Research on the Internal Quality Assurance System of Singapore Education Based on the School Excellence Model

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Abstract

This article aimed to study: (1) the connotation and content of the School Excellence Model (SEM); (2) the relationship between the SEM and Singapore's internal quality assurance system in education; (3) the characteristics and effectiveness of that system; and (4) the motivations behind its construction. The research design was qualitative, using the School Excellence Model and Total Quality Management as the conceptual framework. The research area was Singapore. The key informants were eight participants—teachers, education professionals, and parents—selected through purposive sampling. The research instruments were three types: (1) a document analysis form; (2) a case study analysis form; and (3) a semi-structured interview guide. Data were analyzed by content analysis and descriptive narration. The research results were found as follows:

1. The SEM comprises nine quality standards across two dimensions, namely "Enablers" and "Results."

2. The relationship between the SEM and the internal quality assurance system is expressed through five components: strategic, input, process, outcome, and mechanism assurance.

3. The system is characterized by independent school decision-making, comprehensive cause-and-effect assessment, integration of excellence and forward-thinking, and close school–society interaction; and it supports students' holistic development, operational efficiency, continuous improvement, and international competitiveness.

The new knowledge derived from this research is an integrated, closed-loop quality governance model in which the SEM functions as the operational core, linking strategic vision, organizational inputs,

educational processes, and measurable outcomes through a self–regulating mechanism sustained by a culture of reflective practice, relational leadership, and community partnership—offering a coherent and transferable reference for countries seeking to build or strengthen their own internal quality assurance systems.

Keywords: School Excellence Model; Internal Quality Assurance System; Singapore Education; Quality Governance Model; Total Quality Management

Introduction

Education is widely regarded as the foundation of national development, and the question of how to assure and sustain its quality has become one of the most pressing concerns for governments worldwide. As globalization and the knowledge economy intensify competition among nations, the capacity of an education system to deliver consistently high quality has come to be seen as a decisive determinant of long–term competitiveness. In response, many countries have shifted away from centralized, top–down control toward school–based management, granting individual schools greater autonomy while simultaneously demanding stronger internal mechanisms for monitoring and improving their own quality (Mok, 2003). This shift has placed internal quality assurance at the center of contemporary educational reform.

Singapore offers a particularly compelling case for studying how such internal mechanisms operate. Despite its small size and absence of natural resources, the nation has built one of the highest–performing education systems in the world, ranking first overall in the 2015 PISA assessment (OECD, 2017) and repeatedly leading international mathematics and science studies (Mullis et al., 2000). A central instrument behind this sustained excellence is the School Excellence Model (SEM), introduced by the Ministry of Education in 1999 as a comprehensive self–assessment framework guiding schools to evaluate and continuously improve their performance. Understanding how the SEM works is therefore not merely a matter of national interest but of broad relevance to any system seeking to raise educational quality.

Yet despite the international recognition of Singapore's achievements, the specific way in which the SEM constructs and sustains internal quality assurance at the school level remains poorly understood.

Most existing studies concentrate on external accountability mechanisms or aggregate student outcomes, and few explain how the SEM connects strategic vision, organizational inputs, educational processes, and measurable results into a coherent and self–regulating system. The motivations that drove Singapore to build this system are likewise underexplored. It is precisely this gap—between the visible success of Singapore's schools and the limited understanding of the internal mechanism that produces it—that makes the present study necessary.

Accordingly, this article presents an examination of the connotation of the SEM, its relationship to Singapore's internal quality assurance system, the system's distinguishing characteristics and effectiveness, and the contextual motivations underlying its development. By clarifying how the SEM operates as an integrated quality governance model, the study seeks to provide both theoretical insight and practical guidance for other countries striving to strengthen their own internal quality assurance frameworks.

Research Objectives

1. To explore the connotation and content of the School Excellence Model.
2. To analyze the relationship between the SEM and Singapore's internal quality assurance system in education.
3. To analyze the characteristics and effectiveness of Singapore's internal quality assurance system based on the SEM.
4. To examine the motivations behind Singapore's construction of the internal quality assurance system.

