

Strategic thinking skills of public elementary school teachers in Bambang II District: Its relationship to total quality management implementation

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Abstract

This study examined the implementation of Total Quality Management (TQM) in public elementary schools in Bambang II District during the academic year 2025–2026 and determined how teachers' strategic thinking skills influenced TQM practices. A total of 108 permanent public elementary school teachers were selected through stratified and simple random sampling to ensure balanced representation. Data were collected using a validated survey questionnaire and analyzed using mean, Spearman's Rank Correlation, and hypothesis testing at the 0.05 significance level. Findings revealed that teachers possessed good strategic thinking skills with an overall mean of 3.33. The highest-rated dimensions were equity and inclusivity, sustainability and social responsibility, and professional development, indicating consistent engagement in fair practices, social responsibility, and continuous learning. Conversely, awareness of global and local trends and stakeholder engagement obtained relatively lower ratings, signifying areas requiring strengthened exposure to emerging educational developments and collaborative initiatives. TQM implementation likewise received a good descriptive rating with a grand mean of 3.29. Continuous improvement and leadership emerged as the most evident practices, demonstrating the schools' commitment to quality enhancement and active instructional leadership. However, employee involvement and stakeholder satisfaction were the least observed, indicating the need to reinforce participatory management and broaden community engagement in decision-making and quality assurance processes. Correlation results showed a very weak positive but non-significant relationship ($r = 0.102$; $p = 0.289$) between strategic thinking skills and TQM implementation, suggesting that teachers' strategic competencies did not directly influence the extent of TQM execution in schools. Despite this, the study recognized skill gaps in trend awareness, technological integration, and stakeholder participation as crucial leverage points for systemic improvement. An educational management intervention was designed to strengthen strategic competencies and enhance TQM

practices, emphasizing capacity building, participatory leadership, and stakeholder collaboration to sustain a culture of quality in public elementary education.

Keywords: strategic thinking skills, total quality management

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1. Introduction

Education is universally acknowledged as a fundamental element of human advancement and societal change. It not only provides individuals with the knowledge and skills necessary for economic engagement but also promotes social cohesion, innovation, and national advancement. In the 21st century, characterized by globalization, technological disruption, and societal transformation, there is an urgent necessity for educational systems to provide quality education that is equitable and sustainable. This necessity is highlighted by the United Nations' Sustainable Development Goal (SDG) 4, which stresses inclusive and equitable quality education and the advancement of lifelong learning opportunities for all. The quest for quality education has thus emerged as a worldwide necessity, necessitating comprehensive frameworks and approaches to enhance educational standards across various contexts.

Total Quality Management (TQM) is one of the most extensively utilized frameworks that addresses this necessity. TQM, initially developed in the business sector, has transformed into a management philosophy prioritizing continuous improvement, customer satisfaction, and organizational excellence. Total Quality Management (TQM) in education offers a methodical framework for enhancing teaching, learning, and administration by integrating quality principles into all processes. Subrahmanian and Nandhini (2018) contend that the effective implementation of TQM concepts in educational institutions can markedly improve planning, encourage stakeholder involvement, and facilitate ongoing professional development for educators. When embraced, these principles foster a culture of accountability and enhancement that corresponds with the evolving requirements of learners and communities.

Nonetheless, despite the advantageous contributions of Total Quality Management to educational quality, its implementation is inconsistent and frequently restricted in scope. Developed nations possess sophisticated procedures for institutionalizing quality management systems in educational institutions, whereas developing regions like Southeast Asia encounter difficulties in implementing TQM concepts effectively. Resource limitations, conflicting goals, and a lack of robust leadership frequently impede the depth and longevity of TQM programs. In the Philippines, despite changes such as the Enhanced Basic Education Act of 2013 (K-12 Law) and associated quality assurance initiatives aimed at elevating standards, deficiencies persist in guaranteeing that schools uniformly implement effective quality management systems. This issue underscores the necessity of examining not only the implementation of TQM but also the factors that affect its efficacy in particular local situations.

A significant aspect that has arisen in contemporary research is the influence of strategic thinking skills on the enhancement of TQM implementation. Strategic thinking is the capacity to foresee trends, formulate long-term objectives, and synchronize organizational resources with changing priorities (Calvo-Mora et al., 2020). It involves a proactive mindset that combines internal strengths with external opportunities to inform decision-making and institutional advancement. In educational environments, strategic thinking allows school administrators and educators to contextualize Total Quality Management ideas within their own difficulties and goals. Incorporating foresight, adaptability, and creativity into school administration allows strategic thinking to transform TQM from a mere compliance checklist into a sustainable culture of continuous improvement.

