

## Implementation of a Quality Management System in E-Learning Services: A Case Study of Google Classroom

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### Abstract

The digital transformation of education has led to the widespread adoption of e-learning platforms, with Google Classroom becoming one of the most widely used tools globally. However, high adoption rates do not automatically guarantee service quality, necessitating a systematic quality management approach. This study analyzes the application of Quality Management System (QMS) principles to the Google Classroom e-learning service based on ISO 9001:2015. The research employs a literature review method, mapping Google Classroom features to the seven QMS principles: customer focus, leadership, engagement of people, process approach, continual improvement, evidence-based decision-making, and relationship management. The findings indicate strong support for user-centered design, structured instructional workflows, and continual improvement. However, gaps remain in formal quality documentation, internal audit mechanisms, and structured management review processes. Full ISO 9001:2015 compliance requires educational institutions to complement Google Classroom's operational capabilities with formal quality documentation, audit mechanisms, and structured vendor relationship management.

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### Keywords:

Quality Management System; ISO 9001:2015; Google Classroom; E-Learning; digital education quality.

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## INTRODUCTION

The digital transformation of the education sector has fundamentally reshaped the dynamics of teaching and learning, particularly following the global COVID-19 pandemic, which necessitated the rapid adoption of online learning platforms across educational institutions at all levels. This unprecedented disruption accelerated a shift toward digital education tools that had been developing gradually over the preceding decade, compressing years of gradual technology adoption into mere months of forced transition. The pandemic effectively demonstrated both the potential and the challenges of large-scale e-learning implementation (Ennam, 2024; Sakhopov et al., 2025; Stecuła & Wolniak, 2022).

According to Sroyprapai et al. (2025) and Ayanwale et al. (2024), Google Classroom emerged as one of the most widely used e-learning platforms during this period, owing to its ease of use, seamless integration with the broader Google Workspace ecosystem (including Google Drive, Docs, Gmail, and Meet), and its accessibility across diverse devices and operating systems. The platform's zero-cost availability for educational institutions through Google Workspace for Education made it particularly attractive to resource-constrained schools and universities in developing countries, including Indonesia, where the platform achieved widespread adoption during the pandemic period (Suhadi<sup>1</sup> et al., n.d.; Thapliyal, 2024; Vinodan & Mahalakshmi, 2026).

However, high adoption rates do not automatically guarantee the quality of learning services delivered through a platform (Li & Wang, 2023; Sarrab et al., 2016). Ensuring consistent quality in e-learning requires more than a functional technology platform; it demands a systematic management approach that addresses the full range of factors influencing learning outcomes, including instructional design, teacher competency, student engagement, technical reliability, and continuous improvement processes. Without such a systematic approach, the quality of e-learning services tends to be highly variable, dependent on individual instructor practices, and subject to the same coordination and consistency challenges that affect many loosely managed educational processes (Al Mulhem, 2020; Hadullo et al., 2018; Indra et al., 2022).

A Quality Management System (QMS), particularly the ISO 9001:2015 standard, provides a comprehensive and internationally recognized foundation for ensuring that educational services are customer-focused, well-documented, continuously improved, and supported by evidence-based decision-making. The standard establishes seven core principles of quality management that collectively address the human, process, and systemic dimensions of organizational quality (Tsai et al., 2019). By applying these principles to e-learning contexts, educational institutions can transform their online learning services from ad hoc technological deployments into managed, accountable, and continuously improving educational systems (Berezi, 2025; Matthew et al., 2021; Tsai et al., 2019).

The application of QMS principles to e-learning platforms represents a relatively underexplored research area, particularly with respect to specific platform case studies (Ibrahim, 2015; Wu, 2025). While general frameworks for e-learning quality assurance have been proposed in the literature, mapping specific platform features and capabilities to established QMS standards provides a more actionable and practically useful analytical perspective (Farid et al., 2018; Okoye, 2021; Santally et al., 2020). This study addresses this gap by conducting a detailed mapping of Google Classroom's features and capabilities against the seven principles of ISO 9001:2015, identifying areas of strong alignment, recognizing significant gaps, and proposing complementary measures for institutions seeking full QMS compliance in their e-learning operations.

