

# Characteristics, Advantages and Disadvantages, and New Insights of Preschool Education Evaluation in the Digital Age

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## Abstract

**With the changes of the times and the development and application of technology in the field of education, the entire society has posed new challenges and higher demands on the preschool education system. Educators constructing a preschool education evaluation system that adapts to the digital age is a key focus of current educational evaluation reform. In the context of the digital age, through literature analysis and theoretical exploration, this paper elaborates on the core concepts of preschool education evaluation, the advantages and disadvantages of preschool education evaluation in the digital age, and the new insights for preschool educators in this era. The effectiveness of preschool education evaluation depends on whether the subjects fully utilize digital technology for evaluation, which includes considerations on how to balance the application of technology with educational ethics, how to enhance teachers' digital literacy, how to build an inclusive educational evaluation system, and how to leverage digitalization in preschool education for evaluation, ultimately achieving optimal evaluation outcomes without over-reliance on digital technology.**

## Keywords

**Digital Age; Preschool Education Evaluation; New Insights.**

## 1. Introduction

In response to the national call and to address the current issues of singular evaluation methods and neglect of individual differences among evaluation subjects, the digital transformation of education should emerge. Digital educational evaluation refers to the integration of digital technology into various aspects of the education field, forming a good educational ecology that is open, adaptive, flexible, and sustainable. [1] Focusing on the perspective of 'preschool education evaluation', this paper reflects on the conveniences and drawbacks brought by digital information technology, as well as how preschool education can actively utilize digital evaluation to measure multiple evaluation subjects, making the preschool education evaluation system increasingly refined.

## 2. The Core Issues of Preschool Education Evaluation in the Digital Age

Duan Qin emphasizes: "The digital age is defined as: digital technologies such as big data, artificial intelligence, cloud computing, blockchain, and 5G comprehensively improve and reconstruct the world of life, the field of social production, the understanding of the world and organizational methods, as well as the relationship between individuals and society, characterized by openness, compatibility, and sharing, which raises higher requirements for individual qualities and abilities in this new era." [2] The core issues of preschool education evaluation in the digital age mainly include evaluation methods, fairness of evaluation, absorption and application of evaluation results, and protection of security and privacy, with the most core issue being security and privacy protection.

With the development and enhancement of technology, preschool education evaluation methods have begun to diversify towards personalized development, simultaneously meeting both common and individual needs. Based on this diversification, personalized plans are formulated for children, making evaluations more relevant and reasonable. However, during this period, the sources of data and the accuracy and fairness of the formulas used need to be considered. Over-reliance on data analysis or technical algorithms may lead to a situation where evaluations do not absorb or improve the curriculum. There may also be risks of leakage of children's information or privacy, as well as questions about whether technology could replace teachers. Whether teachers improve with the support of technology or fade into obscurity is a matter that kindergartens and teachers need to pay attention to and reflect upon: that is, whether digital technology and educational ethics are unbalanced.

### **3. Characteristics of Preschool Education Evaluation in the Digital Age**

Past evaluations of preschool education often relied on teachers' subjective judgments, lacking objective evaluation standards and methods. The evaluation methods were usually quite singular, primarily depending on teachers' observational records, which overlooked the comprehensive development and individual differences of children. With the advent of the digital technology era, preschool education evaluation has undergone many changes, the most significant feature being the increase in information technology, overall developing towards a more scientific, objective, and comprehensive direction.

#### **3.1. Scientific and Objective**

The National Education Conference clearly stated: we must coordinate the implementation of the strategy of revitalizing the country through science and education, the strategy of strengthening the country through talent, and the strategy of innovation-driven development, promoting the development of education, technological innovation, and talent cultivation in an integrated manner. [3] Based on this, education should be scientific, and it is particularly significant to strengthen the construction of scientific education courses and scientific course evaluation systems during the basic education stage. With the development of digital technology and the new requirements for preschool education evaluation outlined in relevant documents, preschool education evaluation has gradually transformed into a complete system driven by data online. Digital technology provides new perspectives and tools for kindergarten course evaluation, making evaluation methods more scientific. With the development of big data and artificial intelligence, the evaluation methods in the field of education have also shifted to being data-driven, allowing for a more comprehensive and accurate collection and analysis of various data during course implementation, thereby evaluating the quality and effectiveness of the courses more accurately, avoiding merely looking at the superficial results of education, reducing the interference of human factors, and making the evaluation results more objective. This transformation in characteristics can, to some extent, enhance scientific objectivity.