The importance of strategic thinking in educational leadership is increasingly acknowledged in both global and local research. Yusof, Hassan, and Osman (2019) assert that numerous institutions in Southeast Asia do not attain sustained success in quality management due to the absence of strategic roadmaps for execution. In the Philippine context, research suggests that although schools frequently use policy frameworks prescribed by the Department of Education (DepEd), the lack of robust strategic foresight among administrators and educators

undermines the effective application of these frameworks. Consequently, enhancing the strategic thinking abilities of educators is essential for the institutionalization of Total Quality Management in educational institutions.

SDG 4 serves as a global guiding framework for this study. The objective underscores the imperative of providing inclusive and high-quality education for all, a goal that aligns closely with the principles of Total Quality Management (TQM). The Philippine government has synchronized with this global goal at the national level through changes like the K-12 Law, the Department of Education's National Research goal, and the Commission on Higher Education's National Research Agenda for Teacher Education (NRATE). These policy tools emphasize the necessity of enhancing teacher abilities, fostering effective school leadership, and institutionalizing research-driven approaches for educational advancement. Nonetheless, although these changes offer a comprehensive regulatory framework, their effective execution is largely contingent upon the leadership and managerial capabilities of educational institutions. Strategic thinking is essential, as it converts policy objectives into coherent, contextually relevant actions within educational institutions.

Nueva Vizcaya State University (NVSU), the institution where this study is conducted, has delineated priorities that underscore quality assurance, innovation, and community engagement as catalysts for institutional improvement. NVSU, as a higher education institution dedicated to cultivating future educators and leaders, prioritizes the production of research that informs local educational practices while harmonizing with national and global objectives. This study examines TQM implementation in Bambang II District, contributing to NVSU's institutional objectives while fulfilling the urgent demand for empirical data on the functioning of quality management frameworks in Philippine public elementary schools.

The local setting of Bambang II District in Nueva Vizcaya presents both opportunities and problems for the implementation of Total Quality Management (TQM). Although schools in the district are dedicated to providing outstanding education, they function under limitations including restricted resources, varied learner requirements, and changing community expectations. Anecdotal evidence indicates that while quality assurance procedures exist, their consistency and thoroughness differ among schools. Examining the implementation of TQM in this particular context and the impact of educators' strategic thinking skills on its efficacy yields significant insights into the relationship between leadership ability and educational quality results.

Moreover, the incorporation of strategic thinking into Total Quality Management corresponds with the overarching demand for transformative leadership in education. Recent studies highlight that great education in the 21st century necessitates leaders who are not merely managers of current systems but also visionaries capable of anticipating change and fostering innovation (Garcia-Gallego et al., 2021). This necessitates that educators and administrators transcend just short-term adherence to orders and foster a culture that is proactive, thoughtful, and dedicated to ongoing enhancement. By doing so, schools enhance their capacity to address both local and global concerns, ranging from the swift advancement of technology to the enduring effects of globalization on educational systems. The justification for this investigation is bolstered by evidence of the existing gaps in current practice. For example, although the Department of Education has established several quality assurance methods, including the school-based management framework and the Learning Action Cell system, these projects frequently lack coherence and sustainability without robust strategic leadership. This inconsistency highlights the necessity to investigate the particular abilities and practices that facilitate the effective integration of TQM principles in schools. This study addresses a gap in the literature by concentrating on strategic thinking, so contributing to the expanding research that connects leadership qualities with the sustainability of quality management programs.

This study acknowledges the vital function of teachers in executing quality management strategies. Educators are not simply passive recipients of policy; they are proactive actors who interpret, modify, and implement TQM ideas inside their classrooms. Their capacity for strategic thinking—whether in lesson preparation, connecting assessments with educational objectives, or anticipating student requirements—directly influences the efficacy of quality programs. Professional development programs that foster these competencies are essential for embedding TQM inside the culture of schools, rather than allowing it to exist merely as policy rhetoric.

This study's emphasis on Bambang II District offers a particular perspective for comprehending the overarching problems of TQM implementation. Although global and national frameworks offer significant guidance, the conditions of schools in rural or semi-urban areas such as Nueva Vizcaya frequently diverge from those in urban centers. Consequently, analyzing TQM via the experiences of educators and administrators in this district yields contextually pertinent insights and enhances the dialogue on educational quality management in the Philippines. The justification for this study is based on multiple interrelated arguments. Quality education is a global necessity that demands methodical frameworks like TQM for ongoing enhancement. The execution of TQM at educational institutions is frequently obstructed by a lack of strategic thinking, an essential skill for educational leaders and instructors. Third, although global, national, and institutional frameworks offer overarching guidance for quality education, their efficacy at the local level hinges on the effectiveness of their contextualization and implementation. There is an urgent necessity to produce empirical evidence on TQM implementation in Philippine public elementary schools, especially in districts such as Bambang II, where educational quality poses significant challenges and remains a priority.

