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RESEARCH ARTICLE

Inclusive Navigation: An Inclusive Service Model Based on Adaptive Scheduling and Percentage-Based Curriculum Adaptation

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Abstrak

Pendidikan inklusif adalah upaya sistematis untuk menyediakan kesempatan belajar yang adil bagi semua siswa, termasuk mereka yang memiliki kebutuhan khusus. Namun, pelaksanaannya sering menghadapi tantangan terkait dengan terbatasnya program pembelajaran yang terindividualisasi, waktu belajar yang tidak fleksibel, dan adaptasi kurikulum yang tidak memadai. Penelitian ini bertujuan untuk mengembangkan dan menganalisis model layanan inklusif berbasis penjadwalan adaptif dan adaptasi kurikulum berdasarkan persentase di salah satu sekolah dasar swasta di Karanganyar. Penelitian ini menggunakan pendekatan kualitatif deskriptif dengan desain studi kasus. Data dikumpulkan melalui observasi, wawancara, dan dokumentasi, serta dianalisis menggunakan reduksi data, penyajian data, dan penarikan kesimpulan. Triangulasi digunakan untuk memastikan validitas data. Hasil penelitian menunjukkan bahwa siswa dengan kebutuhan khusus menunjukkan karakteristik yang beragam yang memerlukan layanan pembelajaran yang berbeda, khususnya dalam hal perhatian, komunikasi, dan keterampilan akademik dasar.

Key Word:
Inclusive Education, Adaptive Schedule, Individualized Education, Curriculum Adaptation, Special Needs

Abstract

Inclusive education is a systematic effort to provide equitable learning opportunities for all students, including those with special needs. However, its implementation often faces challenges related to limited individualized learning programs, inflexible learning time, and insufficient curriculum adaptation. This study aims to develop and analyze an inclusive service model based on adaptive scheduling and percentage-based curriculum adaptation at one of the private elementary schools in Karanganyar. This research employs a descriptive qualitative approach with a case study design. Data were collected through observation, interviews, and documentation, and analyzed using data reduction, data display, and conclusion drawing. Triangulation was used to ensure data validity. The results indicate that students with special needs demonstrate diverse characteristics requiring differentiated learning services, particularly in terms of attention, communication, and basic academic skills. Based on these findings, the study develops a model integrating adaptive scheduling and percentage-based curriculum adaptation. Adaptive scheduling provides flexibility in learning duration and intensity, while curriculum adaptation adjusts learning targets according to students' abilities (25%, 50%, 75%, and 100%). This integrated model improves students' learning engagement, focus, and academic participation. The study concludes that the combination of flexible time management and differentiated learning targets is essential for creating effective and sustainable inclusive education practices in elementary schools.

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PENDAHULUAN

Inclusive education is a systematic effort to provide fair and equal educational services for all students without discrimination, including students with special needs (ABK). This approach emphasizes that each student has unique characteristics that require responsive and adaptive learning services.

Several studies have shown that the implementation of inclusive education in elementary schools still faces various obstacles, such as limited teacher competency, suboptimal implementation of the Individual Learning Program (IEP and minimal curriculum adaptation to student needs (Minsih, 2023; Efendi, 2022).

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This situation indicates that inclusive practices in the field do not fully reflect the principles of flexible, learner-centered learning.

Furthermore, observations at one of the private elementary schools in Karanganyar revealed a gap between ideal conditions and learning practices. Some students with special needs were unable to optimally participate in learning, particularly in terms of learning duration, attention span, and achievement of academic targets. This indicates the need for innovative service models that focus not only on learning content but also on time management and adjustments to learning targets.

Based on these challenges, this study proposes a novel inclusive service model based on two main components: an adaptive scheduling and ability-based curriculum adaptation. This model is designed to integrate flexible learning times with adjusted learning targets, thus accommodating students' needs more comprehensively.

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METODE PENELITIAN

This research uses a descriptive qualitative approach with a case study design to provide an in-depth description of the implementation of the inclusive service model at one of the private elementary schools in Karanganyar.

