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Digital-Based Inclusion Education Strategy at Modern Islamic Boarding School

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Abstract

Digital-based inclusive education has become a major focus in achieving the 2030 SDGs by various international organizations. Computer devices and the development of information and communication technology are currently very rapid. Most people have enjoyed this development, but there are still marginalized people such as children with disabilities, through adaptive technology, it is hoped that they can take part in learning like other normal children in an inclusive education setting. This research has an urgency to explain how the strategy of digital-based inclusion education at IBS Padepokan Kyai Mudrikah Kembang Kuning Pamekasan Madura Madura. This type of research is a case study with a qualitative approach. Data was taken from the interviews, observations and documentation which were then analyzed by means of data condensation, data display, conclusion drawing and data verification. The results of this study show that Digital based learning strategy in inclusive education held at IBS Padepokan Kyai Mudrikah Kembang Kuning Pamekasan Madura prioritizes mastery of technology in training the creativity of students. The use of technology in learning can help students with disabilities to to channel their ideas and skills in technology.

Keywords: Inclusion Education, Digital-based strategy, sustainable development goals.

Abstrak

Pendidikan inklusif berbasis digital telah menjadi fokus utama dalam upaya pencapaian Tujuan Pembangunan Berkelanjutan (SDGs) 2030 oleh berbagai organisasi internasional. Perangkat komputer serta perkembangan teknologi informasi dan komunikasi saat ini sangat pesat. Sebagian besar masyarakat telah merasakan manfaat dari perkembangan ini, namun masih ada kelompok yang termarjinalkan seperti anak-anak penyandang disabilitas. Melalui teknologi adaptif, diharapkan mereka ikut serta dalam proses pembelajaran sebagaimana anak-anak lain dalam lingkungan pendidikan inklusif. Penelitian ini memiliki urgensi untuk menjelaskan bagaimana strategi pendidikan inklusif berbasis digital diterapkan di IBS Padepokan Kyai Mudrikah Kembang Kuning Pamekasan Madura. Jenis penelitian ini adalah studi kasus dengan pendekaan kualitatif. Data diperoleh melalui wawancara, observasi, dan dokumentasi, yang kemudian dianalisis melalui proses kondensasi data, penyajian data, kesimpulan kesimpulan, dan verifikasi data. Hasil penelitian menunjukkan bahwa strategi pembelajaran berbasis digital dalam pendidikan inklusif di IBS Padepokan Kyai Mudrikah Kembang Kuning Pamekasan Madura mengutamakan penguasaan teknologi dalam melatih kreativitas siswa. Penggunaan teknologi dalam pembelajaran dapat membantu siswa penyandang disabilitas untuk menyalurkan ide dan keterampilan mereka dalam bidang teknologi.

Kata kunci: *Pendidikan Inklusif, Strategi Berbasis Digital, Tujuan Pembangunan Berkelanjutan*

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Introduction

Inclusive education in Permendiknas RI Number 70 of 2009 is explained as an education delivery system that provides opportunities for all students who have abnormalities and have the potential for intelligence and/or special talents to participate in education or learning in an educational environment together with students in general (*Permendiknas RI Number 70 of 2009* -n.d.). This is done as an equal distribution of education by shortening access to education to special education and fulfilling children's educational rights.

IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura is an educational institution that organizes inclusive education by accepting children's disabilities and providing equal opportunities in their learning. In addition, IBS Padepokan Kyai Mudrikah Kembang Kuning Pamekasan Madura develops digital-based education. Each student is given 1 computer facility to do their tasks in developing their creativity (Heni, interview, 2025).

School Digitalization is an implementation of *new learning* that is prepared to face the industrial revolution 4.0. The characteristics of new learning are *student centered, multimedia, collaborative work, information exchange, and critical thinking and informed decision making.*"School Digitalization is a new breakthrough in the world of education by utilizing the development of information technology in various aspects of teaching", There are many advantages of this program, where the learning system becomes easier because it can be accessed on a network (Deviyanda et al., 2023) By using the school digitization program, students are expected to become more independent by looking for sources of knowledge independently. However, this is still under the supervision of the teacher who will currently be the *gatekeeper* and select what information is received by the students.

Inclusive, digital-based education has become an important global issue in achieving sustainable development goals (Averoes, 2023). Challenges and opportunities in improving the quality of education in Indonesia are increasingly complex in the digital era and global competition. Therefore, a digital-based inclusive education strategy is increasingly important to support the achievement of the 2030 Sustainable Development Goals (SDGs) in Indonesia.

