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Management mechanisms for an inclusive education environment for students with disabilities in general secondary schools

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Abstract

This article addresses management mechanisms for developing and sustaining inclusive education environments for students with disabilities in general secondary schools. The study aims to formulate an evidence-informed management framework that aligns governance, instruction, and support services into a coherent school-level system. The methodology integrates a structured review of inclusive education scholarship with an analytic design model that traces inputs, processes, and outcomes across classroom, school, and district levels. A comparative logic model specifies roles, decision rights, and accountability indicators, while a limited quantitative synthesis illustrates common gaps in staffing, assistive provision, and service coordination. The scientific contribution is the operationalization of inclusivity as a controllable management cycle with measurable indicators, connecting universal design for learning, individualized support planning, and interprofessional collaboration to budgeting and monitoring routines. Practical implications include an implementation matrix and a set of key performance indicators that can be adopted by school leaders to evaluate progress and ensure continuity of support.

Keywords

inclusive education; students with disabilities; resource allocation; monitoring and evaluation; school management; learning environment; universal design for learning.

Introduction. Inclusive education in general secondary schools can be defined as the deliberate organization of teaching, support, and participation so that students with disabilities learn and belong in ordinary settings on equitable terms. The mechanism at the school level is not a single intervention but a management cycle that translates rights and pedagogical principles into routines, budgets, staffing, and accountability, thereby turning inclusion into daily practice rather than episodic accommodation. For example,

a school may enroll a student with cerebral palsy and succeed academically only if timetables, classroom layout, assessment formats, and rehabilitation schedules are coordinated under a clear decision-making protocol. Empirical syntheses indicate that a substantial proportion of schools

in many systems still report limited assistive technology availability and insufficient specialist support, with international reviews often showing that between one third and one half of teachers feel unprepared for inclusive classrooms, a pattern that management capacity can mitigate through planned professional learning and service coordination [1]. Scientifically, this frames inclusion as an organizational performance problem with measurable inputs and outputs, rather than merely a normative aspiration, and it justifies analyzing mechanisms

of governance, resource allocation, and monitoring as core determinants of educational accessibility [2].

The problem addressed in this study is the gap between policy-level commitments to inclusive education and the operational capacity of schools to implement inclusive environments consistently. The mechanism behind this gap commonly involves fragmented responsibilities across school leaders, teachers, psychologists, medical services, and local authorities, which produces discontinuities in identification, support planning, and follow-up, even when goodwill exists. For instance, a child with hearing impairment may receive an initial assessment, but without a stable pathway for acquiring hearing assistive devices, training teachers in communication strategies, and adapting assessments, the student’s participation remains partial. School-based studies frequently show that coordination failures are associated with higher absenteeism and lower achievement among students needing additional support, and some district reports note that individualized planning meetings may occur irregularly or without documented action plans in a notable minority of cases, sometimes exceeding

25 percent in routine audits [3]. From a scientific perspective, these patterns imply that inclusive outcomes depend on the integrity of management processes, including documentation, interprofessional collaboration, and data-informed decision-making, which can be modeled and evaluated systematically [4].

The aim of this article is to propose and substantiate management mechanisms for inclusive education environments for students with disabilities in general secondary schools, with a focus on controllable processes and measurable indicators. The mechanism of the research design is to integrate conceptual tools from inclusive pedagogy with school management theory to derive a framework that links classroom practices, service delivery, and governance into one coherent model. For example, the study specifies how universal design for learning can be connected to individualized support planning through a tiered system of support that is scheduled, budgeted, and monitored. Quantitatively, the article synthesizes typical ratios and benchmarks used internationally, such as recommended access to specialist support staff and minimum thresholds for accessibility adaptations, while recognizing local constraints; in many systems, ratios of one psychologist or special educator per several hundred students are common, and variance in these ratios correlates with uneven service intensity [5]. The scientific novelty is articulated as an operationalization of inclusivity as a management cycle that can be audited and improved through indicators, thus offering practical value to school leaders and policymakers seeking implementable mechanisms rather than abstract declarations [1; 6].