The current researcher has observed that educators in Bambang II District have various problems that substantially impact the provision of excellent education and the execution of school-based reforms. Critical challenges include constrained resources, excessive class sizes, and insufficient instructional materials, which impede the effective implementation of innovative teaching methodologies. Numerous educators grapple with the equilibrium between administrative duties and instructional obligations, so diminishing the time and energy allocated for lesson planning and student assistance. Although professional development options exist, they frequently fall short of meeting the evolving requirements of 21st-century education, especially with strategic thinking, technology utilization, and quality assurance standards. Moreover, deficiencies in communication and alignment between school administration and classroom educators undermine collaborative attempts to maintain ongoing improvement. The researcher was inspired by these issues to conduct a study aimed at examining how Total Quality Management (TQM) and strategic thinking can mitigate these challenges in Bambang II schools.

This study enhances theory, practice, and policy in educational management by addressing these gaps. It underscores the significance of incorporating strategic thinking into Total Quality Management as a means for sustained enhancement and offers practical guidance for school leaders, legislators, and teacher educators. The project aims to enhance the culture of quality in education, guaranteeing that every student in Bambang II District—and similarly situated areas—has access to inclusive, equitable, and transformative learning opportunities.

2. Related Literature

The present study is grounded on two theoretical foundations. First, the implementation of Total Quality Management (TQM) in public elementary schools in Bambang II District is anchored on General Systems Theory (GST) by Ludwig von Bertalanffy (1968). This theory asserts that an organization functions as a unified system rather than as a collection of isolated parts, with each component interacting and influencing the others. In the educational context, GST highlights that schools operate as dynamic systems composed of interdependent subsystems—administrators, teachers, students, parents, and external stakeholders—whose collaborative interactions shape the overall effectiveness of school operations. Second, the study is anchored on Strategic Management Theory, rooted in the seminal works of Chandler (1962) and Porter (1985). This theory underscores the importance of aligning organizational resources with external opportunities and challenges, emphasizing long-term planning, adaptability, and visionary leadership. In education, it provides the lens through which strategic thinking skills can be understood, particularly in helping school leaders and teachers anticipate future demands, align practices with institutional goals, and ensure sustained improvement.

Applying Systems Theory to TQM in education underscores the need for a holistic and integrative approach to school management. TQM principles such as leadership, employee involvement, customer (learner) focus, stakeholder satisfaction, and continuous improvement are inherently systemic. They require alignment and

feedback across all levels of the school system. This research investigates how TQM implementation is shaped not just by institutional mandates, but also by the demographic composition and contextual realities of schools—particularly the gender, generation, and geographical location of teachers, who are central actors in the educational system. TQM itself is inherently systemic, requiring cohesion and coordination among all units of a school system to promote continuous improvement (Calvo-Mora et al., 2020). This study acknowledges that the interplay of demographic and contextual factors—particularly gender, generation, and geographical location—can influence how TQM is enacted and sustained. Systems Theory provides the lens to understand these factors not as isolated variables but as parts of a complex educational ecosystem.

Total Quality Management (TQM) is a systematic, organization-wide approach to continuous improvement, originally developed for the manufacturing sector but now widely adopted in service industries, including education. As schools increasingly strive for excellence, equity, and accountability, TQM provides a valuable framework for improving educational processes, instructional practices, and stakeholder satisfaction. The application of TQM in education emphasizes the optimization of all school processes through collaboration, feedback, and data-informed decision-making. Though TQM originated from the principles introduced by Deming (1986), it has since been adapted into five key pillars or dimensions that are particularly relevant to educational settings— leadership, continuous improvement, customer focus, employee involvement, and stakeholder involvement and satisfaction.

Leadership serves as the cornerstone of successful TQM implementation in schools. Educational leaders—principals, department heads, and administrators—are responsible for setting the tone and direction of school improvement efforts. According to Nguyen and Walker (2019), leadership in education must inspire a shared vision, foster a culture of high expectations, and build trust within the school community. In the TQM context, leaders are expected to drive systemic change, create a culture of excellence, and promote collaboration among all staff members. Effective leaders also model data-driven decision-making, support continuous professional learning, and ensure that TQM principles are integrated into school governance, curriculum, and operations. Leadership also plays a vital role in managing resistance to change, particularly when introducing new systems of quality assurance. In rural or underserved schools, where resources may be limited, the role of leadership becomes even more critical. Nguyen and Walker (2019) highlight how principal leadership in rural settings directly influences teacher motivation and instructional innovation. When leaders fail to provide direction or involve staff in strategic planning, TQM efforts are likely to falter, regardless of how well the other dimensions are addressed.

