International Journal of Learning, Teaching and Educational Research
Vol. 25, No. 3, pp. 395-417 March 2026
https://doi.org/10.26803/ijlter.25.3.17
Received Dec 12, 2025; Revised Feb 10, 2026; Accepted Feb 11, 2026

Unveiling Research Mapping on Quality Management and Character Education in Vocational Schools: A Bibliometric Analysis

Eny Setyawati*, Agus Pahrudin and Bambang Sri Anggoro
Universitas Islam Negeri Raden
Intan Lampung, Indonesia

Tri Yuni Hendrowati
Universitas Muhammadiyah
Pringsewu Lampung, Indonesia

Abstract. This study aimed to map the development, core themes and research opportunities in quality management and character education in vocational schools using a bibliometric approach. Data were retrieved from the Scopus database as of December 7, 2025, using a comprehensive search query that generated 142 documents. All metadata were analyzed using Biblioshiny and VOSviewer to examine publication trends, author and institutional productivity, country collaboration networks, influential documents and thematic structures through network and overlay visualizations. The findings indicated a consistent increase in publications since 2010, with a notable surge after 2016, reflecting growing global attention to the quality of vocational education and character development. China, the United States and the United Kingdom emerged as the most productive countries, while the absence of a dominant author suggested that the field remains dynamic and collaborative. The most highly cited documents originated in cross-disciplinary literature, particularly in interprofessional education, service quality and work-based learning. The thematic mapping identified four major clusters: institutional and curriculum quality, organizational management, professional collaboration and quality improvement and ethical and character education. Temporal analysis indicated a shift toward themes such as digital quality management, big data, e-learning, benchmarking and the modernization of vocational training. These findings provided an empirical foundation for strengthening quality governance and character education strategies in vocational schools, while offering new research directions relevant to integrating technology, quality assurance and character development in the evolving landscape of vocational education.

*Corresponding author: Eny Setyawati; *enysetyawati008@gmail.com*

Keywords: bibliometric analysis; character education; quality assurance; quality management; vocational school

1. Introduction

Character education is a critical issue in vocational education, particularly in preparing graduates who are required to demonstrate not only technical competence but also professional ethics and social responsibility. At the secondary level, it fosters values such as integrity, discipline, responsibility and work ethic through a holistic approach that integrated curriculum, school culture and contextual learning experiences (Killip, 2020; Wafudu & Kamin, 2024). Despite its importance, evidence from industry and educational evaluations indicates that character-related deficiencies among vocational school graduates persist, particularly in work discipline, ethical behavior and collaboration.

Vocational students are also expected to master transversal competencies, including collaboration, entrepreneurship and inquiry skills. These competencies are developed through student-centered learning, industry-based practice and real-world experience, which are key characteristics of vocational learning (Mara, 2018). Given that vocational graduates enter the labor market earlier and more directly than graduates from other school types, character education is a more urgent and context-specific challenge in vocational schools. Strengthening these character attributes requires a quality assurance (QA) system that could align learning processes with labor market needs and stakeholder expectations, ensuring the balanced development of character and technical skills (Sütőová et al., 2022; Wafudu & Kamin, 2024).

Furthermore, mentoring and reflective practice reinforce learners' professional identities and ethical behavior, which are essential in experiential learning contexts (Ghirotto et al., 2020; Sugarman et al., 2021). In the era of the Fourth Industrial Revolution, governance and evaluation mechanisms are increasingly emphasized to ensure coherence between curriculum, school culture and learning practices, so that graduates have strong character and industry-aligned competencies (Asad et al., 2023; Lu & Wang, 2023).

Quality management plays a central role in the effective implementation of character education in vocational settings. QA refers to systematic processes used to plan, monitor and evaluate educational inputs, processes and outputs to ensure that they meet defined quality standards (Wafudu et al., 2022; Wafudu & Kamin, 2024). In contrast, quality management (QM) provides managerial principles that supported continuous improvement and stakeholder satisfaction (Sütőová et al., 2022; Yaya et al., 2017).

These principles emphasize process control, accountability and continuous improvement, thereby ensuring that educational outcomes meet established standards (Wafudu & Kamin, 2024). In vocational schools, QA frameworks such as the European Foundation for Quality Management support improvements in academic performance and curriculum alignment with industry needs, while also strengthening school culture to promote integrity, discipline and work ethic

(Gianni et al., 2024; Jarboua et al., 2025; Sütőová et al., 2022). Key aspects of QM relevant to character education included instructional quality, curriculum relevance, assessment practices, learning facilities and school culture. Models such as total quality management (TQM), QA systems and standards-based evaluation guide learning, assessment and vocational program management and their instruments demonstrate validity and reliability in evaluating learning quality (Wafudu et al., 2022). However, the adoption of QA frameworks varies across countries, as reflected in benchmarking initiatives such as the BEQUEL project in Europe, national practices in the United Kingdom and policy reforms in China (Fan, 2020; Lengyelová & Dimopoulou, 2023; Pepper et al., 2024). Consequently, sustainable governance and performance evaluation remain essential for ensuring accountability and continuous improvement in character-oriented vocational education (Jarboua et al., 2025; Ren & Wareewanich, 2023).