Literature Review

This study draws on two theoretical foundations. First, Total Quality Management (TQM) theory, originally developed by Deming (2018) and later applied to education by scholars such as Sallis (2014), posits that quality must be the primary concern across all dimensions of an organization. In an educational context, TQM emphasizes systematic improvement, full stakeholder participation, and data–driven decision–making. Applied to this research, TQM helps explain why the SEM evaluates multiple

domains—including leadership, staff performance, and student outcomes—rather than focusing narrowly on examination results.

Second, Closed-Loop Control System theory provides a dynamic process framework consisting of three core steps: setting standards, process control, and feedback adjustment (Tychonievich, 2012). In education, this model underpins continuous improvement cycles in which standards are set, processes are monitored, and feedback loops drive refinement. This lens is particularly valuable for interpreting the nine quality standards of the SEM and the iterative logic of Singapore's internal quality assurance system.

The SEM was introduced in Singapore in 1999, aligned with the national vision of "Thinking Schools, Learning Nation" (TSLN) articulated by the government in 1997. It was adapted from internationally recognized quality frameworks, including the European Foundation for Quality Management (EFQM), the Singapore Quality Award (SQA) model, and the Malcolm Baldrige National Quality Award (MBNQA) model of the United States, with modifications tailored to the educational context (Ng, 2003). It encompasses nine quality standards organized into two dimensions: the "Enablers" dimension covers Leadership, Strategic Planning, Staff Management, Resources, and Student-Focused Processes, while the "Results" dimension includes Staff Results, Student Results in Holistic Development, Partnership and Society Results, and Key Performance Results (Ng, 2003). This structure reflects a systems-level understanding of school quality, linking organizational inputs to measurable outcomes.

Internal quality assurance in education refers to a systemic and sustained management approach through which schools implement policies, processes, and practices to monitor, evaluate, and continuously improve educational quality (Zhu, 2019), and it is distinguished from external quality assurance conducted by government agencies or independent inspectorates (Wei & Zhong, 2009). Comparable frameworks have emerged globally: in the United Kingdom, schools developed internal self-evaluation frameworks to complement Ofsted inspection (Zhao, 2013); in the United States, the Every Student Succeeds Act (2015) emphasized a balance between federal standards and local quality control; and in China, the Ministry of Education's 1997 guidance on school self-evaluation marked the beginning of systematic internal quality assurance development (Xia, 2015).

Taken together, this body of literature establishes the importance of internal quality assurance but also reveals a clear gap. Although the SEM is frequently cited as a structural framework (Ng, 2003;

Tan & Ng, 2007) and its effects on student outcomes have been documented (Huang et al., 2019), existing studies rarely explain how the model actually operates as an internal quality assurance system—how its standards translate into strategic, input, process, outcome, and mechanism assurance within schools. The central problem this study seeks to address, therefore, is the following: by what mechanism does the SEM function as the operating core of Singapore's internal quality assurance system, and what makes this mechanism effective? Answering this question is the principal contribution of the present research, converting a widely admired but loosely understood model into an explicit, transferable account of quality governance.

In summary, the literature reviewed above supplies the conceptual lenses (TQM and Closed–Loop Control) through which the SEM and Singapore's internal quality assurance system are analyzed in this study.

Research Framework

This is a qualitative study. The researcher established the research framework based on Total Quality Management theory and the nine standards of the School Excellence Model, examining how the SEM—through its Enablers and Results dimensions—shapes five components of internal quality assurance (strategic, input, process, outcome, and mechanism assurance), as illustrated in Figure 1.

School Excellence Model (9 standards: Enablers & Results)	**Qualitative inquiry** (documents, cases, interviews; TQM lens)	**Internal Quality** Assurance System (5 assurance components)

Figure 1 The research framework

Research Methodology

This study is qualitative research. The research area was Singapore. The key informants were eight participants selected through purposive sampling: four teachers (TA, TB, TC, TD), two education consultants (EA, EB), and two parents (PA, PB). The research instruments were three types: (1) a document analysis form, used to review academic literature, MOE policy documents, school reports, and international assessment data; (2) a case study analysis form, used to examine three Singapore schools (two secondary and one primary) that have implemented the SEM; and (3) a semi–structured

interview guide, developed from the nine quality standards of the SEM and validated by a panel of six academic experts. Data were collected between November 2023 and May 2024, both face-to-face and by telephone, and interviews were recorded and transcribed verbatim.

