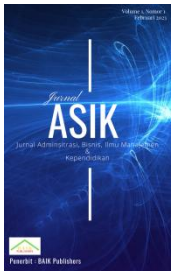
ASIK: JURNAL ADMINISTRASI, BISNIS, ILMU MANAJEMEN, & KEPENDIDIKAN,
VOL. 3, NO. 2, JUNE 2025
ISSN 2986-0334



# ANALYSIS OF SCHOOL READINESS IN IMPLEMENTING DIGITAL LEARNING: CASE STUDY IN CIPUTAT, SOUTH TANGERANG

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(Submitted: March ; Accepted: April ; Published: June)

## ABSTRACT

*Digital transformation in education requires the readiness of school institutions in various aspects, from infrastructure to curriculum adaptation. This study aims to analyze school readiness in implementing digital learning in the Ciputat area, South Tangerang. The study used a qualitative approach with a case study method in three schools with different characteristics. Data collection techniques included in-depth interviews, observations, and documentation studies. The results of the study showed that school readiness still varies greatly. Schools with adequate managerial and financial support tend to be more prepared, as indicated by the availability of digital infrastructure, good teacher competence, and a curriculum that has adapted to digital learning. Meanwhile, limited facilities, low digital literacy of teachers and students, and minimal training are the main obstacles for other schools. In conclusion, the successful implementation of digital learning requires synergy between technical readiness, human resources, and curriculum policies. This study provides implications for education policy makers in designing strategies for equalizing digital transformation in schools.*

***Keywords: digital learning, school readiness, teacher competence, digital curriculum.***

## I. INTRODUCTION

### A. Research Background

The development of information and communication technology (ICT) has had a major impact on various areas of life, especially in the education sector. The Industrial Revolution 4.0 and the digitalization era require the education system to transform to keep up with the times. One form of this transformation is the implementation of digital learning, namely the teaching and learning process that uses digital technology as the main or complementary media. Digital learning offers various advantages, such as more flexible access to materials, higher interactivity, and learning opportunities that are not limited by space and time. Thus, digital learning is considered capable of increasing the effectiveness and quality of education.

This phenomenon has become increasingly prominent since the COVID-19 pandemic hit the world, including Indonesia. The policy of social restrictions and physical school closures forced education actors to adopt digital-based distance learning (PJJ) methods. In many schools, especially in urban areas

such as Ciputat, South Tangerang, the use of digital platforms such as Google Classroom, Zoom, and WhatsApp is increasingly being implemented. However, in reality, the readiness of schools to implement digital learning is uneven and is still an issue that needs serious attention.

The Ciputat area, South Tangerang, is a fairly strategic area with a dense population and various educational institutions. Here there are public schools, private schools, madrasahs, and religious-based schools such as tahfidz schools. However, even though it is close to the city center and the infrastructure is quite adequate, the difference in school readiness in digital learning is very striking. Some schools have been able to utilize technology well, have adequate IT facilities, competent teachers, and a curriculum that has adapted to digital learning. On the other hand, there are also schools that still experience limitations, both in terms of facilities, human resources, and curriculum support.

This condition indicates an imbalance in readiness that has the potential to affect the quality and effectiveness of digital learning in the region. Infrastructure readiness, including the availability of computer devices, internet networks, and digital classrooms, greatly influences the learning process. Likewise, teacher readiness, including the ability to use technology, creativity in creating digital learning materials, and adaptation of effective online teaching methods, are important factors. No less important is student readiness in accessing and using technology and support from parents, which also determine the success of digital learning. In addition, the readiness of a curriculum that is adaptive to digital technology is also a major determinant of the sustainability and relevance of learning. Various studies have been conducted on digital learning in Indonesia, including in the South Tangerang area. However, these studies often have limited scope, for example, only focusing on one level of education, one school, or only certain aspects such as teacher readiness. The research by Handayani et al. (2020) which examined the readiness of online learning at SDN Ciputat 04, for example, has not compared the readiness between private and public schools, or between levels of education such as elementary schools, MTs, and tahfidz schools. In addition, studies on the readiness of digital curriculum in the context of schools in Ciputat are still minimal, even though this aspect is very important to ensure the consistency and sustainability of digital learning.