Digital-based inclusive education has become a key focus in achieving the 2030 SDGs by various international organizations, including the United Nations. The goal of inclusive education is to provide equal opportunities for every individual to get quality

education without any discrimination. However, challenges still exist in realizing inclusive education based on science and technology, especially in developing countries such as Indonesia (Setiawan, 2019).

Computer devices and the development of information and communication technology are currently very rapid. Most people have enjoyed this development, but there are still marginalized people. They have difficulty getting access to information space because of their limitations. The regulations governing this issue are clear, but the reality in its implementation is still not yet. Limitations due to certain obstacles experienced by children with disabilitiess certainly require tools, especially access to information technology. Through adaptive technology, they are expected to be able to participate in learning like other children in an inclusive education setting (Jamila et al., 2024).

In this context, this study has an urgency to describe how to implement digital-based inclusion education at IBS Padepokan Kyai Mudrikah Kembang Kuning Pamekasan Madura Madura. In addition, this research contributes to the development of digital-based inclusive education strategies in developing students' creativity.

Previous studies have shown that digital-based inclusive education can improve students' participation, skills, and ability to adapt to social and technological changes. One of them is research from Saepullah which results that digital-based learning serves as a transformative force in modern education, offering innovative solutions to improve students' learning experience (Saepullah et al., 2025).

There is also Khayati's research that states that teachers who conduct adaptive learning for children who have difficulty learning by adjusting the conditions of the students themselves, the adjustment is related to strategy methods, materials, learning tools/media, and the learning environment (Khayati et al., 2020). However, from several previous studies, according to the author, it is still in the theoretical aspect, not yet at the implementation stage, especially in Islamic educational institutions.

In this study, the framework used is *engagement theory* which emphasizes the importance of student participation in learning to improve their understanding of the material being taught. The argument for this theory is that digitally based inclusive education should pay attention to student participation as one of the keys to success in learning (Shafira et al., 2024).

In addition, it also uses the theory of constructivism and inclusive education. The theory of constructivism explains that effective education is one that allows students to build

their own knowledge through direct experience and active participation in the learning process (Suryana et al., n.d.). Meanwhile, inclusive education theory explains that education must be accessible to all children, including those with disabilitiess (Suryadi, 2023), in contrast to previous research, This study will examine digital-based inclusive education strategies at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura.

This research is important because education is a key factor in achieving the 2030 SDGs, and digital-based inclusive education can help address educational gaps and strengthen children's skills to face future global challenges. Through digital-based inclusive education, children can learn effectively and acquire the skills needed to face the industrial revolution 4.0 as well as develop solutions to global problems such as climate change and poverty.

Method

This type of research is a case study research with a qualitative approach. The location of the research is at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura. The research informants consisted of five people consisting of school principals, teachers, and students at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura. The data collection techniques used are through in-depth interviews, continuous observation and documentation. Data analysis techniques are by way of data condensation, data display, conclusion drawing and data verification (Lexy, 2002).

Interview and observation instrument of researchers adapted from the book *Digital Learning Platform and Educational Inclusivity Strategy in Indonesia* (Zamjani et al., 2020). Which consists of six categories of digital-based inclusion education, including digital learning platforms, technology to adjust the needs of disabled students, multimedia resources used, student interaction with teaching, collaborative learning, problem solving using technology. From these six categories, the researcher developed seven questions to explore information about the digital-based inclusion education strategy implemented at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura.

Result and Discussion

The application of information and communication technology in learning development is one of the strategic steps in an effort to improve access and quality of educational services to the community. One of the focuses of attention from various efforts to improve access and quality of education is related to the development of student-oriented

learning (Munir, 2017). Student-oriented learning can be done by building a learning system that allows students to have the ability to learn more innovatively, interactively, and varied and have multidimensional competencies. The use of information technology and internet networks is one of the efforts to package and deliver learning in a more interesting and attractive way.

As at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura which provides internet access facilities in the school environment to provide convenience in digital-based learning. In the learning process at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura uses blanded learning, which is a learning method that combines face-to-face teaching with online-based learning interactions (Muchlis, interview, 2025). The platforms used in the learning process are the use of Google Drive to collect assignments, Zoom for distance learning with teachers, and Quiziz to do practice questions (Nada, observation, 2025). Teaching and learning activities are carried out online when teachers have assignments outside the city and do not allow face-to-face meetings. In addition, online learning also requires students to search for information through the internet which is then used as a reference for discussion in face-to-face meetings in the classroom or called flippedclassroom. The combination method through flipped-classroom is learning with a method of finding learning materials from the internet which is then combined with face-to-face learning in the classroom (offline) (Zamjani et al., 2020).