The study subjects consisted of 7 students exhibiting special needs, 3 classroom teachers, and 4 special assistant teachers. Subjects were selected purposively based on their direct involvement in the implementation of inclusive services.

Data collection techniques included observation, in-depth interviews, and documentation. Observations were conducted to identify student characteristics and learning behaviors, interviews were used to gather information related to learning strategies and challenges encountered, and documentation was used to supplement data in the form of IEP (Individualized Education Program), learning tools, and student progress reports.

Data analysis was conducted using an interactive model encompassing data reduction, data presentation, and conclusion drawing. Data validity was tested through triangulation of sources and techniques to ensure the validity of the research findings.

HASIL DAN PEMBAHASAN

Based on the initial identification results, seven students at one of the private elementary schools in Karanganyar who were the subjects of the study, exhibited special needs.

Observations revealed that these students had diverse characteristics, including difficulty maintaining attention, barriers to communication and social interaction, and delays in understanding learning materials.

Furthermore, several students tended to struggle with basic literacy skills, such as reading and writing, and required intensive repetition of the material. This variation in characteristics indicates that each student requires a different learning approach tailored to their individual needs.

This demonstrates that mapping student characteristics is a key prerequisite for designing effective inclusive services. Without accurate identification, learning interventions tend to be poorly targeted. Based on these characteristics, the next step is to analyze students' learning needs more specifically.

A needs analysis revealed that students require services that address focus, communication, basic literacy, and intensive mentoring.

Observations revealed that some students could only maintain focus for 15–20 minutes during a classroom session, necessitating adjustments to learning strategies and study duration. Furthermore, some students required intensive review of material to achieve basic understanding.

These needs indicate that learning barriers stem not only from academic ability but also from self-regulation and the learning environment. Therefore, a multidimensional learning approach is essential.

To address these needs, a structured service system is required, providing appropriate accommodations. In general, students also require a flexible, non-pressuring learning environment that allows for individual development according to their individual abilities.

Based on Government Regulation No. 13 of 2020, one of the private elementary schools in Karanganyar requires the development of more specific instructional accommodations. The following table presents the service needs analysis:

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Table 1. Gap Analysis of Inclusive Services

No	Ideal Standards	Real Conditions
1	Presence of IEP	Presence of IEP
2	Presence of Special Education Teachers	Presence of Special Education Teachers
3	Adaptive Curriculum	Still general

This gap indicates that although schools are structurally aligned toward an inclusive system, their functional implementation is not yet optimal. This underscores the need for innovative, more applicable service models. Based on this gap, service priorities were determined as the basis for model development.

Service priorities include developing an Individualized Education Program (IEP), implementing adaptive scheduling, and adapting an ability-based curriculum. These three aspects are interrelated and inseparable. The IEP forms the basis for planning, the adaptive scheduling regulates the learning rhythm, and the adaptive curriculum determines learning outcomes. The integration of these three aspects is then formulated into a comprehensive inclusive service model.

First, developing an Individualized Education Program (IEP) is a top priority because it serves as the foundation for designing learning tailored to the needs of each student. Without an IEP, learning tends to be general and less accommodating to differences in student abilities.

Second, adapting the learning schedule (adaptive scheduling) is necessary to provide flexible learning time for students who are unable to attend full classes. This adjustment aims to reduce learning fatigue and increase learning effectiveness.

Third, adapting the ability-based curriculum is a crucial step to ensure students can continue learning according to their capacity. Students with special needs have the same rights to receive educational services as regular students, therefore, curriculum adjustments are necessary to take into account their individual characteristics and needs. This approach allows students to learn without undue pressure and achieve realistic learning outcomes. Therefore, the curriculum in inclusive education is not uniform, but is modified according to the developmental stage, characteristics, and ability level of students (Ilahi, 2013).

The developed inclusive service model integrates two main components: an adaptive scheduling and percentage-based curriculum adaptation. This model operates systematically, with the adaptive scheduling managing the duration and load of learning, while the curriculum adaptation manages the depth and target learning outcomes.

Unlike previous research that focused solely on IEP or adaptive curriculum, this model integrates time and learning outcomes within a single service system. This model is not only relevant to the research context but also has the potential to be replicated in other inclusive schools with similar characteristics.