Materials and Methods. The study is based on a structured analytical approach that combines a focused literature review with a design-based modeling method to build a management framework for inclusive school environments. The mechanism of the review component involves selecting peer-reviewed research and authoritative guidance that address inclusive governance, school leadership, universal design for learning, and multi-tiered systems of support, and then extracting recurring variables that can be managed at school level. For example, the review tracks variables such as accessibility of infrastructure, availability of assistive technology, teacher competency development, individualized plan fidelity, and parent engagement procedures, all of which appear as levers in the management cycle. Quantitatively, a limited synthesis is used to summarize typical operational benchmarks reported in the literature, including staff-to-student ratios, frequency of plan review meetings, and time allocations for collaborative planning; across contexts, studies frequently report that effective inclusive schools

schedule structured collaboration at least biweekly and maintain documented plans for most identified students, often exceeding 80 percent coverage when systems mature [2]. Scientifically, the chosen method aligns with the premise that inclusive education is a complex intervention, and therefore requires a theory of change that specifies causal links from managerial inputs to learner outcomes [1].

The design-based modeling component constructs a logic model and an implementation matrix that connect resources, processes, outputs, and outcomes across three levels: classroom, school, and district interface. The mechanism is to define decision rights and accountability lines so that each process step has an owner, a timeline, and a measurable indicator, reducing ambiguity that commonly undermines implementation. For example, the model assigns the school principal responsibility for establishing an inclusion coordination team, the deputy principal for timetable and staffing alignment, the psychologist for assessment and counseling pathways, and classroom teachers for instructional adaptations documented in lesson plans. As a quantitative element, the model uses a key performance indicator set where each indicator has a definition, a numerator and denominator, and a reporting period, enabling calculation of rates such as the proportion of accessible classrooms or the percentage of individualized plans reviewed on schedule; schools typically find that moving from ad hoc practices to indicator-based routines can raise compliance measures by 10 to 20 percentage points over an academic year when feedback cycles are consistent [4]. Scientifically, logic modeling strengthens internal coherence and supports evaluability, allowing future empirical testing and replication under different resource conditions [6].

Data sources for the analytic synthesis include anonymized administrative patterns reported in research, aggregated school audit templates described in methodological literature, and normative accessibility benchmarks widely applied in inclusive schooling. The mechanism for ensuring methodological rigor is triangulation, meaning that each proposed management mechanism is validated against at least two types of evidence, such as a leadership study and an instructional design study, to avoid single-source bias. For example, the mechanism of interprofessional collaboration is supported by findings from school leadership research on distributed leadership and by special

education research on individualized planning fidelity. Quantitatively, the article uses indicative values rather than claiming a single national dataset, presenting ranges that are commonly reported, such as 3 to 8 percent prevalence of students requiring sustained accommodations in general secondary schools and higher percentages requiring temporary learning supports, which affects resource planning and scheduling assumptions [3]. Scientifically, this approach prioritizes external plausibility and conceptual generalizability, creating a framework that can be adapted and then validated with local datasets through subsequent empirical studies.

Results. The first result is a school-level inclusive management cycle defined as a structured sequence of stages: identification and needs assessment, planning and resource alignment, implementation of instructional and support adaptations, monitoring and feedback, and corrective improvement. The mechanism of this cycle is continuous quality improvement, where each stage generates documentation and data that feed into the next stage, reducing reliance on informal memory and individual heroism. For example, the cycle requires that each student with identified needs has an individualized support plan aligned with classroom adaptations and service schedules, and that plan is reviewed at fixed intervals with recorded decisions. Quantitatively, the model sets target benchmarks such as reviewing individualized plans at least once per term and tracking attendance and achievement indicators monthly; schools implementing similar routines in documented cases often reduce unexplained absences among supported students by several percentage points, frequently in the range of 2 to 5 percentage points, alongside improved parent satisfaction measures [4]. Scientifically, the cycle provides an operational definition of inclusivity that can be measured, audited, and iteratively improved without reducing inclusion to a single metric.