#### **3.2. From Singular to Diverse**

Guo Li pointed out: "As education informatization enters the 3.0 era, the development of information technology, especially emerging technologies such as the Internet of Things, big data, cloud computing, and intelligent robots, provides more possibilities for the deep integration of information technology and education." [4] From this, it can be seen that preschool education evaluation is gradually forming new forms aimed at the public with the changes in the times and technology. In response to the traditional evaluation method based on written tests, which leads to the phenomenon of students having 'high scores but low abilities', Wang Dianjun pointed out: "We need to establish a diversified evaluation system that includes students' innovative thinking, teamwork, problem-solving abilities, etc., which can be achieved

through various methods such as project evaluation, peer evaluation, and self-evaluation, to comprehensively reflect students' learning outcomes and innovative capabilities." [5] Education possesses integrity and systematicity, and preschool education evaluation naturally transforms from a single phenomenon and standard method into a diversified evaluation approach. On this basis, data will be transparently and publicly presented to the government, kindergartens, teachers, parents, and others. From another perspective, this allows these evaluation subjects to better understand the characteristics and current status of the evaluation objects and propose targeted countermeasures.

### 3.3. Dynamic Multisensory

Jiang Shihui and others pointed out: "Educational digitalization utilizes tools such as the Internet, information technology, and computers to promote the comprehensive coupling and creation of technological and educational elements, thereby reconstructing educational paradigms and improving the dynamic processes of educational issues." [6] It is evident that educational digitalization is dynamic, manifested in the construction of educational informatization infrastructure and environment, achieving extensive connectivity of educational resources, thereby discovering problems and making scientific decisions, and being able to quickly respond to the diverse needs of teachers and students. Similarly, preschool education evaluation under digitalization is also a dynamic and continuous process. Integrating social resources under the digital network forms a complete evaluation system from multiple angles, senses, and methods in the digital network space, maximizing the effectiveness of educational evaluation. For example, the application of digital intelligent morning checks is a typical evaluation method for preschool education and care work. Early childhood educators use non-contact temperature measurement, intelligent attendance, and other technologies to collect data on children's arrival and departure information, ultimately forming data analysis reports to monitor children's physical and mental health, ensuring their healthy growth.

## 4. The Pros and Cons of Preschool Education Evaluation in the Digital Age

In the digital age, the evaluation of preschool education has dual aspects. We should rationally view the pros and cons of digital evaluation. Only by comprehensively understanding these advantages and disadvantages can we fully leverage the benefits of digitalization in preschool education evaluation while actively addressing and avoiding potential issues, thus promoting the development of preschool education evaluation towards a more scientific, reasonable, and equitable direction.

### 4.1. The Benefits of Preschool Education Evaluation in the Digital Age

The evaluation index system for the maturity of digital transformation in primary and secondary school education has been fully established. This system is based on principles such as guidance, development, universality, systematicness, and feasibility, aiming to optimize internal governance in schools and promote high-quality development in education as its value orientation. [7] Prior to this, the current state of preschool education evaluation showed a trend of 'three deficiencies': first, insufficient content in educational evaluation; second, inadequate forms of educational evaluation; and third, a lack of diversity in evaluation themes. Analysis of the data revealed that a significant number of preschool teachers, when designing educational evaluation work plans, subconsciously exclude parents from the process, viewing them merely as sources of information rather than engaging in scientific and effective home-school collaboration.

With the support of digital information technology, preschool education evaluation in the digital age can quickly and accurately analyze and assess the overall situation of children, providing a more complete and diverse evaluation through various methods, greatly improving

evaluation efficiency. Moreover, because it is purely digital analysis, the standards and results of the evaluation become more objective, reducing the influence of subjective human factors and increasing the credibility of the evaluation results. Furthermore, technological informatization can provide personalized guidance and suggestions for children, aiding in their individual growth and overall development. Due to the dynamic and tracking characteristics of preschool education evaluation in the digital age, it can timely and effectively reflect relevant situations of children to the government, kindergartens, parents, and teachers, facilitating informed decision-making.