The appropriate and innovative use of technology in learning, such as mobile applications, learning videos, and interactive simulations, has proven effective in supporting inclusive science and technology-based education in Indonesia. This is in line with the theory of constructivism which emphasizes the importance of students' active participation in learning to build their own knowledge through direct experience (Suryana et al., n.d.). The use of technology in learning can also help students with disabilitiess, such as blind or deaf students, to learn independently. In addition, an inclusive education strategy based on science and technology can also help Indonesia achieve the 2030 Sustainable Development Goals (SDGs) (Ramadhani, 2023). The use of technology at IBS Padepokan Kyai Mudrikah Kembang Kuning is not only experienced by regular students but also by children with disabilities, who benefit from it without being separated from their peers. One of the main goals of IBS PKMKK in implementing an inclusive school concept is to ensure that children with disabilities also have equal rights to receive a proper and dignified education. Through

this inclusive approach, all students are encouraged to respect one another, collaborate, and learn in an equitable environment.

The use of multimedia used in IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura includes; making videos (youtube, tiktok, Instagram), designing posters, and even making simple game coding (Nada, observation, 2025). Mobile apps and learning videos can provide easy and flexible access to learning materials, while interactive simulations can help students visualize abstract concepts and develop practical skills (Setiawan & Apsari, 2019). The use of technology greatly supports the active involvement of children disabilities, they get the same opportunity to channel their ideas and skills in technology.

In addition, audio-visual media also petrified students in understanding and memorizing the Qur'an as happened at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura. Based on the results of the interview with Mr. Muchlis as the director, it is stated that "For ABK students, memorizing the Qur'an can use audio, namely listening to audio of the reading of the Qur'an from a smart TV so that even though he cannot read the Quran, but if he is always listened to the reading of the Quran, then over time he will be helped to be able to read and memorize the Qur'an (Muchlis, interview, 2025). This shows that the use of digital-based media can help children with disabilitiess in memorizing and understanding the Qur'an. In addition, during the process of memorizing the Qur'an, children disabilities does not only rely on audio-visual media but are also accompanied by a special mentor. This mentor plays an important role in ensuring that ABK students receive intensive guidance tailored to their abilities and needs. This attentive mentoring ensures that children disabilities can follow the memorization process in the right way and feel supported in every step they take to memorize and understand the Qur'an.

Digital-based inclusive education can certainly help reduce educational gaps and strengthen children's skills to face future global challenges, such as the industrial revolution 4.0 and global issues such as climate change and poverty. This is in line with the theory of constructivism in education which focuses on the active role of students in learning (Supardan, 2016). This theory argues that students build their own knowledge through active and interactive learning experiences with the surrounding environment. In this context, technology can be an effective tool to assist students in building their own knowledge. Proper and innovative technology can allow students to access and process information in an easier and interactive way. For example, technology-based learning media such as video and

animation can help students understand complex concepts in a more visual and interactive way (Verrawati & Mustadi, 2018).

However, keep in mind that the use of technology in education does not completely replace the role of teachers. Teachers still have an important role in facilitating learning and helping students with disabilitiess. As in IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura which continues to make teachers role models and role models in learning. In terms of the use of media such as laptops, children with disabilities need special assistance and guidance to learn laptops that are considered complicated by children with disabilities. A special companion is not just anyone can accompany anyone, not only people who can be technological, but also people who are able to have character closeness (Muchlis, interview, 2025). The use of technology must indeed be balanced with the development of students' social and emotional skills to ensure effective and inclusive learning (Ramadhani, 2023).

Although digital-based inclusive education offers many benefits, in reality, there are still several challenges that need to be addressed. One of these is the lack of understanding among regular students when interacting with children disabilities, which sometimes leads to a sense of incompatibility during joint learning activities. The significant differences in ability often cause children with disabilities to fall considerably behind in understanding the learning materials. Digital platforms that are considered easy and practical by regular students may not be as accessible or understandable for children with disabilities. Therefore, the role of teachers becomes crucial in bridging this gap. Teachers not only serve as learning facilitators but also as social mediators who help build understanding and empathy among students. Flexible and differentiated learning approaches must be implemented to ensure that all students, both regular and children with disabilities, can learn according to their individual abilities and learning styles.