The urgency of this research is underscored by multiple converging factors. First, the permanent shift toward blended and online learning models means that e-learning platforms will continue to play central roles in educational delivery for the foreseeable future. Second, increasing competition among educational institutions and growing expectations from students and parents for high-quality digital learning experiences create pressure for demonstrable quality assurance. Third, accreditation bodies and quality assurance agencies are increasingly incorporating e-learning quality criteria into their evaluation frameworks, requiring institutions to document and demonstrate quality management in their digital offerings. Fourth, the rapid pace of technological change and platform evolution necessitates ongoing attention to how quality can be maintained and improved as platforms add new features and capabilities.

The novelty of this research lies in its specific focus on mapping a widely used commercial e-learning platform (Google Classroom) against the formal principles of an internationally recognized quality management standard (ISO 9001:2015). Unlike prior studies that have examined quality management at institutional or program levels, this research provides a granular analysis of how platform features support—or fail to support—each of the

seven QMS principles. This platform-level analysis offers actionable insights for educational administrators, instructional designers, and quality assurance professionals who must make practical decisions about technology adoption, complementing platform capabilities with institutional processes, and documenting quality practices for internal and external stakeholders.

This study evaluates the extent to which the principles of ISO 9001:2015 are reflected in Google Classroom and identifies areas requiring enhancement to achieve a more accountable, consistent, and robust online learning environment. The insights generated are intended to be practically useful for educational administrators, instructional designers, and quality assurance professionals responsible for managing and improving e-learning services in their institutions.

## **RESEARCH METHOD**

This study employed a systematic literature review method to analyze the alignment between Google Classroom's features and the seven principles of ISO 9001:2015. The literature review approach was selected as appropriate for this analytical objective because it allows for the synthesis of multiple sources of evidence — including quality management standards, e-learning research, and platform documentation — into a coherent analytical framework without requiring original empirical data collection from platform users.

Data sources included quality management textbooks and reference materials, peer-reviewed journal articles on e-learning quality assurance and QMS in educational settings, official Google Classroom product documentation and feature specifications, and prior studies on digital education quality management. Literature selection was governed by criteria of relevance to either ISO 9001:2015 principles or Google Classroom features and capabilities. Sources were included if they provided substantive evidence or analysis relevant to at least one of the seven QMS principles in an e-learning context.

The analytical method consisted of systematic feature mapping, in which each major feature and capability of Google Classroom was examined in relation to each of the seven QMS principles to determine the degree and nature of alignment. Content analysis was applied to identify both convergences (features that support QMS principle implementation) and divergences (QMS requirements that Google Classroom does not natively support). Conceptual validation was conducted by comparing the mapping results with findings from prior studies on educational quality assurance and e-learning quality management.

## **RESULTS AND DISCUSSION**

### **Mapping of Google Classroom Features to QMS Principles**

The systematic mapping of Google Classroom features to the seven ISO 9001:2015 QMS principles revealed a complex pattern of alignment and gaps. The platform demonstrates strong alignment with customer focus, process approach, continual improvement, and evidence-based decision-making principles, while showing partial alignment with leadership and engagement of people principles and notable gaps in relationship management and formal quality documentation requirements.

**Customer Focus:** Google Classroom's design philosophy strongly reflects the principle of customer focus. The platform is designed with a deliberately simple and intuitive interface that minimizes the learning curve for both teachers and students, reducing cognitive barriers to

productive engagement with learning content. High accessibility across devices and operating systems ensures that students with varying technological resources can participate in platform-based learning activities. Collaborative tools and streamlined assignment workflows reduce administrative burdens for teachers while enabling students to focus on substantive learning activities rather than procedural logistics.