This model emphasizes that the success of inclusive education depends not only on content differentiation but also on adaptive learning time management. The integration of these two aspects is the model's main advantage over conventional approaches.

An adaptive scheduling is a learning schedule adjustment strategy designed to accommodate the individual needs of students, particularly those with special needs, so that they are not forced to attend the full learning duration like regular students. This approach is based on the principle of flexibility in inclusive education, which emphasizes that the learning process must adapt to the conditions, abilities, and characteristics of students (Tomlinson, 2014).

In the context of inclusive education, limitations in attention span, emotional regulation, and learning stamina are often major barriers for students with special needs to participate in long-term learning (Hallahan, Kauffman, & Pullen, 2015). Therefore, adjusting the learning schedule is an essential accommodation for creating a more responsive learning environment.

Implementation results show that adjusting the learning schedule can improve focus, reduce learning fatigue, and increase student engagement in the learning process. This reinforces the finding that time flexibility is a crucial factor in supporting the success of inclusive education (Friend & Bursuck, 2019).

Students continue to follow class material, but with different achievement targets based on their abilities. Adaptive curriculum can be categorized according to the type of barriers experienced by the students (Hallahan, Kauffman, & Pullen, 2015).

The curriculum for students with special needs who do not experience intellectual disabilities, such as blindness, deafness, physical disabilities, etc., requires slight modifications in the teaching methods and media used to present information (Friend & Bursuck, 2019).

The curriculum for students with special needs who experience intellectual disabilities, such as

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children with intellectual disabilities and those with other disorders accompanied by intellectual disabilities, usually requires modifications to almost all learning components. Learning objectives must be modified, as must the materials, processes, and implementation of evaluations.

Their challenges vary widely. Their developmental understanding of education allows them to enjoy education in regular schools, where they are placed alongside regular children, known as inclusive schools. Inclusive schools are increasingly found in several regions in Indonesia. To maximize services for students with special needs, a curriculum is needed. The curriculum in inclusive schools should be adaptable to the abilities and disabilities of students with special needs. Adapting the curriculum, including teaching materials, facilities and infrastructure, methods, and other aspects, will assist students with special needs in learning in inclusive schools.

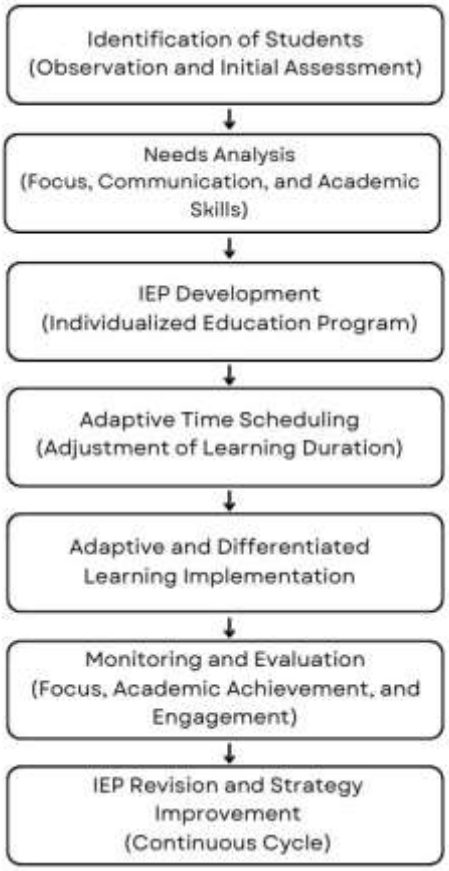

Figure 1. Inclusion Navigation Model

This phased approach demonstrates that model implementation is not instantaneous but requires a systematic and ongoing process. The figure demonstrates that the inclusion service model is systematically developed, starting from student identification through the evaluation stage. The integration of adaptive scheduling and percentage-based curriculum adaptations is the key to optimizing learning services for students with special needs.