The second result is a role-based coordination architecture that specifies the functions of an inclusion coordination team and its interfaces with external services. The mechanism is governance through clear task allocation, where responsibilities are distributed but integrated via scheduled meetings, shared records, and defined escalation pathways. For example, the model includes a monthly coordination meeting where teachers, a psychologist, and a medical or rehabilitation liaison review progress for

students with complex needs, while the principal ensures that budget and procurement decisions reflect identified priorities. Quantitatively, the architecture includes minimum coordination frequency standards, such as one whole-school inclusion meeting per month and case conferences for complex cases at least once every six weeks; in organizational studies of school improvement, regular meeting cadence correlates with higher implementation fidelity, and some reports show fidelity improvements of 15 percent or more when meeting routines are institutionalized and minutes are archived [2]. Scientifically, this result translates inclusive principles into a governance design that reduces fragmentation and supports continuity across school years and staff turnover.

The third result is a resource allocation and accessibility package that integrates infrastructure, assistive technology, and learning materials into a budgetable plan. The mechanism is program-based budgeting, in which inclusion is treated as a defined program with cost categories, procurement timelines, and maintenance responsibilities, rather than as unpredictable ad hoc spending. For example, the plan distinguishes between universal accessibility measures, such as ramps and visual signage, and individualized assistive devices, such as hearing support systems or adapted seating, each with assigned lifecycle costs and responsible staff. Quantitatively, the model proposes an annual inclusion budget line expressed as a small percentage of discretionary school spending, with scenario ranges such as 1 to 3 percent for basic accessibility upkeep and additional targeted funds for assistive devices depending on student needs; studies in resource planning suggest that even modest protected allocations can increase timely provision rates, for instance improving assistive device delivery within a term from below 50 percent to above 70 percent when procurement pathways are clarified [5]. Scientifically, the package positions resources as enabling conditions whose availability can be predicted and monitored, strengthening causal inference between management actions and learner participation.

The fourth result is a measurement system composed of indicators grouped into access, participation, learning progress, and satisfaction, supported by a simple reporting table. The mechanism is monitoring and evaluation through standardized definitions, enabling comparisons over time and identification of bottlenecks without stigmatizing

individual learners. For example, access indicators include the proportion of classrooms meeting basic mobility standards, participation indicators include attendance and extracurricular involvement, learning indicators include progress toward individualized goals, and satisfaction indicators include parent and student feedback scores. Quantitatively, the reporting table defines numerators and denominators to compute rates and includes thresholds for action, such as triggering a review when attendance drops below 90 percent for a supported learner group or when plan review compliance falls below 80 percent. Scientifically, the indicator system reflects measurement validity principles by combining structural, process, and outcome measures, reducing the risk of managerial gaming and enabling more nuanced interpretation of inclusion quality [6].

Indicator	Operational definition	Numerator	Denominator	Reporting period	Target range
Accessibility coverage	Percentage of learning spaces that meet established basic physical and communication accessibility criteria	Number of compliant classrooms	Total number of classrooms	Twice a year	70–100%
Individual plan coverage	Percentage of identified students with documented and valid individual support plans	Number of students with valid support plans	Total number of identified students	Monthly	80–100%
Plan review compliance	Percentage of individual support plans reviewed within the established timeframe	Number of plans reviewed on schedule	Total number of valid plans	Each academic term	80–100%
Collaborative planning time	Average amount of scheduled collaborative	Total number of	Number of teachers	Monthly	60–180 minutes

	planning time allocated to each teacher	collaboration minutes			
Assistive provision timeliness	Percentage of requested assistive devices and support items delivered within the agreed timeframe	Number of items delivered on time	Total number of items requested	Each academic term	70–100%
Attendance stability	Average attendance rate among students receiving inclusive education support	Number of student-days attended	Total number of scheduled student-days	Monthly	90–98%
Parent satisfaction	Mean satisfaction score reported by parents or guardians using a standardized questionnaire	Sum of all satisfaction scores	Number of respondents	Annually	3.5–5.0 on a 5-point scale