**Leadership:** The platform enables teachers to fulfill their roles as instructional leaders by providing comprehensive tools for setting learning objectives, organizing and sequencing course materials, creating and distributing tasks and assessments, and evaluating and providing feedback on student performance. The teacher's central position as course organizer and progress monitor reflects QMS's emphasis on leadership at the process level. However, the platform does not provide tools for institutional-level leadership processes such as program-level quality planning or strategic management review.

**Engagement of People:** Classroom's discussion and comment features facilitate active participation and communication between students and teachers, and among students in collaborative activities. Stream-based communication, rubric-based assessment, and real-time document collaboration through Google Docs promote transparency, shared responsibility, and collective engagement with learning objectives. However, the platform does not provide tools specifically designed to support organizational engagement processes such as competency development planning or performance feedback for teaching staff.

**Process Approach:** The structured instructional workflow embedded in Google Classroom — progressing from course planning through material delivery, task assignment, assessment, and feedback — represents a well-defined process approach to instruction. This workflow provides a consistent framework for instructional delivery that reduces variability across classes and instructors. The integration with Student Information Systems (SIS) and automated grade synchronization further strengthens process consistency and reduces duplication of effort in academic record management.

**Continual Improvement:** Regular feature updates to Google Classroom, including the introduction of originality reporting, Classroom analytics, and AI-assisted instructional tools, demonstrate Google's commitment to ongoing platform development and improvement. These enhancements reflect the ISO principle of continual improvement applied at the platform development level. At the instructional level, the availability of completion data, grade trends, and engagement metrics provides teachers with the information needed to identify areas for instructional improvement and adjust their approaches accordingly.

**Evidence-Based Decision Making:** Classroom's data dashboards, grade tracking, and engagement metrics support evidence-based decision-making by providing teachers with quantitative insights into student performance and engagement patterns. Completion rates, assessment scores, and participation data enable teachers to identify learning gaps, target remediation efforts, and evaluate the effectiveness of instructional approaches. From a QMS perspective, the ability to extract actionable insights from operational data is essential for setting quality objectives and evaluating corrective actions.

**Relationship Management:** Google Classroom's integration with Google Drive, Gmail, Google Meet, SIS systems, and numerous third-party educational tools strengthens the broader learning ecosystem and supports multi-stakeholder coordination. However, formal relationship management as required by ISO 9001:2015 goes beyond technological integration to

encompass vendor evaluation, risk assessment for external providers, and formalized partnership management processes that are not natively supported by the platform.

### **Gaps in ISO 9001:2015 Compliance**

Despite the strong alignment observed in several QMS principle areas, several significant gaps must be addressed before Google Classroom-based e-learning services can achieve full conformance with ISO 9001:2015. These gaps are primarily institutional rather than technological in nature, requiring educational institutions to implement complementary management processes and documentation systems alongside the platform.

The first and most significant gap relates to formal quality documentation. ISO 9001:2015 requires organizations to maintain structured documentation including quality policies, measurable quality objectives, documented procedures for key processes, records of performance monitoring, and documentation of corrective actions. While Google Classroom stores operational records such as grades, assignment submissions, and class activity archives, these records do not constitute the structured quality documentation required by ISO 9001. Educational institutions must therefore develop and maintain separate quality documentation frameworks that are informed by Classroom data but organized and managed according to QMS principles.

The second gap involves internal audits and management reviews. ISO 9001:2015 requires organizations to conduct regular internal audits to verify that processes comply with established quality standards, and management reviews to evaluate resource adequacy, goal achievement, and improvement opportunities. Neither of these processes is natively supported by Google Classroom. Institutions must design their own audit and review cycles, using Classroom analytics and other data sources as evidence inputs, and document the outcomes through separate management systems.

The third gap concerns structured vendor relationship management. While Google Classroom integrates with many third-party tools and services, ISO 9001:2015 requires formalized evaluation and risk management processes for external providers whose products and services can affect the quality of the organization's outputs. Educational institutions should develop criteria for evaluating and selecting third-party tools, conduct risk assessments before large-scale adoption, and document their external provider management processes.