The implementation of the inclusion service model, based on adaptive schedulings and percentage-based curriculum adaptations, is carried out over 3–6 months through the following systematic and ongoing stages:

Initial Identification and Assessment (a). This stage follows up on the findings in the student identification section, which indicated the diverse characteristics of students with special needs. The assessment is conducted to more specifically map student learning needs, particularly in aspects of focus, communication, and basic academic skills. The results of this assessment serve as the basis for determining appropriate learning interventions.

Development of Individualized Education (b). Program (IEP) and Adaptive Schedule Planning (B). Referring to the identified needs analysis, this stage focuses on developing the IEP as the main service priority. The IEP was designed to address individual student needs that had not previously been optimally accommodated. Furthermore, adaptive scheduling planning was implemented in response to the finding that students needed flexibility in learning duration to maintain focus and reduce fatigue.

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Adaptive Learning Implementation (c). This stage represents the direct implementation of the IEP and the adaptive schedule that had been developed. Differentiated learning strategies were implemented to adapt the learning process to student characteristics. Implementation of this stage emphasized that inclusive learning not only adapts the material but also the students' learning processes and rhythms.

Percentage-Based Curriculum Adaptation (d). This stage represents a concrete manifestation of service priorities in the form of curriculum adjustments. Based on the previous analysis, students require realistic and diverse learning targets. Therefore, learning outcomes are adjusted in percentages (25%, 50%, 75%, and 100%) according to student abilities. This approach allows students to remain engaged in learning without experiencing undue pressure.

Monitoring and Evaluation (e). This stage is conducted as part of a reflection on the effectiveness of the implemented model. Evaluation refers to the indicators discussed previously, namely academic progress, increased focus, and student engagement in learning. Evaluation results are used to refine the IEP and learning strategies, creating a cycle of continuous improvement in inclusive services.

The evaluation instrument is based on the principles of inclusive learning and education evaluation, covering academic aspects, learning behavior, student engagement, IEP implementation, and collaboration with parents (Arikunto, 2018; Friend & Bursuck, 2019; Epstein, 2011). Evaluation of the success of the implementation of the inclusive service model is carried out systematically using measurable indicators across several key aspects, namely:

Table 2. Implementation Success Evaluation Instrument

Assessment Aspects	Measurement Description	Indicators
Academic Aspects	Measured through the achievement of learning targets in the IEP based on the percentage of achievement (25%, 50%, 75%, and 100%).	Ability to complete assignments according to targets. Improved formative assessment results.
Focus and Learning Behavior Aspects	Measured through observations during learning	Duration of student focus during learning (minutes) Frequency of distractions during learning activities Ability to follow instructions
Aspects of Learning Engagement	Measured through active student participation in learning activities	Participation in class activities Responses to teacher questions Involvement in group assignments
IEP Implementation Aspects	Measured based on the alignment of learning implementation with the IEP plan	Suitability of implementation with the IEP plan Teacher consistency in implementing adaptive strategies
Collaboration with Parents	Measured through the intensity and quality of parental involvement	Frequency of teacher-parent communication Parental involvement in home learning support

Data were collected through observation sheets, student progress notes, and documentation of learning outcomes. Descriptive analysis was conducted by comparing conditions before and after model implementation.

The results of the model implementation showed significant improvements in several aspects of learning. Before the model's implementation, the average student focus time was around 15–20 minutes in classical learning. After the implementation of the adaptive scheduling, approximately 5 out of 7 students showed an increase in focus time to 25–35 minutes.

Furthermore, student engagement in learning also improved, as evidenced by increased participation in class activities and the ability to complete assignments according to IEP targets. Academically, there was an improvement in learning outcomes, with some students previously in the 50% category increasing to 75% after the model's implementation.

These findings align with research by Hidayat (2021), which states that students with attention deficits require more flexible learning durations to maintain focus. Furthermore, the implementation of the adaptive curriculum is supported by Efendi (2022), who emphasized the importance of adjusting learning targets in inclusive education.

These findings indicate that the integration of learning time management and curriculum adaptation has a positive impact on the effectiveness of inclusive learning.