The development of research on QM and character education in vocational schools demonstrates broad, multidisciplinary dynamics. Studies in this field span vocational education, character development, educational management and quality policy, resulting in a fragmented body of literature (Gianni et al., 2024; Markowitsch, 2018; Wafudu & Kamin, 2024). This fragmentation represents a clear knowledge and methodological gap, as many studies focus on isolated variables and do not integrate QM and character education within a unified framework. This condition complicates efforts to produce a comprehensive synthesis of core themes, influential authors and emerging research directions.

Consequently, these conditions underscore the need for structured scientific mapping to integrate diverse approaches to QM and character learning outcomes (Gianni et al., 2024; Wafudu et al., 2022; Wafudu & Kamin, 2024). Variations in national QA practices, such as those reflected in the BEQUEL project, benchmarking initiatives in the United Kingdom and policy reforms in China, further contribute to inconsistencies in the literature (Fan, 2020; Pepper et al., 2024). Therefore, a systematic and integrative approach is required to clarify the research landscape and strengthen the evidence base in this field.

Several review studies examine aspects of educational quality and character development within vocational education. For example, Malekani and Mubofu (2019) highlight the role of supporting facilities, such as school libraries, in enhancing learning quality and character formation. Wafudu et al. (2022) developed an instrument to assess components of QA in vocational education and emphasize how learning quality is shaped by the alignment of input, process and output elements. Markowitsch (2018) emphasizes the importance of conceptual clarity in understanding school QM culture and advocates multi-method approaches to examine the relationship between culture and quality practices.

Meanwhile, Lester (2020) identified partnerships between educational institutions and industry as essential for sustaining work-based vocational programs. Although these studies provide valuable insights, they do not present an integrated explanation of how QM supports character education in vocational

schools. Collectively, these studies show that research on QM and character education has expanded but remains fragmented and unintegrated.

Although previous research addresses aspects of QM and character education, existing studies remain partial and do not fully integrate the two domains. Research on school quality culture (Markowitsch, 2018), character-supportive learning ecosystems (Malekani & Mubofu, 2019) and QA instruments in vocational learning (Wafudu et al., 2022) largely developed independently. Likewise, Lester (2020) examined QA in work-based programs without explicitly connecting it to students' character development. This situation reveals a clear theoretical and methodological gap, as no study has systematically mapped the global research landscape on the link between QM and character education in vocational schools. To date, studies applying a bibliometric approach to examine this integrated field have been scarce. Therefore, this research addresses the gap by employing bibliometric analysis to synthesize dispersed evidence and identify dominant themes, conceptual structures and future research opportunities.

This study aims to map the development of scientific publications on QM and character education in vocational schools by identifying major research themes and remaining research opportunities. It also examines publication trends, authorship patterns, influential institutions and countries and conceptual structures within international literature. Based on these objectives, the study formulated three key questions: (1) What are the trends and characteristics of research on QM and character education in vocational schools? (2) What major themes dominate literature? (3) What potential research directions could be further explored based on bibliometric findings? The results of this study are expected to provide a systematic and empirical foundation for advancing theory and practice, particularly in improving the management of character education in vocational schools.

2. Methodology

2.1 Research Design

This study employed bibliometric analysis to examine the research landscape on quality management and character education in vocational schools. Bibliometric analysis is used to identify publication trends, authorship patterns, publication sources, relevant institutions and countries and to map intellectual networks based on collected metadata (Salido et al., 2025). Data was obtained from the Scopus database, accessed on December 7, 2025. Scopus was selected for its extensive metadata coverage, consistent indexing system and strong reputation as a leading international scientific database used across disciplines (Nasrum et al., 2025). Its accessibility and flexible search functions also support efficient data collection for scientific mapping.

2.2 Data Source and Search Query

The research process comprised several stages, including research design, data collection, data analysis, data visualization and data interpretation, as illustrated in Figure 1 (Hariyanti et al., 2025; Zupic & Čater, 2015). The research design stage began with determining the study topic, namely quality management and

character education in vocational schools, accompanied by the formulation of research objectives and questions. The Scopus database was designated as the primary data source. At the data collection stage, the following search criteria were used: "("quality management" OR "education quality" OR "quality assurance" OR "quality improvement" OR "total quality management" OR TQM OR "continuous improvement") AND ("vocational education" OR "technical education" OR "vocational school" OR TVET OR "technical and vocational education" OR "vocational high school" OR "secondary vocational school") AND (character OR value* OR moral* OR ethic* OR virtue)".

