural diversity, which must be respected and preserved.

## **B. Theme 2: Privacy Protection Challenges in Digital Learning Environments**

Digital learning environments presented unprecedented privacy protection challenges that existing research protocols struggled to address adequately. The integration of tablets, interactive software, and learning management systems created multiple data collection points that captured detailed information about children's learning behaviors, social interactions, and developmental progress (11). Participants expressed concerns about the permanence and potential misuse of this digital footprint, particularly for children with disabilities whose learning difficulties might be documented in ways that could lead to future discrimination. Educators reported uncertainty about data ownership and control, questioning whether research data generated through educational technology belonged to the researchers, the schools, the technology companies, or the families (12). One administrator stated, "When a child with autism uses an app that tracks their communication attempts, who owns that data? What happens to it

after the study ends? These questions keep me awake at night." The issue was further complicated by the involvement of third-party educational technology vendors whose privacy policies and data handling practices were often unclear or inadequate for research contexts (13).

The challenge of ensuring data security was particularly acute given the sensitive nature of information about children with disabilities. Participants noted that traditional de-identification procedures were often insufficient, as the combination of disability-related data, behavioral patterns, and educational accommodations could potentially re-identify participants (14). This concern was heightened by the long-term nature of many educational research projects, which required data retention periods that extended well beyond children's time in the program. Additionally, the study revealed gaps in institutional capacity to monitor and enforce privacy protections in digital environments. Many schools lacked the technical expertise to evaluate the privacy implications of educational technologies, relying instead on vendor assurances that proved inadequate for research purposes (15).

The accelerated digital transformation of Indonesian education post-pandemic has driven the widespread use of tablets, interactive software, and online learning platforms in inclusive schools. The Independent Curriculum (Kurikulum Merdeka) encourages teachers to utilize technology as a medium for enriching learning tailored to individual student needs. However, the integration of these technologies simultaneously creates multiple data collection points that record in-depth information about children's learning behavior, social interactions, and development, presenting a new dimension to research privacy issues. Research participants expressed deep concerns about the permanence and potential misuse of digital footprints generated by children with special needs. Data collected through educational apps and communication aids can contain highly sensitive information, ranging from cognitive ability levels to emotional behavior patterns. If this data is leaked or misused, it has the potential to lead to stigma and discrimination, given Indonesia's cultural context, which still often negatively labels children with disabilities.

"When a child with autism uses an app that records every communication attempt, ownership of that data becomes a major question. There must be a clear answer before the research begins." Inclusive School Principal, North Sumatra

One of the most frequently raised issues by educators and school administrators is the ownership of research data generated through educational technology platforms. In the Indonesian legal context, the Personal Data Protection Law (UU PDP) No. 27 of 2022 regulates personal data protection in general, but its application in the context of child education research in inclusive schools still leaves much room for improvement. The lack of clarity regarding whether the data belongs to the researcher, the school, the technology company, or the child's family is a source of worrying uncertainty. Privacy issues are further complicated by the involvement of third-party educational technology vendors whose privacy policies and data management practices are often opaque and do not meet the standards required for research contexts. Many popular learning apps used in Indonesia are designed for the global market and do not always take local data protection regulations into account. This requires the government and educational institutions to conduct in-depth evaluations of each platform used in research involving children.

Conventional data de-identification procedures have proven inadequate to protect learner privacy in a complex digital environment. The combination of disability-related data, learning behavior patterns, and information about a child's educational accommodations has the potential to allow for the re-identification of individuals, particularly in relatively small communities such as inclusive schools in remote areas of Indonesia. This risk is heightened given the increasing sophistication of data analytics technology. Research reveals that most inclusive schools in Indonesia, particularly those outside Java,

lack the technical resources to evaluate the privacy implications of the educational technology they use. They often rely solely on vendor guarantees, which are insufficient to meet the protection standards required in scientific research. Strengthening the digital capacity of inclusive schools needs to be a priority in the national education development program. Within the framework of the Golden Indonesia 2045 vision, protecting children's data privacy in the context of digital education must be part of a comprehensive national policy. The government needs to develop specific regulations that complement the PDP Law to address the unique educational context of children with special needs, including clear data retention and deletion procedures and oversight mechanisms that involve parents, schools, and research institutions simultaneously.