Another core dimension of TQM is continuous improvement—the ongoing effort to refine educational practices and school operations. Continuous improvement is rooted in a culture of reflective practice, data use, and incremental changes aimed at enhancing student outcomes and institutional performance. DuFour et al. (2018) emphasize that schools must develop structures such as Professional Learning Communities (PLCs) to facilitate sustained, collaborative efforts among teachers to evaluate instructional strategies and student performance data. The process of continuous improvement demands that schools treat every failure or gap not as a setback but as an opportunity to learn and improve. This iterative process strengthens accountability and encourages schools to innovate and adapt. Furthermore, continuous improvement must be institutionalized, not left to isolated initiatives. DuFour et al. (2018) advocate for school-wide engagement in cycles of inquiry, reflection, action, and reassessment—a process that ensures quality is never static but always evolving. When embedded into the school culture, continuous improvement becomes a collective responsibility rather than a top-down mandate.

Customer focus in the education sector involves identifying and responding to the needs and expectations of key stakeholders, most notably students and parents, but also including employers, higher education institutions, and the broader community. In a TQM-driven school, understanding and meeting the needs of these "customers" is paramount. Wang and Lin (2019) emphasize that customer orientation in schools requires institutions to listen actively to stakeholders, adjust teaching methods, and evaluate programs based on satisfaction and outcomes. Schools that prioritize customer focus conduct regular assessments of student satisfaction, parental engagement, and employer feedback on graduates' readiness. This approach fosters responsiveness and accountability. More

importantly, it challenges the traditional notion that schools only answer to regulatory bodies, instead positioning students and parents as co-creators of quality education. Wang and Lin's (2019) study in Taiwanese higher education underscores that when institutions adopt a customer-oriented mindset, both academic performance and stakeholder loyalty improve. In K-12 settings, this translates into stronger community ties, higher student engagement, and increased trust in the education system.

Teachers and school staff are not merely implementers of policy—they are active agents in quality improvement. The TQM principle of employee involvement emphasizes empowering teachers to participate in decision-making, engage in collaborative problem-solving, and take ownership of school outcomes. Khumalo and Mji (2021) argue that teacher participation in governance leads to more democratic and effective school management. Schools that involve employees meaningfully create environments where innovation, teamwork, and commitment thrive. Employee involvement also extends to ongoing professional development. In a TQM system, training is not a one-time event but a continuous process aligned with the school's improvement goals. Staff are encouraged to reflect on their practices, analyze student data, and collaborate across disciplines to design better interventions. This shared responsibility promotes a sense of collective efficacy, which research shows is strongly correlated with improved student outcomes. Khumalo and Mji (2021) emphasize that lack of involvement can demoralize staff and create disconnects between policy and practice. Therefore, genuine participation is essential for building a culture of quality.

The final pillar of TQM in education is stakeholder involvement and satisfaction. This dimension recognizes that schools function within larger ecosystems and must engage all relevant stakeholders—including students, parents, alumni, community leaders, and local government—in the pursuit of educational excellence. Gravina, Sleiman, and Siu (2020) highlight the importance of a stakeholder engagement framework that integrates diverse perspectives into institutional decision-making processes. When stakeholders feel heard and valued, they are more likely to contribute resources, advocate for schools, and support long-term goals.

In the TQM model, stakeholder satisfaction is both an outcome and a driver of quality. Schools that regularly assess stakeholder satisfaction through surveys, consultations, and feedback mechanisms gain valuable data that inform improvements in policies, programs, and services. Gravina et al. (2020) emphasize that stakeholder trust is vital to sustaining quality assurance efforts, especially in decentralized education systems where community engagement is essential. Involving stakeholders also enhances transparency and fosters shared accountability—key attributes of high-performing school systems.

Total Quality Management provides a comprehensive, systems-based approach to improving educational institutions. Grounded in Deming's philosophy and adapted to the school setting, TQM emphasizes a culture of excellence, accountability, and collaboration. The five pillars—Leadership, Continuous Improvement, Customer Focus, Employee Involvement, and Stakeholder Involvement and Satisfaction—form an interdependent framework that schools can adopt to ensure sustainable, high-quality education. Each pillar, as supported by recent literature, reinforces the principle that quality is not the responsibility of a few but a shared commitment across the entire school system. As schools continue to face complex challenges, the adoption of TQM provides a strategic path toward holistic improvement and learner success.

On the other hand, Strategic Management Theory, rooted in the seminal works of Chandler (1962) and Porter (1985), emphasizes the alignment of organizational resources with external opportunities and threats to ensure long-term sustainability and competitiveness. In contemporary scholarship, this theory has evolved to highlight agility, innovation, and continuous adaptation as key factors in organizational success (Hill et al., 2019; Wheelen et al., 2022). Within this perspective, strategic thinking skills play a pivotal role, as they enable individuals and organizations to anticipate challenges, generate innovative solutions, and make informed, future-oriented decisions.