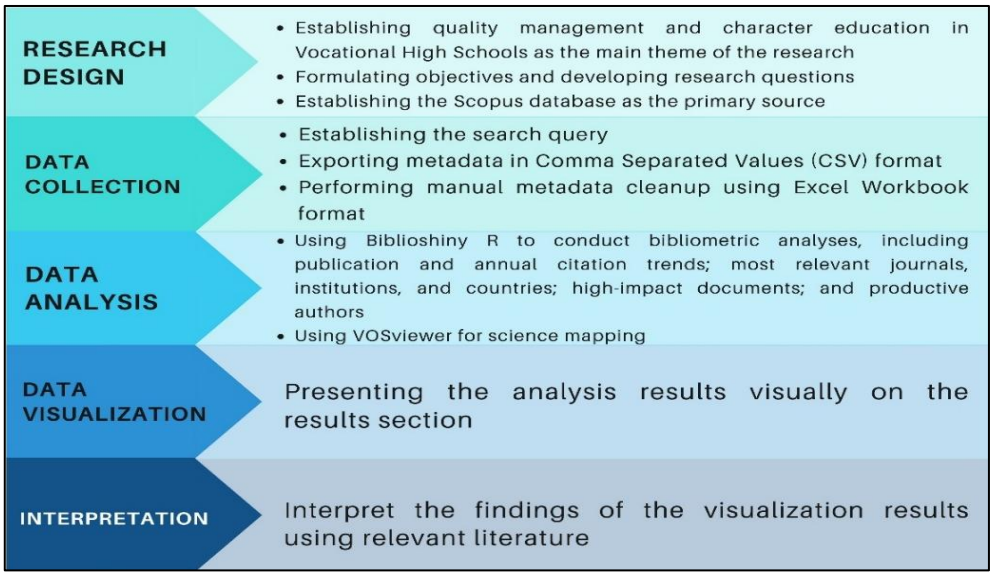

Figure 1: Workflow of Science Mapping

This selection of criteria was designed to capture a broad representation of concepts related to quality management, vocational education and character education. The search produced 142 documents. All documents retrieved were initially included to ensure comprehensive coverage. However, inclusion was conditional on the completeness of bibliographic metadata required for bibliometric analysis. All metadata were exported in Comma-Separated Values format for further analysis. A manual screening was then conducted to verify metadata completeness, focusing on essential fields such as author names and institutional affiliations. Six documents with incomplete metadata were excluded because they could not be reliably analyzed. This process was performed using data converted to an Excel Workbook format. As a result, 136 complete metadata records were retained as the final dataset for analysis.

2.3 Data Analysis

Data analysis was conducted after all metadata had been collected. This study utilized Biblioshiny (R) and VOSviewer, which were selected for their ease of use, comprehensive analytical features and widespread adoption in bibliometric research (Hariyanti et al., 2025; Nasrum et al., 2025). Descriptive bibliometric analysis with Biblioshiny (R) included annual publication trends, citation

patterns, leading journals and institutions, as well as the most influential authors and documents (Gandasari et al., 2024; Melisa et al., 2025).

Further conceptual and thematic mapping was performed using VOSviewer. At this stage, a minimum keyword occurrence threshold of three was applied to generate keyword co-occurrence networks and overlay visualizations. A thesaurus file was used to standardize terms and eliminate duplicates. Non-contextual or irrelevant keywords were removed to ensure that the resulting clusters accurately represented the research domain.

Data visualization was conducted in conjunction with the analysis to transform numerical and relational data into visually interpretable forms. These visualizations served as the foundation for the interpretation process. Data interpretation was guided by research questions and focused on identifying research trends and patterns, as well as dominant and emerging themes, to inform potential future research directions. To enhance the validity of the analysis and minimize bias, the interpretations were independently reviewed and validated by three additional researchers. The interpretations presented in this manuscript reflect a shared consensus among the validators.

3. Results

3.1 Trends and Research Overview on Quality Management and Character Education in Vocational Schools

The results of the bibliometric analysis, related to annual publication trends in quality management and character education in vocational schools, are presented in Figure 2.