This research gap creates a significant research gap. With the varied and dynamic real conditions in the field, more comprehensive research is needed to measure and analyze school readiness in implementing digital learning holistically. This research is important not only to provide an objective picture of existing readiness, but also to identify supporting factors and obstacles faced by schools in Ciputat. That way, policy recommendations and strategies for developing digital learning can be designed in a targeted manner, according to the needs and conditions of each school.

In addition, the results of this study are also expected to provide academic contributions by enriching the literature on the implementation of digital learning at the local level, especially in the Ciputat area, South Tangerang. This comprehensive readiness mapping can also be used as a

reference for local governments, the Education Office, and schools in designing teacher training programs, providing technological infrastructure, and compiling curricula that are responsive to digital learning needs.

Based on this background, this study focuses on analyzing school readiness in implementing digital learning in Ciputat, South Tangerang, by looking at aspects of infrastructure readiness, teacher competence, student readiness, and curriculum adaptation at various levels of education. Thus, this study is expected to provide a comprehensive picture of school readiness and the factors that influence it, as well as become a basis for strategic decision making in the development of sustainable digital learning in the future.

### B. Research Formulation

1. How is the level of readiness of school infrastructure in implementing digital learning in Ciputat, South Tangerang?
2. To what extent are teachers competent in using digital technology to support the learning process in schools in Ciputat?
3. How prepared are students in participating in digital learning in the Ciputat area?
4. Has the curriculum in Ciputat schools been adapted to support effective digital learning?
5. What factors support and inhibit the implementation of digital learning in Ciputat schools?

### C. Research Objectives

1. Analyzing the level of readiness of school infrastructure in implementing digital learning in Ciputat, South Tangerang.
2. Identifying teacher competency in using digital technology as a learning medium in Ciputat schools.
3. Assessing student readiness in participating in the digital learning process in the Ciputat area.
4. Reviewing the adaptation of the curriculum implemented in Ciputat schools related to digital learning.
5. Identifying supporting and inhibiting factors in the implementation of digital learning in Ciputat schools to provide recommendations for the development of more effective digital learning

## II. LITERATURE REVIEW

### A. Digital Learning and School Readiness

Digital learning refers to the use of information and communication technologies (ICT) in the teaching and learning process to improve the effectiveness and quality of education (OECD, 2023). The implementation of digital learning requires readiness from various aspects, including technological infrastructure, human resource competency, and curriculum adaptation (Çemçem, Korkmaz, & Kukul, 2024). Kistanti, Sunardi, and Drajati (2024) found that technological readiness in junior high schools in Indonesia still varies, especially regarding access to and use of digital devices.

School readiness for digital learning is greatly influenced by the condition of technological infrastructure and human resource management capabilities. This variation in readiness needs to be anticipated so that the implementation of digital learning can run effectively.

### B. Teacher Competence in Digital Learning

Teachers' digital competence is a key factor in the success of digital learning. Alférez-Pastor et al. (2023) emphasized the importance of digital competence training for prospective teachers. Çemçem, Korkmaz, and Kukul (2024) developed a measurement tool for teacher readiness in blended learning that includes aspects of technology and pedagogy.

Training and development of teachers digital competence is essential so that teachers are able to integrate technology effectively in learning, thereby improving the quality of the teaching and learning process.

### C. Student Readiness in Digital Learning

Student readiness includes digital literacy skills, learning motivation, and access to technology. Syed Hamid and Sueb (2025) stated that improving teachers' digital competence plays an important role in reducing the gap in access to education and increasing student engagement. However, challenges such as low motivation and limited access are still obstacles.