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KESIMPULAN

The adaptive scheduling-based inclusion service model and percentage-based curriculum adaptation have proven to be more effective in accommodating the learning needs of students with special needs. This model provides flexibility in managing learning time while simultaneously adjusting learning achievement targets. Conceptually, this model emphasizes that the success of inclusive education is determined not only by curriculum adaptation but also by responsive learning time management to the students' conditions. Therefore, the integration of these two aspects is key to creating inclusive, meaningful, and sustainable learning. This study is limited by its focus on a single school, so the results cannot be broadly generalized. Therefore, further research with a broader scope is needed to more comprehensively test the model's effectiveness.

DAFTAR REFERENSI

Anderson, L. W., & Krathwohl, D. R. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.

Arikunto, S. (2018). *Dasar-dasar evaluasi pendidikan*. Jakarta: Bumi Aksara.

Budiyanto. (2023). Pengembangan program pembelajaran individual bagi anak berkebutuhan khusus. *Jurnal Asesmen Pendidikan, 5*(1), 12–25.

Efendi, M. (2022). Kurikulum adaptif dalam pendidikan inklusif. *Jurnal Cakrawala Pendidikan, 41*(3), 678–690.

Epstein, J. L. (2011). *School, family, and community partnerships: Preparing educators and improving schools*. Boulder: Westview Press.

Fitriani, R. (2023). Kolaborasi guru dan orang tua dalam pendidikan inklusif. *Jurnal Obsesi, 7*(4), 4561–4572.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59–109.

Friend, M., & Bursuck, W. D. (2019). *Including students with special needs: A practical guide for classroom teachers*. Boston: Pearson.

Hallahan, D. P., Kauffman, J. M., & Pullen, P. C. (2015). *Exceptional learners: An introduction to special education* (13th ed.). Pearson.

Handayani, D. (2022). Implementasi pembelajaran berdiferensiasi pada Kurikulum Merdeka. *Jurnal Pendidikan Dasar, 9*(1), 56–68.

Hidayat, A. (2021). Strategi pembelajaran bagi anak ADHD di sekolah dasar. *Jurnal Pendidikan Khusus, 17*(2), 101–110.

Kementerian Pendidikan dan Kebudayaan. (2009). *Peraturan Menteri Pendidikan Nasional Nomor 70 Tahun 2009 tentang Pendidikan Inklusif*. Jakarta: Kemendikbud.

Kustawan, D. (2020). *Pendidikan inklusif dan implementasinya di sekolah dasar*. Bandung: Luxima.

Minsih. (2023). Implementasi pendidikan inklusif di sekolah dasar. *Jurnal Inovasi Pendidikan Dasar, 8*(2), 88–101.

Mulyono, A. (2021). *Anak berkebutuhan khusus dan layanan pendidikannya*. Jakarta: Rineka Cipta.

Nurfadhillah, S. (2022). Penanganan kesulitan belajar pada siswa disleksia. *Jurnal Pendidikan Khusus, 18*(1), 45–55.

Pemerintah Republik Indonesia. (2020). *Peraturan Pemerintah Nomor 13 Tahun 2020 tentang Akomodasi yang Layak bagi Peserta Didik Berkebutuhan Khusus*. Jakarta: Sekretariat Negara.

Pratiwi, I. (2023). Pengembangan minat dan bakat siswa dalam pendidikan inklusif. *Jurnal Pendidikan Anak, 12*(2), 134–145.

Rahmawati, F. (2022). Peran guru dalam pendidikan inklusif. *Jurnal Pendidikan Dasar Indonesia, 7*(1), 23–35.

Santrock, J. W. (2020). *Educational psychology* (6th ed.). New York: McGraw-Hill.

Sari, N. (2021). Model pembelajaran inklusif berbasis kebutuhan siswa. *Jurnal Pendidikan, 10*(3), 210–220.

Slavin, R. E. (2018). *Educational psychology: Theory and practice*. Boston: Pearson.

Smith, D. D. (2018). *Introduction to special education: Making a difference* (8th ed.). Boston: Pearson.

Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners* (2nd ed.). ASCD.

Widyasari, C. (2022). Pembelajaran berdiferensiasi dalam Kurikulum Merdeka. *Jurnal Pendidikan Dasar, 9*(1), 56–68.