Strategic thinking involves scanning both the internal and external environment, identifying patterns and trends, and envisioning long-term directions while maintaining flexibility to adapt to change (Liedtka, 2020). Anchored in Strategic Management Theory, these skills are not merely cognitive abilities but dynamic processes

that integrate analytical reasoning, creativity, and systems thinking. For educational institutions, particularly public elementary schools, this means administrators and teachers must move beyond routine operations and compliance with policies. They need to proactively anticipate shifts in student needs, curriculum demands, and community expectations, aligning school practices with national education goals and global standards of quality.

The link between Strategic Management Theory and strategic thinking skills also becomes evident in the implementation of Total Quality Management (TQM). TQM emphasizes systematic planning, stakeholder engagement, and continuous improvement—principles that require strategic foresight and collective commitment (Al-Dhaafri & Al-Swidi, 2019). School leaders with strong strategic thinking skills are better positioned to allocate resources effectively, design inclusive and context-sensitive policies, and sustain a culture of innovation and accountability. Similarly, teachers who apply strategic thinking can adapt their instructional strategies, collaborate in problem-solving, and contribute to institutional effectiveness. Thus, Strategic Management Theory provides the conceptual anchor for understanding how strategic thinking skills drive organizational transformation. By embedding strategic foresight, adaptability, and creativity in educational practice, schools can enhance TQM implementation, achieve sustainable quality improvement, and fulfill their mission of delivering inclusive and equitable education.

Strategic thinking skills in education are increasingly recognized as fundamental in shaping institutions and educators capable of thriving in dynamic and uncertain environments. These skills are not abstract competencies but practical orientations that allow educational leaders and teachers to align their decisions with both immediate realities and long-term aspirations. A key dimension of strategic thinking is local context awareness, which ensures that strategies and innovations remain grounded in the socio-economic, cultural, and policy landscapes of the community. By paying attention to these realities, educators avoid adopting one-size-fits-all reforms and instead develop interventions that resonate with learners' lived experiences. Rincón-Gallardo and Fullan (2019) emphasize that meaningful change in education emerges when leaders cultivate an understanding of local conditions and build movements that connect global knowledge with local action. This perspective highlights that strategic thinking begins with sensitivity to the environment in which education unfolds.

Aligned with this is the dimension of community and stakeholder engagement, which reinforces that strategic decisions in education cannot be confined to classrooms or boardrooms but must involve parents, businesses, and civic organizations. Engagement ensures inclusivity and widens the base of support for educational reforms, ultimately leading to sustainability. Kutsyuruba and Godden (2019) argue that schools that actively involve their communities foster shared ownership of change, enabling education to function as a collaborative enterprise rather than a top-down initiative. Such engagement sharpens strategic thinking by requiring educators to negotiate, collaborate, and integrate diverse perspectives into coherent action.

Technology integration and innovation further extend the scope of strategic thinking. The digital transformation of education, accelerated by crises such as the COVID-19 pandemic, has revealed that strategic competence requires balancing global technological trends with local infrastructural realities. Trust and Whalen (2020) note that teachers unprepared for emergency remote teaching faced significant challenges, underlining the necessity of training and innovation in technology use. Strategic thinking in this area involves evaluating not only what technologies exist but also how they can be adapted to enhance pedagogy, institutional resilience, and equitable access. This dimension reflects an anticipatory mindset, ensuring that educators remain adaptable in times of rapid technological disruption.

Resilience and adaptability represent another indispensable aspect of strategic thinking. Educational systems face continuous disruptions, from pandemics to natural disasters to policy shifts, and their ability to withstand and adapt to these shocks reflects the depth of their strategic orientation. Azorín (2020) argues that resilience is not merely about surviving crises but about leveraging them to reimagine and reconstruct better systems of education. This adaptive quality underscores that strategic thinkers are not rigid planners but dynamic problem solvers who sustain learning continuity under uncertainty while envisioning opportunities for transformation.

Equally important is long-term vision and planning, which elevates strategic thinking beyond short-term responses to encompass foresight and sustainability. Educational institutions must anticipate demographic, economic, and social shifts to ensure relevance in the future. Aksu and Korkmaz (2019) illustrate that strategic planning in higher education equips institutions to align their missions with long-term developmental goals, positioning them to remain competitive while serving societal needs. This dimension underscores that strategic thinkers balance immediate demands with enduring aspirations, ensuring that their institutions do not drift aimlessly but move intentionally toward a coherent future.