#### **4.2. The Disadvantages of Early Childhood Education Evaluation in the Digital Age**

Firstly, digital evaluation can lead to some information privacy issues. Relevant information about children, their parents, and teachers will be transmitted through data to a certain terminal, creating a risk of leakage. For example, if a kindergarten's network equipment is outdated, it may have vulnerabilities and has not been updated with timely patches, coupled with a lack of effective security measures and emergency plans, leading to network hacker attacks and resulting in data information leakage.

Secondly, the rational pursuit of goal-oriented maximization by tools somewhat neglects humanistic care. Value rationality focuses on the purity of purpose, seeking alignment between digital technology and humanistic values.[8] Over-reliance on data and technology can lead kindergarten teachers to have an incomplete understanding of children's situations, neglecting face-to-face emotional communication, which in turn results in delays in children's social and emotional development. Additionally, some educators excessively pursue goal-oriented maximization, which leads them to evaluate solely based on numerical assessments, lacking consideration for the child as the subject. The result is a neglect of teacher-student relationships, home-school relationships, and a loss of teachers' humanistic care.

Furthermore, there is a lack of awareness regarding the universality of digital technology resource development and insufficient resource utilization. This means that government departments and kindergartens may experience certain economic pressures, and even teachers may face increased work pressure, spending most of their time learning how to evaluate and organizing collected data, rather than engaging in face-to-face communication to note children's information characteristics, which is relatively time-wasting on some level.

Finally, the difficulty in interpreting data may lead to errors in the application of evaluation results. Although digital technology can collect a large amount of data, interpreting and utilizing this data remains a challenge. Sometimes, teachers may lack sufficient expertise to correctly interpret the data, or the data may be too complex to draw clear conclusions.

### **5. New Insights into Early Childhood Education Evaluation in the Digital Age**

The significance of educational evaluation for educators lies in helping them improve their teaching and achieve professional growth. The rapid development of educational digitization provides strong technical support for early childhood education evaluation. In facing the pros and cons of early childhood education evaluation in the digital age, we need to fully utilize and further contemplate how to address several core issues of early childhood education evaluation in the digital age to optimize its effectiveness.

#### **5.1. How to enhance teachers' digital information literacy**

Based on the Ministry of Education's published 'Digital Literacy for Teachers' education industry standards, the aim is to solidly promote the national education digitalization strategic

action, improve the education informationization standard system, and enhance teachers' awareness, ability, and responsibility to optimize, innovate, and transform educational activities using digital technology. [9] Moreover, regarding the technology itself, it is necessary to adhere to educational theories and principles. As kindergarten teachers, it is even more important to continuously improve their information literacy in line with the times. Enhancing teachers' digital literacy can be approached from the following aspects: First, participate in regular training. Currently, the quality of kindergarten teachers varies, with both new and experienced teachers. Therefore, the government and kindergartens should organize relevant course training for teachers based on specific circumstances, continuously consolidating and improving teachers' digital information literacy. Training can be conducted online or offline, and the content is not limited to data analysis, evaluation standards, artificial intelligence, and educational technology, among others. Second, hold more competitions for teachers' digital technology teaching skills within kindergartens. These competitions can be used to apply and test learning outcomes, encouraging teachers to learn and frequently use what they have learned. Third, policy guidance and support are needed; the government and relevant educational departments should introduce corresponding policies and measures, providing necessary resources and funding to support teachers in enhancing their digital literacy. Fourth, regularly assess teachers' self-digital literacy and allow data to provide feedback and suggestions, helping to identify shortcomings in a timely manner and further pinpoint areas for improving their digital information literacy, flexibly applying various digital evaluation methods.