Qualitative data were analyzed using inductive content analysis and then written up as descriptive narration (Vears & Gillam, 2022). Trustworthiness was established through data triangulation across sources, methods, and participants; member checking, in which key findings were shared with selected informants for confirmation; and thick description to support transferability. Research ethics protocols—informed consent, confidentiality, and voluntary participation—were observed throughout.

Research Results

Objective 1 The connotation and content of the School Excellence Model.

The nine quality standards of the SEM reflect a holistic conception of school excellence. Within the Enablers dimension, Leadership emerged as foundational, with principals exercising relational leadership, maintaining communication with teachers, and focusing on student welfare; as one teacher noted, "our principal always says that without teachers, leadership cannot accomplish much" (TD). Strategic Planning operated through annual development cycles rotating across student, teacher, and teaching priorities (TA); Staff Management involved three structured annual conversations and a 100-hour professional-learning entitlement; Resources were conceived broadly to include physical, technological, parental, and community assets; and Student-Focused Processes encompassed co-curricular activities (CCAs), the Student Navigation Programme, and cross-cultural exchanges. Within the Results dimension, Staff Results, Student Results in Holistic Development, Partnership and Society Results, and Key Performance Results were evidenced respectively through professional recognition, students' academic and personal growth, external collaborations, and performance data tracked via integrated ICT systems.

Objective 2 The relationship between the SEM and the internal quality assurance system.

Analysis revealed that the SEM structures the internal quality assurance system across five interlocking components. Quality Strategic Assurance aligns school plans with national frameworks such as the 21st Century Competencies framework and the TSLN vision. Quality Input Assurance mobilizes human and material resources, exemplified by the 100-hour professional development entitlement and

the integration of parents and community members. Quality Process Assurance manages teaching, learning, and operations through student–centered processes that are continuously monitored and refined. Quality Outcome Assurance tracks academic and non–academic achievement, staff performance, and community engagement. Quality Mechanism Assurance denotes self–regulation: the SEM's self–assessment framework, combined with external validation by the MOE's Schools Division, creates a closed–loop mechanism that identifies improvement priorities and adjusts strategies accordingly.

Objective 3 The characteristics and effectiveness of the system.

Four characteristics define the system: independent school decision–making, by which schools design their own development plans and curricula while remaining accountable to national standards (Mok, 2003); comprehensive cause–and–effect assessment, evaluating both enablers and results so that neither is optimized at the expense of the other; integration of excellence and forward–thinking, by which schools anticipate future needs such as digital transformation; and close school–society interaction, in which parents and community partners are explicitly recognized as school resources. In terms of effectiveness, the system provides a solid foundation for students' holistic development, enhances operational efficiency through ICT and smart resource management, promotes continuous improvement and distinctive school identities, and strengthens international competitiveness, as Singapore's sustained PISA and TIMSS performance is partly attributed to the SEM's emphasis on reflective, evidence–based management (Huang et al., 2019).

Objective 4 The motivations behind the construction of the system.

Three converging motivations explain the construction of the system. The first is the combined influence of historical evolution and national policy: post–independence emphasis on education as the engine of economic development (People's Action Party, 1959) and the 1997 TSLN vision, which shifted from an examination–driven model toward a holistic conception of quality. The second is the need to promote system–wide reform and school self–improvement, since top–down directives alone could not sustain quality, prompting authorities to grant autonomy within structured frameworks. The third is the adaptation and absorption of international experience, as Singapore creatively borrowed from EFQM, SQA, and MBNQA while preserving national educational values.