### **Recommendations for Enhanced QMS Compliance**

Based on the analysis of alignment and gaps, several recommendations can be made for educational institutions seeking to achieve higher levels of QMS compliance in their Google Classroom-based e-learning operations. These recommendations focus on complementary institutional processes and documentation frameworks that address the identified gaps while leveraging the platform's existing strengths.

First, institutions should develop comprehensive e-learning quality documentation frameworks that include: a formal quality policy for online learning services, specific and measurable quality objectives for key performance dimensions, documented Standard Operating Procedures (SOPs) for major instructional processes such as course design, content development, student assessment, and feedback provision, and systematic record-keeping procedures for maintaining quality evidence over time. These documentation frameworks should be institutionally managed and regularly reviewed, using data from Google Classroom and other sources as evidence inputs.

Second, institutions should establish formal academic audit cycles for e-learning programs, conducted by quality assurance offices or designated academic auditors. Audit criteria should be derived from the institution's quality objectives and should assess the degree to which teaching practices and learning outcomes reflect established quality standards. Audit findings should be documented and presented to institutional leadership in regular management review meetings, where decisions about resource allocation, policy adjustments, and improvement initiatives can be made in an evidence-based and accountable manner.

Third, institutions should develop vendor management processes for evaluating and monitoring the third-party tools and services integrated with their e-learning systems. These processes should include criteria for initial vendor selection, risk assessment frameworks for evaluating potential impacts on service quality and data security, and periodic performance reviews for established vendors. Documentation of these processes and their outcomes should be maintained as part of the institution's overall quality management record system.

Finally, it is worth noting that for educational contexts where learner-specific considerations such as accessibility, ethical responsibility, and learner data protection are particularly important, ISO 21001:2018 (Educational Organization Management Systems) may provide a more contextually appropriate complement to ISO 9001:2015. ISO 21001 extends general QMS principles with educational-specific requirements and can be integrated with Google Classroom's operational capabilities to support a more comprehensive and learner-centered quality assurance approach.

## CONCLUSION

Google Classroom aligns strongly with key principles of ISO 9001:2015—particularly customer focus, process approach, continual improvement, and evidence-based decision-making—through its user-centered design, structured instructional workflows, and built-in analytics, thereby providing a solid foundation for quality e-learning delivery. However, full compliance with ISO 9001:2015 depends less on the platform itself and more on institutional implementation, requiring formal quality documentation, internal audits, management reviews, and structured vendor management systems. This study highlights that the primary challenge lies in bridging the gap between technological capability and institutional practice, emphasizing that effective QMS adoption in e-learning is fundamentally an organizational responsibility. Moreover, integrating QMS principles into e-learning environments fosters a culture of continuous improvement, enabling institutions to iteratively enhance teaching effectiveness, learning experiences, and system reliability. Future research should explore empirical evaluations of QMS implementation across different educational contexts, including comparative studies of multiple platforms and longitudinal analyses to assess how sustained institutional commitment influences the quality and outcomes of digital education systems.

## REFERENCES

- Al Mulhem, A. (2020). Investigating the effects of quality factors and organizational factors on university students' satisfaction of e-learning system quality. *Cogent Education*, 7(1), 1787004.
- Ayanwale, M. A., Molefi, R. R., & Liapeng, S. (2024). Unlocking educational frontiers: Exploring higher educators' adoption of Google Workspace technology tools for