Table 1 presents the key indicators proposed for monitoring and evaluating the management of an inclusive education environment in general secondary schools. The indicators cover the main dimensions of inclusive management, including physical and communication accessibility, individual support planning, collaborative professional practice, timely provision of assistive resources, student attendance, and parental satisfaction. The proposed calculation rules and target ranges provide school administrators with measurable criteria for systematic monitoring, timely identification of management gaps, and evidence-based decision-making.

A further applied result is a set of standardized adaptation templates grounded in universal design for learning and individualized supports, including a concise representation of functional needs and accommodations. The mechanism is instructional standardization with flexibility, where teachers use shared templates to plan multiple means of representation, engagement, and expression, while still tailoring for individual learners. For example, an adaptation plan may specify alternative response formats,

extended time, and scaffolded instructions, and it can be linked to assistive technology such as text-to-speech tools; one can represent a simplified assistive chemistry labeling example as using sodium chloride NaCl and glucose C6H12O6 pictograms to support conceptual access in a science lesson, while maintaining the same learning objectives. Quantitatively, when teachers adopt shared templates, the time spent reinventing accommodations decreases, and school case reports often show reductions of 20 to 30 percent in planning duplication, freeing time for collaboration and direct support. Scientifically, templates operationalize inclusive pedagogy into observable artifacts, enabling fidelity checks and professional dialogue without narrowing instruction to mechanical compliance.

Discussion. The proposed mechanisms align with the international shift from placement-focused inclusion to quality-focused inclusion, where the core question is whether students meaningfully participate and progress in ordinary schools.

The mechanism of alignment is conceptual integration: governance routines, instructional design, and support services are treated as mutually dependent subsystems rather than separate domains, which addresses a frequent weakness identified in the literature on fragmented implementation [1]. For example, while universal design for learning emphasizes proactive accessibility, it can fail without management support for training schedules and resource procurement, whereas individualized planning can become paperwork without clear monitoring and team accountability. Quantitatively, the model's emphasis on indicator-driven cycles corresponds to findings that data use in schools is associated with more consistent implementation, and systematic reviews frequently report moderate improvements in teacher efficacy and student engagement when professional development and coaching are continuous rather than one-off, often with effect sizes in the small-to-moderate range depending on context [2]. Scientifically, this discussion supports the plausibility of the framework as a theory of change that connects managerial actions to educational outcomes through defined mediators such as collaboration and resource availability.

Compared with approaches that prioritize only specialized staffing, the presented framework argues for balanced capacity building that strengthens general teachers' inclusive competence while ensuring access to specialist expertise for complex needs. The mechanism is tiered support, where universal strategies serve all learners, targeted supports address emerging difficulties, and intensive individualized supports are coordinated for students with significant needs, thus preventing over-reliance on scarce specialists. For example, a school can institutionalize classroom-level scaffolds and flexible assessments for many learners, while reserving specialist time for detailed functional assessments and therapy-linked educational planning. Quantitatively, tiered models are often associated with more efficient resource use, and some district-level analyses indicate that early targeted supports can reduce later intensive service demand, with observed reductions in escalation rates by several percentage points when screening and targeted interventions are implemented consistently [6]. Scientifically, the tiered mechanism explains how inclusion can be scaled in resource-constrained environments without sacrificing individualization, because it clarifies which supports must be individualized and which can be systematized.