Although they tend to be slower than regular students, children with disabilities are still able to complete their tasks well, especially with the support of technology used in learning. The digitalization of education, such as the use of audio-visual media, learning apps, and online platforms, provides flexibility for children with disabilities to learn at their own pace. For example, they can access learning materials at any time through digital platforms, allowing them to review lessons or complete assignments at their own speed without feeling rushed. This inclusive environment, supported by technology, enables children with disabilities not only to complete their academic tasks but also to feel more

engaged and have equal opportunities with regular students in the learning process, reducing barriers and increasing their motivation.

In learning, group projects combine children with disabilities with other normal students, so that children with disabilities can learn material from their classmates. Examples of group projects that have been carried out are designing posters, making breathing systems, and creating solar systems (Widiyawati, interview, 2025). This is in line with constructivist learning theory which emphasizes the importance of learner-centered learning and provides opportunities for them to build understanding through various sources and media (Suryana et al., n.d.)In addition, children with disabilities often feel reluctant to talk about the difficulties they face with teachers, so that through group activities, they can work together with classmates to help them overcome the difficulties they face (Nada, observation, 2025). Technology serves as a bridge to accommodate students' diverse abilities while also expanding access for children with disabilities to participate in learning effectively. By utilizing digital media, learning applications, and online platforms, children with disabilities are given opportunities to develop their potential optimally. Proper assistance and the active involvement of teachers and peers are crucial factors in supporting ABK students learning processes so they can grow alongside other students without discrimination.

There are several platforms used at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura in the problem-based learning used, such as; canva, capcut, skretch, and corel draw, the use of these media in multimedia learning helps children with disabilities in developing skills in practice-based learning. This is in accordance with the learning provisions for ABK students with the technology used can provide opportunities for children with disabilities to develop problem-solving skills in the context of practical learning (Zamjani et al., 2020). The use of various platforms in problem-based learning can indeed be mentally and physically demanding for children with disabilities. For students with disabilities, even turning on a laptop can be a challenge in itself, making the use of such platforms a significant obstacle that requires special assistance. Despite the difficulties they often face in practice, students with special needs remain enthusiastic and strive to complete the tasks assigned to them. (Nada, observation, 2025)

To increase the learning motivation of children with disabilities at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura, namely by providing rewards when students are able to do their assignments well, rewards are not only in the form of goods,

but in the form of praise and special attention given by teachers to students (Nada, observation, 2025). That way, students become active in learning and helping each other in doing assignments. The existence of a good and active learning environment will have an impact on students' motivation to learn more actively so that the results produced are satisfactory. The existence of high learning motivation will make students more enthusiastic in learning so that it will be easier to get optimal learning results, on the other hand, low learning motivation will make students lose enthusiasm or desire to learn (Lubis & Mavianti, 2022). In supporting the implementation of inclusive education, IBS Padepokan Kyai Mudrikah Kembang Kuning also provides psychological services for students who need emotional support or wish to express their feelings. The presence of a psychologist at the school allows students, especially those with special needs (ABK), to receive help in managing their emotions and the challenges they face, both related to learning and personal issues.

Digitalization in education is a breakthrough to develop learning innovations so that students can learn according to the needs and challenges of the times, of course, not only the media or learning facilities are prioritized, but also their competencies, skills, and achievements. Therefore, the digitalization of education must be tied to a constructivistic educational paradigm that directs students; students to be able to answer the challenges of VUCA (volatility, uncertainty, complexity, and ambiguity which requires the ability to think critically, creatively, communicatively, innovatively, collaboratively, and problem solving (Muvid & Sa'diyah, 2024).

Conclusion

There are several digital-based inclusion education strategies implemented at IBS Padepokan Kyai Mudrikah kembang Kuning Pamekasan Madura, namely; 1). The use of digital platforms in learning such as Google Drive, Zoom, and Quiziz. 2). The technology used is in accordance with children disabilities, 3). Multimedia used such as making videos (youtube, tiktok, instagram), designing posters, and making simple game coding. 4). The use of technology greatly supports the active involvement of ABK students, they get the same opportunity to channel their ideas and skills in technology. 5). Collaborative learning, examples of group projects that have been carried out such as designing posters, creating respiratory systems, and creating solar systems, 6). The Canva, CapCut, Skretch, Corel

Draw, and google chrome apps help them find other resources to practice problem-solving skills independently and develop skills in practice-based learning.

Suggestion

In this study, the researcher provides recommendations to conduct follow-up research that focuses on digital-based learning to increase the creativity of students with disabilities to find digital-based learning patterns that are suitable for children with disabilities.

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