- teaching and assessment in Lesotho dynamic landscape. *Heliyon*, 10(9).
- Berezi, I. U. (2025). Virtual learning environment: Redefining higher educational delivery for efficiency and accessibility. *International Journal of Educational Management, Rivers State University*, 1(1), 451–467.
- Ennam, A. (2024). Assessing COVID-19 pandemic-forced transitioning to distance e-learning in Moroccan universities: An empirical, analytical critical study of implementality and achievability. *The Journal of North African Studies*, 29(1), 153–177.
- Farid, S., Ahmad, R., Alam, M., Akbar, A., & Chang, V. (2018). A sustainable quality assessment model for the information delivery in e-learning systems. *Information Discovery and Delivery*, 46(1), 1–25.
- Hadullo, K., Oboko, R., & Omwenga, E. (2018). Factors affecting asynchronous e-learning quality in developing countries university settings. *International Journal of Education and Development Using ICT*, 14(1).
- Ibrahim, O. (2015). *The implications of applying total quality management (TQM) on e-learning in Egypt: Suggested e-learning service quality model*. University of Huddersfield.
- Indra, R., Ritonga, M., & Kustati, M. (2022). E-leadership of school principals in implementing online learning during COVID-19 pandemic at public senior high schools. *Frontiers in Education*, 7, 973274.
- ISO. (2015). *ISO 9001:2015 quality management systems—Requirements*. International Organization for Standardization.
- ISO. (2018). *ISO 21001:2018 educational organizations management systems—Requirements with guidance for use*. International Organization for Standardization.
- Li, J., & Wang, R. (2023). Machine learning adoption in educational institutions: Role of Internet of Things and digital educational platforms. *Sustainability*, 15(5), 4000.
- Matthew, U. O., Kazaure, J. S., & Okafor, N. U. (2021). Contemporary development in e-learning education, cloud computing technology, and Internet of Things. *EAI Endorsed Transactions on Cloud Systems*, 7(20), e3.
- Okoye, K. (2021). Educational workflow model for effective and quality management of e-learning systems design and development: A conceptual framework. In *International Conference on Innovations in Bio-Inspired Computing and Applications* (pp. 475–490).
- Sakhipov, A., Omirzak, I., & Fedenko, A. (2025). Beyond face recognition: A multi-layered approach to academic integrity in online exams. *Electronic Journal of E-Learning*, 23(1), 81–95.
- Santally, M. I., Rajabalee, Y. B., Sungkur, R. K., Maudarbocus, M. I., & Greller, W. (2020). Enabling continuous improvement in online teaching and learning through e-learning capability and maturity assessment. *Business Process Management Journal*, 26(6), 1687–1707.
- Sarrab, M., Elbasir, M., & Alnaeli, S. (2016). Towards a quality model of technical aspects for mobile learning services: An empirical investigation. *Computers in Human Behavior*, 55, 100–112.
- Sroyprapai, P., Songsriwittaya, A., Kaewrattanapat, N., & Nittayathamkul, V. (2025). The cloud-based remote learning via digital media ecosystem to enhance learning engagement among undergraduate students in engineering education. *Studies in Media and Communication*, 13(2), 96–111.
- Stecula, K., & Wolniak, R. (2022). Advantages and disadvantages of e-learning innovations during COVID-19 pandemic in higher education in Poland. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 159.
- Suhadi, M. I. S., Gobi Krishna, A., & Sinniah, L. (n.d.). Evaluation of user satisfaction on the placement of electric vehicle (EV) charging stations. In *Conference e-proceedings book*

- of 2nd International Urban Planning Conference (INUPC) 2025 (p. 55).*
- Thapliyal, H. (2024). *Unveiling the past: AI-powered historical book question answering*. Digital Repository of Theses.
- Tsai, Y., Poquet, O., Gašević, D., Dawson, S., & Pardo, A. (2019). Complexity leadership in learning analytics: Drivers, challenges and opportunities. *British Journal of Educational Technology*, 50(6), 2839–2854.
- Vinodan, A., & Mahalakshmi, S. (2026). *Micro, small, and medium enterprises for global sustainability: ESG standards and compliance*. Taylor & Francis.
- Wu, J. (2025). E-learning management systems in higher education: Features of the application at a Chinese vs. European university. *Journal of the Knowledge Economy*, 16(1), 5025–5055.