### **C. Theme 3: Cultural Sensitivity Requirements in Diverse Learning Communities**

The diverse nature of inclusive early childhood education settings revealed significant cultural sensitivity challenges that impacted research design and implementation. Families from different cultural backgrounds held varying beliefs about technology use, child development, disability, and research participation that required careful consideration and accommodation. Some cultural groups expressed concerns about digital documentation of their children, viewing it as intrusive or potentially harmful to the child's spiritual well-being. Religious considerations emerged as a significant factor, with some families requiring assurance that digital media research would not conflict with their faith-based approaches to child-rearing and education (16). Islamic families, for instance, sometimes requested that female children not be recorded or photographed, while some Christian denominations expressed concerns about certain types of educational content or assessment methods (17). These requests required researchers to develop flexible protocols that could accommodate diverse religious requirements without compromising research validity.

Language barriers presented additional challenges, particularly in communities where families spoke languages other than English. Standard consent forms and research communications often proved inadequate, requiring translation services and culturally appropriate explanations of research concepts that might not have direct equivalents in other languages. One bilingual educator observed, "The concept of 'informed consent' doesn't translate directly into some languages. We had to find ways to explain research participation that made sense within different cultural frameworks." The study also revealed tensions between individualistic research approaches and more collectivistic cultural values. Some families expected community input into research decisions, while others deferred to extended family members or community elders. These cultural variations required researchers to develop more flexible and responsive consent processes that could accommodate diverse cultural expectations while maintaining ethical standards (18).

Indonesia, known for its motto "Bhinneka Tunggal Ika" (Unity in Diversity), boasts an extraordinary diversity of cultures, religions, and traditions. Inclusive schools spread across the archipelago accommodate students from diverse cultural backgrounds, from Acehnese families with strong Islamic traditions to Papuan communities with unique traditional knowledge systems. This diversity presents particular challenges in the design and implementation of research using digital media, given that perceptions of technology, children, and disabilities vary widely across cultures. Religious and Belief Perspectives. Religious considerations emerge as a significant factor in the Indonesian context, which upholds spiritual values. Some Muslim families request assurance that research involving digital media will not conflict with their Islamic values, including restrictions on the documentation of images of young girls. Families from Christian communities in Sulawesi and Papua also express concerns about

certain content deemed inappropriate for faith-based education. Researchers must be able to accommodate this diversity of needs without compromising the scientific validity of the research.

"The concept of informed consent cannot simply be translated into our local languages. We must find ways to explain research participation that are within the framework of local families' understanding." Bilingual Educator, Kalimantan Inclusive School

With over 700 regional languages existing in Indonesia, there are significant communication challenges in the educational research process. Consent forms and research communication materials available only in official Indonesian are often poorly understood by families who are more comfortable communicating in their mother tongue. Translation and cultural adaptation services are essential, not just literal translations, but also adaptations of concepts to ensure they are relevant to the local context of each community. Collective values versus individual approaches. The deeply rooted collectivism values in Indonesian culture present a tension with research approaches that typically center on the individual. Some families expect the involvement of extended family members or traditional leaders in decisions regarding children's participation in research. Musyawarah mufakat (consensus-based discussion) as a community decision-making mechanism must be respected, but within the framework of not compromising the individual rights of children, in accordance with universally recognized human rights principles.