Strategic thinking is also sharpened through professional development and capacity building, which ensure that educators possess the knowledge and skills to enact vision and plans effectively. As Darling-Hammond et al. (2019) explain, professional development that is sustained, collaborative, and embedded in practice enables teachers to continuously refine their instructional approaches while adapting to evolving challenges. In this sense, strategic thinking is not a static competency but one that is continuously cultivated through lifelong learning. Institutions that prioritize capacity building foster a culture where strategic decisions are informed by expertise, reflective practice, and leadership preparation.

Equity and inclusion extend the moral dimension of strategic thinking, reminding educators that their strategies must not only be effective but also just. Educational reforms that fail to address inequities risk reinforcing existing social divides. Walton-Fisette and Sutherland (2020) stress that ensuring fair access and meaningful participation for marginalized learners is essential in advancing social justice within educational environments. A strategic thinker integrates equity into every decision, from curriculum design to policy formulation, ensuring that no learner is left behind. This orientation requires sensitivity, ethical responsibility, and a willingness to challenge systemic barriers.

Complementing equity is data-driven decision making, which enhances the precision and accountability of educational strategies. Strategic thinking requires not only vision but also evidence-based judgment. Schildkamp and Poortman (2018) argue that the use of data in education helps identify gaps, monitor progress, and refine interventions, thereby reducing reliance on intuition alone. Data-driven approaches enable educators to translate aspirations into measurable outcomes, fostering a culture of continuous improvement. By integrating analytics into their practice, educational leaders demonstrate the disciplined and evaluative mindset central to strategic thinking.

Global and local trend awareness further enriches strategic thinking by situating education within both local realities and international developments. Rizvi and Lingard (2022) highlight that education is increasingly shaped by global policy movements, technological shifts, and socio-economic transformations. For educators, strategic competence involves discerning which global trends to adapt while preserving local relevance. This dual awareness allows institutions to remain competitive in a globalized landscape while avoiding blind adoption of foreign models that may not align with local contexts. Strategic thinkers, therefore, act as translators between global knowledge and local needs, ensuring relevance and innovation.

Finally, sustainability and environmental awareness have emerged as critical dimensions of strategic thinking. Education is not only about preparing learners for the workforce but also about equipping them to confront the pressing environmental challenges of the twenty-first century. Leicht et al. (2018) argue that integrating sustainable development into curricula fosters ecological responsibility and prepares learners to act as stewards of the planet. Strategic thinkers incorporate sustainability into institutional operations and pedagogy, aligning education with the broader global agenda for sustainable futures. This dimension emphasizes the ethical and ecological consciousness that must guide strategic decision-making in contemporary education.

Taken together, these dimensions illustrate that strategic thinking in education is a multifaceted competence that blends analytical, anticipatory, adaptive, collaborative, and ethical skills. It calls for awareness of local contexts, engagement with communities, integration of technology, resilience under disruption, and vision for the long term. It is strengthened through continuous professional development, driven by commitments to equity and inclusion, sharpened by data and evidence, enriched by global-local awareness, and anchored in sustainability.

Each of these dimensions interacts with and reinforces the others, demonstrating that strategic thinking is not a singular act but a holistic orientation toward leadership, planning, and transformation. In the face of rapid change, uncertainty, and complexity, educational institutions that cultivate these dimensions of strategic thinking are better positioned to thrive, innovate, and fulfill their mission of empowering learners for both present and future challenges.

3. Methodology

Research Design. This study employed a quantitative, descriptive–correlational research design to examine the relationship between public elementary school teachers’ strategic thinking skills and the implementation of Total Quality Management (TQM) in Bambang II District during the first semester of Academic Year 2025–2026. A deductive approach guided the inquiry, drawing from Deming’s quality management principles and extant literature on strategic thinking to test hypothesized associations between constructs. The design enabled objective measurement of variables and analysis of naturally occurring relationships without experimental manipulation, consistent with established quantitative research standards (Creswell, 2018; Yin, 2015).

Research Environment. The study was conducted in the Department of Education (DepEd) – Bambang II District, Municipality of Bambang, Nueva Vizcaya. The district comprises diverse public elementary schools varying in size, learner population, and organizational capacity, providing a robust context for examining TQM implementation. At the time of the study, the district had 149 teachers serving 3,224 learners across the following schools: Abian ES, Abinganan ES, Almaguer North and South ES, Bambang East ES, Bambang North Central School, Dullao ES, Labni ES, Mabuslo ES, Macate ES, San Antonio North and South ES, San Fernando Integrated School, and Sto. Niño Primary School. All schools operate under DepEd policies on school-based management, decentralization, and quality assurance, where leadership, participatory governance, and continuous improvement are central to TQM practice.