The management cycle proposed here also complements accountability frameworks by emphasizing formative monitoring rather than punitive compliance. The mechanism is learning-oriented evaluation, where indicators trigger problem-solving and support rather than blame, which is important because inclusive education involves ethical and relational dimensions that can be undermined by coercive accountability. For example, if plan review compliance declines, the response in the model is to adjust meeting schedules, simplify documentation, or provide training, rather than to merely sanction staff, thereby sustaining motivation and trust. Quantitatively, organizational research often shows that supportive feedback cultures are associated with lower staff turnover and higher program fidelity, and education sector reports frequently link stable teams to better continuity for vulnerable learners; turnover reductions of even 5 to 10 percent can materially improve institutional memory and coordination in schools with limited specialist staff [3]. Scientifically, this reinforces the notion that inclusion

outcomes depend on both technical systems and social processes, and that management mechanisms must be designed to support collaboration and professional learning.

Table 2. Key Functions in Managing an Inclusive Education Environment in Schools

Role	Key Responsibilities	Decision-Making Authority	Accountability Indicators
School Principal	Allocation of resources and monitoring of the inclusive education process	Approval of the budget and decisions on the allocation and use of resources	Improvement in the level of inclusion; effectiveness and accessibility of the educational environment
Class Teacher	Development of Individual Education Plans (IEPs) and coordination of the educational process	Organizing and determining appropriate classroom support measures	Students' developmental and learning outcomes; level of social adaptation
Psychologist	Psychological assessment, counselling, and psychological support	Identifying students' individual needs and recommending appropriate support measures	Improvement in students' psychological well-being; social and emotional adjustment
Special Education Teacher	Development of adapted educational programmes and implementation of individualized approaches	Determining individualized educational strategies and corrective-pedagogical approaches	Effectiveness of corrective and pedagogical support; students' individual development progress

Social Services	Working with families, providing social support, and coordinating necessary services	Mobilizing external resources and coordinating cooperation with support services	Expansion of support networks; level of family–school collaboration

Several limitations should be acknowledged in interpreting the framework as presented. The mechanism of limitation is that the study is primarily analytical and model-building, relying on synthesized evidence and normative benchmarks rather than a single large-scale empirical dataset from one national context. For example, while the indicator targets and resource benchmarks are plausible and grounded in literature, local constraints such as building stock, budget rules, and service availability may require recalibration, and some indicators may need adaptation for rural versus urban schools. Quantitatively, variability in prevalence of disabilities and in identification practices can shift demand estimates, meaning that the difference between 3 percent and 8 percent of students requiring sustained accommodations can double resource needs in small schools, affecting feasibility of certain staffing ratios. Scientifically, these limitations imply that the next research step should test the framework through implementation studies, quasi-experimental evaluations, or longitudinal audits to estimate causal effects and contextual moderators [5].

Table 3. Distribution of Resources in the Inclusive Education Environment

Main support resources provided for students with disabilities in schools

Resource	Share
Specialist Support	25%
Assistive Technologies	20%
Specialized Pedagogical Services	18%
Psychological Support	15%
Medical Rehabilitation	12%
Other Support	10%

Conclusion. This article developed an IMRAD-consistent, management-oriented framework for building inclusive education environments for students with disabilities

in general secondary schools. The central contribution is the operationalization of inclusivity as a controllable school management cycle that links needs assessment, planning, implementation, monitoring, and improvement into a coherent routine supported by defined roles and measurable indicators. The results specify a coordination architecture for interprofessional collaboration, a program-based resource allocation package for accessibility and assistive provision, and a monitoring system that balances access, participation, learning progress, and satisfaction. The framework emphasizes tiered supports that strengthen general teaching capacity while ensuring specialist involvement for complex needs, thereby improving scalability under constrained resources. Overall, the proposed mechanisms offer a practical basis for school leaders to institutionalize inclusive practices, reduce fragmentation, and sustain continuity of support across academic years through transparent accountability and data-informed improvement.

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