Discussion

The findings can be interpreted through the study's two theoretical lenses. The breadth of the SEM's nine standards operationalizes TQM principles—total participation, systematic improvement, and data–driven decision–making (Deming, 2018; Sallis, 2014)—within a concrete national setting, showing how abstract quality philosophy becomes embedded institutional practice. The relationship between the five assurance components, in turn, demonstrates the explanatory power of Closed–Loop Control System theory (Tychonievich, 2012): mechanism assurance returns outcome information to strategic planning, mirroring the standard–control–feedback cycle and explaining why improvement is continuous rather than episodic. Finally, the prominence of cultural conditions—reflective practice, relational leadership, and community partnership—suggests that the transferability of Singapore's experience rests less on copying its standards than on cultivating the governance culture that animates them. Structures travel easily; the culture that sustains them must be deliberately built.

New Knowledge from the Research

Synthesizing the findings, this research proposes an integrated, closed–loop quality governance model—the SEM–Based Internal Quality Assurance Model—in which the nine SEM standards, organized into the Enablers and Results dimensions, are translated into five sequential and mutually reinforcing assurance components. Strategic assurance sets the direction by aligning school plans with national vision; input assurance mobilizes human and material resources; process assurance manages teaching, learning, and operations; outcome assurance measures academic and non–academic results; and mechanism assurance feeds those results back through self–assessment and external validation, thereby restarting the cycle. The model is presented in Figure 2.

SEM Standards (9 standards / 2 dimensions: Enablers & Results)	**Strategic** Assurance	**Input** Assurance	**Process** Assurance	**Outcome** Assurance	**Mechanism** Assurance (self–regulating feedback)

Figure 2 The SEM–Based Closed–Loop Internal Quality Assurance Model.

Interpreted through this model, three insights emerge. First, the SEM is not merely a self-assessment checklist but a systemic quality governance tool linking strategic vision, inputs, processes, and outcomes through a self-regulating mechanism. Second, the closed-loop structure—where mechanism assurance returns outcome information to strategic planning—explains the system's capacity for continuous rather than episodic improvement. Third, the model's effectiveness depends not only on its formal structure but on enabling cultural conditions. These findings extend existing literature on TQM in education (Sallis, 2014) and school excellence (Ng, 2003) by grounding an abstract framework in an explicit, empirically derived model that other systems can adapt.

Conclusion

This study explored the School Excellence Model as the cornerstone of Singapore's internal quality assurance system. The SEM's nine quality standards provide a comprehensive, two-dimensional framework integrating organizational enablers with measurable results; the relationship between the SEM and the assurance system operates across five components—strategic, input, process, outcome, and mechanism assurance—forming a coherent quality governance architecture; and the system's four defining characteristics collectively explain its effectiveness in supporting student holistic development, operational efficiency, continuous improvement, and international competitiveness.

The motivations underpinning the system—historical policy evolution, the imperative for reform and self-improvement, and creative adaptation of international frameworks—highlight the importance of context-sensitive design. Above all, the study concludes that the SEM is best understood not as a static evaluation instrument but as a self-regulating, closed-loop quality governance model, and that a robust internal quality assurance system is simultaneously a technical achievement and a cultural accomplishment.

Recommendations

1. Recommendations for Application

1) Adopt the closed-loop quality governance model as a design template, building an explicit cycle that links strategic planning, input mobilization, process management, outcome measurement, and feedback-driven mechanism review, so that each evaluation directly informs the next planning cycle.

2) Invest deliberately in the cultural conditions the model requires, prioritizing professional development that builds reflective and data-informed capacity rather than compliance-oriented reporting alone.

3) Develop a student-centered learning support system in which mentoring, co-curricular activities, and individualized guidance are formally embedded as process-assurance instruments.

4) Institutionalize school–society partnerships as a structural resource, creating formal channels for families, community organizations, and industry partners to contribute to input and process assurance.

2. Recommendations for Future Research

1) Comparative validation: future studies should test the proposed closed-loop model in different national contexts to assess its transferability and identify components requiring local adaptation.

2) Longitudinal investigation: tracking the system over time would clarify how a quality culture is formed and sustained and how the feedback loop matures across successive cycles.

3) Quantitative confirmation: subsequent research could operationalize the five assurance components as measurable constructs and use survey or structural-equation approaches to test the proposed relationships.

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