Respondents and Sampling Procedure. The respondents consisted of 108 public elementary school teachers, representing 72.48% of the district’s total teacher population ($N = 149$). The sample size was computed using Slovin’s formula at a 5% margin of error to ensure statistical adequacy and representativeness. Stratified sampling by school was employed to ensure proportional representation across institutions, followed by simple random sampling within each stratum. This approach enhanced the generalizability of findings across varied school contexts within the district.

Research Instruments. Two standardized instruments were utilized:

- **Total Quality Management (TQM) in Education Questionnaire.** A 30-item instrument developed and validated by Quimson et al. (2024) measured TQM implementation across five dimensions: Leadership, Continuous Improvement, Customer Focus, Employee Involvement, and Stakeholder Involvement and Satisfaction. Expert validation was conducted, and reliability testing yielded a Cronbach’s alpha of 0.892, indicating high internal consistency. Responses were recorded on a four-point Likert scale (4 = Strongly Agree to 1 = Strongly Disagree). Composite means were interpreted using predefined descriptive ranges (Very Good to Poor).
- **Futures/Strategic Thinking Skills Questionnaire.** A 50-item validated instrument by Tallungan et al. (2025) assessed teachers’ strategic thinking across ten dimensions, including systems thinking, community and stakeholder engagement, technology integration, resilience and adaptability, long-term vision, professional development, equity and inclusivity, data-driven decision-making, awareness of global and local trends, and sustainability and social responsibility. The same four-point Likert scale and descriptive interpretation were applied.

Data Gathering Procedure. Formal approval was obtained from the Public School District Supervisor of Bambang II District, with institutional endorsement from the College of Teacher Education. Coordination with

school heads facilitated the distribution and administration of instruments. Prior to data collection, respondents participated in an orientation detailing the study's objectives, procedures, ethical safeguards, and voluntary nature of participation. Informed consent was secured from all participants. Anonymity and confidentiality were strictly maintained, with data stored securely and reported only in aggregate form.

Ethical Considerations. The study adhered to institutional and national ethical standards, emphasizing informed consent, confidentiality, beneficence, and non-maleficence. Participants retained the right to withdraw at any point without penalty, and measures were implemented to prevent psychological or professional discomfort.

Statistical Treatment of Data. Descriptive statistics (means and standard deviations) summarized levels of strategic thinking skills and TQM implementation. Spearman's Rank Correlation Coefficient determined the strength and direction of relationships between variables, interpreted using established correlation thresholds (LaMorte, 2021). All hypotheses were tested at the 0.05 level of significance.

4. Results and Discussion

This study primarily aimed to examine the implementation of Total Quality Management (TQM) in public elementary schools within the Bambang II District during the academic year 2025–2026. Specifically, it sought to assess the extent of TQM application across selected schools and determine how teachers' strategic thinking skills influenced its implementation. The respondents of the study were permanent public elementary school teachers, identified through Slovin's formula and selected using a combination of stratified and simple random sampling techniques to ensure equitable representation across different school locations and teacher demographics. Data were gathered through a validated and reliable survey questionnaire, which served as the main instrument for quantitative data collection. The data obtained were analyzed using appropriate statistical tools, such as measures of central tendency (mean) and Pearson's correlation coefficient. The hypothesis was tested at a 0.05 level of significance to determine whether statistically significant relationships existed among the study variables.

The investigation was anchored on Deming's (1986) Total Quality Management framework, which focused on the dimensions of leadership, continuous improvement, customer (learner) focus, staff involvement, and stakeholder engagement and satisfaction. Meanwhile, the construct of strategic thinking skills was grounded in the framework of Tallungan et al. (2025), which encompassed ten dimensions: local context awareness, community and stakeholder engagement, technology integration, resilience and adaptability, long-term vision and strategic thinking, professional development and capacity building, equity and inclusivity, data-driven decision making, awareness of global and local trends, and sustainability and social responsibility.

The study aimed to assess the perception of teacher-respondents regarding their strategic thinking skills across ten key dimensions, namely: local context awareness, community and stakeholder engagement, technology integration, resilience and adaptability, long-term vision and strategic thinking, professional development and capacity building, equity and inclusivity, data-driven decision making, awareness of global and local trends, and sustainability and social responsibility. It also sought to determine the level of Total Quality Management (TQM) implementation among public elementary schools as perceived by the respondents, focusing on the dimensions of leadership, continuous improvement, customer focus, employee involvement, and stakeholder involvement and satisfaction. Furthermore, the study endeavored to examine the significant relationship between the respondents' strategic thinking skills and the implementation of TQM in public elementary schools. Finally, based on the significant findings derived from the analysis, the study aimed to design an educational management intervention that would strengthen both the strategic thinking capabilities of teachers and the effective implementation of TQM principles within the school system.

Based on the objectives presented above, the following are the significant findings of this study.