Student readiness does not only depend on access to technology, but is also influenced by teacher competence and student motivation. Support from the school environment and family is very important to improve student readiness

### D. Curriculum Adaptation for Digital Learning

El-Hamamsy et al. (2023) proposed a cascade model for digital education curriculum reform involving continuous teacher training and technology-based curriculum development. This approach is considered effective in improving school readiness in implementing digital learning.

Adaptive curriculum and continuous teacher training are key to the successful integration of digital learning in schools. Curriculum reform must simultaneously address technological needs and teacher competency development.

## III. RESEARCH METHODOLOGY

### A. Research Types

This study uses a descriptive qualitative approach with a case study method. This approach was chosen to describe and analyze in depth how schools are prepared to implement digital learning, including aspects of infrastructure, teacher competence, student readiness, and curriculum. Case studies were chosen because they are able to reveal phenomena contextually and holistically in a real school environment.

### B. Location and Subject

The research was conducted in the Ciputat area, South Tangerang, which included three types of schools as a representation of variations in readiness.

**Tabel 1. Location**

| School Code | Education Level | School Status |
|---|---|---|
| S1 | SD | Negeri |
| S2 | MTs | Swasta |
| S3 | SD/MTs | Swasta Keagamaan |

The research subjects consisted of:

1. Principal
2. Subject teachers
3. Upper grade students (grades 5–6 of elementary school/grades 8–9 of MTs)
4. Parents of students (as supporting informants)

**C. Research Instrument**

The main instrument in this study is the researcher himself (human instrument), which is equipped with interview guidelines, observation sheets, and documentation checklists. The guidelines are compiled based on four main indicators of digital readiness, namely:

1. Infrastructure Readiness
2. Teacher Readiness
3. Student Readiness
4. Curriculum Adaptation

**D. Data Analysis Techniques**

Data were analyzed using thematic analysis techniques based on the Miles & Huberman (2020) model which includes three main stages:

1. Data Reduction: Filtering and summarizing data from interviews, observations, and documentation based on thematic categories.
2. Data Presentation: Arranging data in narrative, matrix, or table form for easy interpretation.
3. Conclusion Drawing and Verification: Interpreting patterns of findings, comparing between schools, and drawing temporary conclusions which are then re-verified with data triangulation.

**E. Data Validation Techniques**

To maintain the validity and reliability of the data, source and technique triangulation techniques are used, namely:

1. Comparing interview results with observations and documents.
2. Checking the conformity between the opinions of the principal, teachers, students, and parents.
3. Discussion with colleagues to validate the analysis.

## IV. RESEARCH RESULT

### A. School Infrastructure Readiness

1. Findings

The level of infrastructure readiness in each school shows significant variation:

**Table 2. School Infrastructures**

| School Code | Internet Connection | Number of Computers | Digital Class | Projector/Smart TV |
|---|---|---|---|---|
| S1 | Unstable | 4 unit | Not Available | 2 units |
| S2 | Stable (WiFi) | 15 units (lab) | 3 classes | 4 units |
| S3 | Limited | 2 units | Not Available | 1 unit |

2. Discussion

Observation results show that schools with the S2 code have the most adequate digital infrastructure readiness. This is indicated by the existence of computer labs, stable internet connections, and several classes that have been equipped with multimedia devices. Meanwhile, S1 and S3 schools still have limitations, both in terms of hardware, internet networks, and the use of technology in the classroom.

3. Conclusion

The disparity in infrastructure readiness between schools is a major obstacle to equalizing digital learning. Schools with good funding support and technology management are better prepared to face digital transformation.

**B. Teacher Competence in Using Digital Technology**

1. Findings

Teachers' ability to integrate technology into learning also varies. In S2 schools, most teachers have mastered learning applications such as Learning Management System (LMS) and video conferencing. In contrast, teachers in S1 and S3 schools generally only use basic communication media such as WhatsApp or PowerPoint to teach.