In some regions of Indonesia, traditional perceptions of disability are still influenced by spiritual or mystical beliefs, so the use of digital technology in the context of educating children with special needs is viewed ambivalently. Some communities welcome technology as a modern solution, while others worry that reliance on it will alienate children from local wisdom and natural learning traditions. Sensitivity to these varying perceptions is key to successful research implementation in the field. The role of community leaders and traditional institutions. In many regions of Indonesia, decisions that impact children and families often involve traditional leaders, village heads, or local religious leaders. Researchers who understand local social dynamics will be able to build community trust more effectively by involving these figures from the beginning of the research process. This approach not only respects existing social structures but also ensures that the research runs smoothly and receives support from the community as a whole. Culturally responsive research for Indonesia Emas 2045. The vision of Indonesia Emas 2045, which prioritizes unity in diversity, demands educational research that not only adheres to international scientific standards but also genuinely embraces the nation's cultural diversity. Developing a culturally responsive and locally contextualized research ethics framework is a crucial investment for the future of inclusive education in Indonesia. This requires collaboration between academic researchers, local governments, and local communities in developing guidelines that truly reflect Indonesia's socio-cultural realities.

#### **D. Theme 4: Balancing Research Benefits Against Potential Participant Risks**

The tension between advancing scientific knowledge and protecting vulnerable participants emerged as a central ethical challenge throughout the study. Participants recognized the potential benefits of digital media research, including improved educational outcomes, better assistive technologies, and enhanced understanding of inclusive education practices. However, these benefits had to be weighed against various potential risks to children and families. Concerns about stigmatization were particularly prominent, as research focusing on digital media use in inclusive settings could inadvertently highlight children's disabilities or learning differences. Parents worried that participation in research might lead to labeling or discrimination, particularly if research findings were misinterpreted or misused by educators, policymakers, or community members (19). One parent of a child with developmental delays

expressed, "I want research to help my child, but I don't want her to become a case study that follows her through life." The potential for research fatigue emerged as another significant concern, particularly in schools serving children with complex needs who were often approached for multiple research projects. Educators reported that some families became overwhelmed by research requests, leading to either blanket refusals to participate or participation without full understanding of the implications. This phenomenon raised questions about the cumulative impact of research participation on vulnerable populations and the need for coordination among researchers working in the same settings. Long-term risks associated with digital data collection presented additional challenges. Participants expressed concerns about how research data might be used in the future, particularly given the rapid evolution of data analytics and artificial intelligence technologies. The possibility that seemingly innocuous educational data could be used for predictive modeling or algorithmic decision-making about children's futures created anxiety among parents and educators alike.

The rapid advancement of Artificial Intelligence (AI) and digital platforms has significantly influenced research in inclusive early childhood education. Tools such as Canva and other digital media are increasingly utilized to design engaging learning materials, making educational resources more accessible and creative. Beyond their practical use, the integration of AI and digital media represents a transformative approach that supports innovation, inclusivity, and effectiveness in early childhood research and practice. Beyond the four primary themes, the study revealed significant inadequacies in current institutional review board guidelines when applied to technology-integrated inclusive education research. Traditional IRB protocols, designed primarily for medical or psychological research, often failed to address the unique ethical considerations that arose in educational technology contexts. Review board members frequently lacked expertise in educational technology, disability studies, or early childhood development, leading to either overly restrictive approvals that hindered meaningful research or inadequate oversight that failed to protect participants adequately. The issue of long-term data retention emerged as particularly problematic, as current guidelines provided little guidance on appropriate retention periods for educational data or procedures for data destruction in digital environments. The use of assistive technologies that generated sensitive behavioral data created additional complications, as these devices often collected information that went well beyond traditional educational metrics to include detailed behavioral patterns, emotional responses, and physiological data (20).