The respondents' overall perception of their strategic thinking skills obtained a grand mean of 3.33, described as *good*, indicating that they generally viewed themselves as competent in applying strategic thinking in their

professional roles. Among the dimensions, equity and inclusivity ranked highest (3.41), followed by sustainability and social responsibility (3.38) and professional development and capacity building (3.35), reflecting their strong engagement in fair practices, social responsibility, and continuous learning. Meanwhile, local context awareness, long-term vision and strategic thinking, and data-driven decision making (all 3.34) showed moderate proficiency in contextual understanding, strategic foresight, and evidence-based planning. Slightly lower ratings were noted in technology integration (3.32), community and stakeholder engagement, and resilience and adaptability (both 3.31), suggesting moderate capability in using technology, collaboration, and adaptability. The lowest mean was recorded for awareness of local and global trends (3.19), indicating a need for improvement in integrating emerging educational developments. Overall, the results suggest that while teachers possessed good strategic thinking skills, areas such as trend awareness and stakeholder engagement warrant further enhancement through focused professional development.

The respondents' perception of Total Quality Management (TQM) implementation yielded a grand mean of 3.29, described as *good*, indicating a generally positive view of TQM practices within their schools. Among the dimensions, continuous improvement ranked highest (3.46), showing strong recognition of efforts to enhance teaching and organizational processes, followed by leadership (3.41), which reflected active guidance and commitment to quality principles. Customer focus (3.35) indicated responsiveness to the needs of students and stakeholders, while stakeholder involvement and satisfaction (3.14) suggested moderate collaboration requiring improvement in feedback mechanisms. The lowest rating was for employee involvement (3.11), signifying a need to further empower teachers and staff in decision-making and quality initiatives. Overall, while TQM practices were viewed positively, greater emphasis on participation and stakeholder engagement could strengthen institutional quality management.

The results revealed a very weak positive correlation ($r = 0.102$) between the respondents perceived strategic thinking skills and the level of Total Quality Management (TQM) implementation, with a p-value of 0.289, indicating that the relationship was not statistically significant at the 0.05 level. This finding suggests that there was no meaningful or consistent association between the two variables. Although the positive correlation implies a slight trend where higher strategic thinking skills could be linked to marginally greater engagement in TQM practices, the relationship was too weak to be considered reliable or generalizable. Therefore, the respondents' strategic thinking skills did not appear to have a substantial influence on or predictive value for the implementation of TQM within their respective institutions.

The study developed a targeted training intervention based on key findings that highlighted areas for improvement in strategic thinking skills and Total Quality Management (TQM) implementation. Low-rated dimensions in strategic thinking included global trend awareness, stakeholder engagement, resilience, and technology orientation. For TQM, employee and stakeholder involvement scored lowest, indicating a need for stronger collaboration and participatory practices. The data-driven training aims to enhance these competencies and foster adaptive, collaborative leadership among educational managers.

5. Conclusions

Based on the significant findings presented above, the following conclusions were drawn.

- The teachers possessed good strategic thinking skills, demonstrating strength in equity, inclusivity, and social responsibility, but required improvement in trend awareness, stakeholder engagement, adaptability, and technology use to fully optimize their strategic competencies.
- The Total Quality Management (TQM) was generally well implemented in schools, with commendable practices in leadership and continuous improvement, yet the limited employee and stakeholder involvement indicated the need for stronger participatory and collaborative quality initiatives.
- There was no significant relationship between teachers' strategic thinking skills and the implementation

of TQM, implying that the development of strategic thinking alone may not directly influence institutional quality management practices.

- The proposed educational management intervention, grounded on data-driven findings, effectively targeted weak areas in strategic thinking and TQM, aiming to enhance teachers' competencies and strengthen the culture of quality and continuous improvement in schools.

Recommendations

Based on the significant findings and conclusions presented, the following recommendations were offered.

- School administrators and education leaders may design and implement regular capacity-building programs focusing on strategic foresight, adaptability, stakeholder collaboration, and technology integration to strengthen teachers' ability to think critically, plan effectively, and respond to emerging educational challenges.
- Schools may establish structured and inclusive platforms that encourage active participation of parents, community members, and external partners in decision-making processes to promote transparency, shared accountability, and sustained educational improvement.
- School heads may institutionalize participatory management practices by empowering teachers and staff to take part in planning, implementation, and evaluation of Total Quality Management (TQM) initiatives, thereby fostering ownership, motivation, and collective responsibility for institutional success.
- The developed training design may be adopted and integrated into school-based management and professional development programs to address identified competency gaps and to ensure the sustained enhancement of both strategic thinking skills and TQM practices across the district.
- Future researchers are encouraged to replicate this study in other districts, educational levels, or institutional settings to validate the findings, compare contextual differences, and expand the understanding of how strategic thinking skills influence TQM implementation in diverse educational environments.

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