2. Discussion

The availability of training and managerial support are the main differentiating factors. Teachers in S2 schools appear to be more active in participating in training and have a better understanding of digital pedagogy. Meanwhile, teachers in S1 and S3 schools experience limitations in developing technology-based learning methods, both due to lack of training and limited time and devices.

3. Conclusion

Teacher competence is an important component in digital readiness. Without regular training and management support, the integration of technology into the teaching and learning process will be difficult to develop optimally.

**C. Student Readiness in Participating in Digital Learning**

1. Findings

Students in S2 schools mostly have personal digital devices and stable internet access at home. In contrast, students in S1 and S3 still face access constraints, especially those from low-income families.

2. Discussion

The level of student readiness is greatly influenced by their economic background and digital literacy. In S2 schools, students appear more independent and accustomed to using technology for learning. Meanwhile, in S1 and S3, student motivation in digital learning is low due to access barriers and lack of environmental support.

3. Temporary Conclusions:

Equitable access to technology and parental support are very important in shaping student readiness. Inequality of access is a serious challenge in implementing fair digital learning.

**D. Curriculum Readiness to Support Digital Learning**

1. Findings

   Only S2 schools have systematically adapted digital-based curriculum. The curriculum of S1 and S3 schools is still dominated by conventional approaches without comprehensive technology integration.

2. Discussion

   Curriculum adaptation that is responsive to digital developments is an indicator of the readiness of educational institutions. S2 schools show a commitment to aligning learning materials, methods, and evaluations with digital technology. Meanwhile, other schools have not integrated digital components into the syllabus or lesson plans in their entirety.

3. Temporary Conclusion:

   Digital curriculum reform is not evenly distributed across schools. Schools that are able to adopt ICT-based curriculum are better prepared to face the transformation of education in the digital era..

**E. Supporting and Inhibiting Factors for the Implementation of Digital Learning**

1. Supporting Factors:
   a. Regular teacher training (S2)
   b. Support from the principal for innovation
   c. Student access to personal devices
2. Inhibiting Factors:
   a. Unstable internet connection (S1, S3)
   b. Low digital literacy of teachers and students
   c. Lack of budget for device procurement
   d. Curriculum that is not yet adaptive
3. Discussion

   Internal factors such as teacher competence and curriculum, as well as external factors such as infrastructure and family support, greatly influence the digital readiness of schools. Schools that are able to synergize technical and pedagogical aspects tend to be more successful in implementing digital learning.

4. Conclusion

   The implementation of digital learning requires a systemic and collaborative approach. Schools need to build a strong digital ecosystem with the support of various parties, from teachers, students, parents, to policy makers.

**F. Research Results Discussion**

The results of the study show that school readiness in implementing digital learning in the Ciputat area, South Tangerang still varies significantly. This difference in readiness is influenced by various factors, both internal (school management, teacher competence, curriculum) and external (infrastructure, parental support, students' socio-economic background).

In general, schools with strong institutional and financial support (S2) show higher digital readiness compared to other schools (S1 and S3). This is in line with the findings of Çemçem et al. (2024) that digital readiness is not only determined by the availability of devices, but also by management support, teacher training, and the sustainability of digital programs.

The infrastructure aspect is the main issue that hinders the implementation of digital learning. Schools with unstable internet connections and a limited number of devices are unable to provide optimal digital learning spaces. This finding supports the OECD's view (2023) that the digital divide is still a major challenge in the education system, especially in schools that are less technologically supported.

In terms of teacher competence, it can be seen that the success of digital implementation is highly dependent on the level of digital literacy and pedagogical abilities of teachers. Teachers in schools that provide regular training are better able to adapt ICT-based learning strategies. This supports the research results of Alférez-Pastor et al. (2023) and Tondeur et al. (2021) which emphasize that digital training for teachers is a primary prerequisite in developing effective digital learning.