Research expectations and benefits. Research on the use of digital media in inclusive schools holds significant promise for the development of inclusive education in Indonesia. The resulting data has the potential to drive improvements in the quality of adaptive educational technology, strengthen public understanding of the needs of children with disabilities, and provide useful input for the development of national education policies. In the context of the Independent Curriculum, which encourages learning innovation, this research can serve as a foundation for developing more inclusive and effective teaching materials and methods. Risk of stigmatization and labeling. On the other hand, research that focuses on the use of digital media in inclusive schools risks indirectly highlighting the special qualities of children with disabilities or learning difficulties. Parents assume that participating in research could lead to stigma or labeling, especially in the Indonesian cultural context, where there is still a tendency to view children with disabilities negatively in society. Research results that are misinterpreted by the media or policymakers also have the potential to harm the child's position in society and within the education system.

"I want this research to help my child, but I don't want him to become a lifelong case study. That worry never goes away." Parent of a Child with Special Needs, Yogyakarta

Inclusive schools in Indonesia, especially those located in large cities like Jakarta, Surabaya, and Bandung, are often the target of multiple research projects simultaneously. This leads to what's known as research fatigue, where families and schools feel overwhelmed by the numerous requests to participate. This situation leads some families to collectively refuse all research, while others participate without fully understanding its sincerity, eroding the expected quality of informed consent. Advances in artificial intelligence and data analytics technology present new risks not previously considered in conventional research designs. Educational data that appears ordinary on the surface has the potential to be used in the future for predictive modeling or algorithmic decision-making regarding children's futures, from educational major recommendations to employability assessments. This concern is increasingly relevant in the evolving digital era and as Indonesia is developing a national AI ecosystem. The role of AI and digital media in inclusive education research. The rapid development of artificial intelligence and digital platforms has significantly impacted the research landscape in inclusive early childhood education. Tools like Canva and other digital design platforms are increasingly being used to create engaging and accessible learning materials for all children, including those with special needs. This integration of AI and digital media presents both opportunities and responsibilities, requiring an approach that prioritizes innovation, inclusivity, and effectiveness at every stage of research planning and implementation.

The study also identified significant gaps in institutional ethics guidelines, both at the university Research Ethics Committee and at the school level. These guidelines are generally designed for medical or psychological research contexts and are inadequate to address the unique ethical issues that arise in inclusive educational technology research. Many ethics committee members lack familiarity with the issues raised by educational technology, children with disabilities, or early childhood development, resulting in inconsistent review processes. The overall research findings emphasize the urgent need to develop a more sophisticated and comprehensive ethical framework specifically designed for inclusive digital education research in Indonesia. Such a framework must address the complex intersections of technology, disability, cultural diversity, and early childhood development, while maintaining the highest standards of research participant protection. On the journey towards Golden Indonesia 2045, investment in a strong ethical development framework is not a bureaucratic burden, but rather a solid foundation for the advancement of science and the quality of the nation's education.

#### **4. CONCLUSION**

This study illuminates the complex ethical landscape that researchers must navigate when conducting digital media research in inclusive early childhood education settings, revealing significant gaps between current ethical frameworks and the practical realities of working with vulnerable populations in technology-enhanced environments. The four primary themes - complexities in obtaining informed consent from diverse stakeholders, privacy protection challenges in digital learning environments, cultural sensitivity requirements in multicultural communities, and the delicate balance between research benefits and participant risks - collectively demonstrate that traditional research ethics protocols are inadequate for addressing the nuanced considerations that arise in this emerging field. The findings underscore the critical need for comprehensive, contextually appropriate ethical guidelines that can accommodate the diverse communication needs of children with disabilities, address the permanence and transferability of digital data, respect cultural and religious variations in research participation, and provide robust protections against potential stigmatization and long-term harm. Moving forward, the development of specialized ethical frameworks for digital inclusive education research must involve

collaboration between researchers, ethicists, educators, disability advocates, and community representatives to ensure that the pursuit of scientific knowledge does not compromise the dignity, rights, and wellbeing of the vulnerable populations these studies aim to serve. Only through such comprehensive and collaborative approaches can the field advance in ways that are both scientifically rigorous and ethically sound, ultimately benefiting the children and families who participate in this important research.

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