## 5.2. How to Build an Inclusive Educational Evaluation System

In addition to the technology itself and the efforts of teachers, it is also necessary for the government and even educational departments to construct an inclusive educational evaluation system. Building an inclusive educational evaluation system can be thought of and innovated from aspects such as evaluation standards, personalized evaluation, process evaluation, evaluation results, evaluation subjects, and evaluation processes. First, the evaluation indicators should always adhere to diversity; therefore, in addition to academic performance, students' social skills, innovation abilities, emotional management, and other aspects should also be considered to make the evaluation more comprehensive and in-depth. Second, commonality should be infused with individuality; using the same set of standards inevitably leads to similar evaluation results. Every child is unique, so evaluations should be personalized, taking into account each child's characteristics and needs. Respect differences and fully recognize the unique value of each child. Third, emphasize process evaluation. In addition to looking at evaluation results, teachers should also focus on the process, paying actual attention to children's situations and guiding their progress. Fourth, implement home-school cooperation. A good home-school relationship is the foundation for all activities and work implementation. Parents should also participate in children's educational evaluations, working alongside teachers. Finally, evaluation results should be promptly fed back to the evaluation subjects and summarized for reflection, so that the government and relevant educational departments can fully understand the current status and characteristics of preschool education evaluation.

## 5.3. How to Utilize Digitalization in the Field of Preschool Education for Educational Evaluation

In the field of preschool education, the application of digital technology can greatly enhance the efficiency and accuracy of educational assessments. This provides a new avenue for our current preschool education evaluations. In kindergartens, educators first need to fully utilize digital tools, such as smart wearable devices and Internet of Things (IoT) technologies, to automatically collect data on children's daily activities in the institution, including various

dimensions such as lifestyle habits, health management, and learning interactions. Secondly, after collecting the data, teachers can process and analyze the collected data through big data analysis and artificial intelligence technologies, forming a quantifiable indicator system that can be assessed and compared, in order to gain a comprehensive understanding of the children. Furthermore, teachers or educational administrators can analyze the results based on the data, further generating evaluation reports that provide strong evidence and data analysis for teachers' professional growth, home-school communication, and children's individual development. Finally, the evaluation results can help teachers better understand each child's development status and needs, allowing them to adjust teaching strategies to achieve personalized teaching. At the same time, it can also help parents understand their children's performance and development in the institution, promoting home-school co-education. In addition, digital educational assessments can help kindergarten administrators improve decision-making levels and management efficiency, promote teachers' professional development, and support children's learning and overall development. In summary, the application of digital technology in the field of preschool education not only improves the efficiency and accuracy of educational assessments but also provides more information and tools for teachers, parents, and kindergarten administrators, helping them better understand and promote children's development. Preschool educators need to fully recognize the importance of digitalization in preschool education assessments and make good use of digital technology to enhance educational evaluations.

#### **5.4. How to Balance Technology Application and Educational Ethics**

In the digital age, preschool education assessments need to balance the relationship between technology and educational ethics. Improper handling of this relationship can lead to technology dominating, causing education to lose its warmth. Therefore, we can approach this from the following perspectives: First, respect educational principles and concepts. Regardless of the method of preschool education assessment, we must adhere to the laws and characteristics of children's physical and mental development, centering on the child. Second, absolutely protect children's information and privacy. In the process of collecting and organizing relevant children's information, we must comply with relevant legal regulations and not disregard children's safety for material benefits. Third, ensure absolute fairness. The use of technology should follow the technology itself to assess children's situations, rather than applying a high standard of evaluation to all children, resulting in evaluations that are not varied but identical and unchanged, rendering such evaluation results meaningless. Fourth, technology should not replace humanity. As kindergarten teachers, we should not overly rely on digital information technology, allowing cold machines to replace the warmth of humanity and face-to-face communication, as this can lead to an extreme teacher-student relationship.

### **6. Conclusion**

Digital information technology has brought convenience to our society and the educational evaluation system. However, young children are still human beings, individual lives. Educators cannot solely rely on precise and objective data to analyze and evaluate them. Although the evaluation results can be presented scientifically and effectively, the evaluation process always carries a hint of coldness. How to make young children the 'subject' of evaluation, how to balance the drawbacks and conveniences brought by technology, and how to balance the enhancement of teachers' qualities with the increase of humanistic feelings are all issues that the government, educational authorities, and we, as early childhood educators, need to contemplate. Of course, educators can further explore how evaluation can react back to digital intelligence in the future.

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