Student readiness is also inseparable from social and economic influences. Students from schools that have parental support and access to digital devices tend to be more prepared and motivated to participate in online learning. This supports the findings of Syed Hamid & Sueb (2025) that student readiness in digital learning is highly correlated with family digital literacy and the availability of learning devices at home.

In terms of curriculum, only one out of three schools has made significant adaptations to digital learning needs. The other two schools still implement a conventional curriculum without technology integration. This shows that curriculum transformation efforts at the school level are still limited, as criticized by El-Hamamsy et al. (2023) that digital curriculum reform must involve teacher training and the development of learning materials that are in accordance with the digital ecosystem.

Overall, the findings of this study confirm that the success of implementing digital learning at the elementary and secondary school levels depends not only on technical aspects, but also on the readiness of human resources and the support of educational policies. There needs to be comprehensive intervention from local governments, education offices, and school foundations to provide infrastructure support, ongoing training, and adaptive and contextual curricula. Thus, the ideal digital learning implementation model in Ciputat and similar areas must include a multi-level approach: strengthening infrastructure, increasing teacher capacity, fostering student readiness, and aligning technology-based curriculum. This approach will answer the research gap that has not been widely studied locally, namely how digital school readiness is determined by the relationship between structural and cultural variables at the school level.

## V. CLOSURE

### A. Conclution

Based on the results of the research and discussion, it can be concluded that school readiness in implementing digital learning in the Ciputat area, South Tangerang, is greatly influenced by five main aspects:

1. Infrastructure Readiness

   The availability of digital devices and internet connections are the main determinants of the smoothness of digital learning. Schools that have computer laboratories, stable Wi-Fi networks, and multimedia devices in the classroom are more technically prepared to organize digital learning.
2. Teacher Competence

   Teachers who have received regular digital training and have technology-based pedagogical skills are able to design interactive and effective learning. On the other hand, limited teacher competence is a serious obstacle to the adoption of educational technology.
3. Student Readiness

   Access to personal devices, basic digital literacy, and support from the family environment greatly determine student readiness in participating in digital learning. Students who have facilities and high learning motivation show a positive response to digital learning.
4. Curriculum Adaptation

   A curriculum that has been adapted to the digital learning format (including teaching media, evaluation methods, and lesson structures) facilitates the transition to technology-based learning. Conventional curricula without digital innovation tend to hinder the effectiveness of learning.
5. Supporting and Inhibiting Factors

   Supporting factors include teacher training, principal policies, and the role of parents. Meanwhile, obstacles include limited infrastructure, lack of budget, and the lack of integration of technology into the learning system.
6. Main conclusion

   School readiness in digital learning is not singular, but rather the result of synergy between technical readiness, human resource competency, student conditions, and curriculum structure. The gap between schools is still quite wide, so systematic and sustainable intervention is needed.

**B. Suggestion**

Based on these conclusions, here are some suggestions that can be submitted to various parties:

1. For Schools
   a. Prepare a strategic plan for school digitalization that includes infrastructure procurement, teacher training, and curriculum adjustments.
   b. Conduct regular training related to the use of LMS-based learning technology, digital presentations, and online evaluations.
   c. Mapping student readiness so that the digitalization program can be adjusted to the socio-economic conditions of students.
2. For the Government/Education Office
   a. Provide digital infrastructure assistance evenly to all types of schools, especially public and religious schools.
   b. Develop a massive, sustainable, and local-needed digital competency training program for teachers.
   c. Encourage the development of an adaptive curriculum that is integrated with technology and supports 21st century learning.
3. For Parents and Communities
   a. Support children's digital learning at home by providing internet access

and the necessary devices.

b. Build active communication with schools to understand digital learning methods and needs.

4. For Further Researchers
   a. It is recommended to conduct quantitative research on a wider scale in order to map digital school readiness regionally or nationally.
   b. Examining more deeply the role of local education policies and cultural factors in influencing schools' digital readiness

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