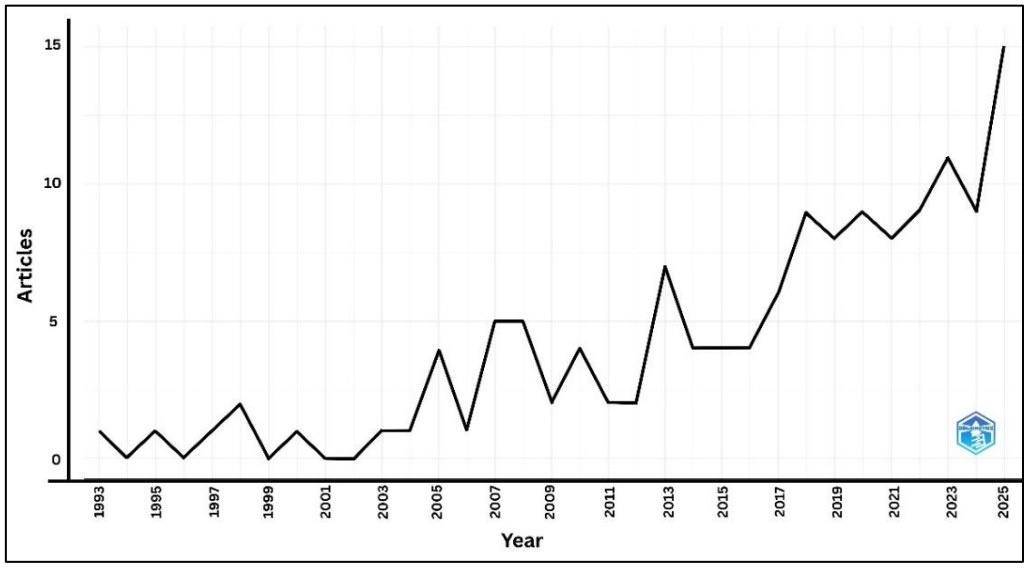

Figure 2: Annual Trend of Publications on Quality Management and Character Education in Vocational Schools

The annual publication trend in Figure 2 shows a significant increase in scientific activity related to quality management and character education in vocational education. During the early period (1993–2005), publication numbers were low

and fluctuated, averaging only one to two articles per year. However, beginning in 2010, a more stable upward trend emerged, characterized by a gradual and consistent increase in publication output. After 2016, the growth became more pronounced, reaching a peak of fifteen publications in 2025. This pattern indicates heightened scholarly interest in the topic over the past decade, in line with increasing demands for accountable educational governance and stronger character development within vocational education. The results of the average annual citation analysis are shown in Figure 3.

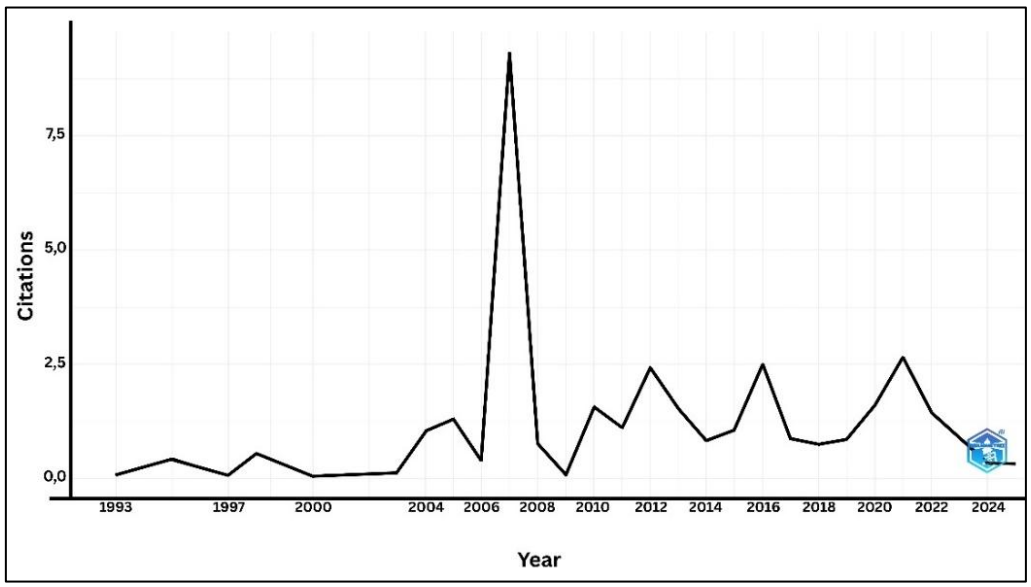

Figure 3: Average Annual Citations of Publications on Quality Management and Character Education in Vocational Schools

Figure 3 shows considerable variation in average annual citations across the observation period. In the early years, from 1993 to the early 2000s, citation averages were relatively low and often close to zero, suggesting that early publications were not widely referenced. A notable increase occurred in 2007, when the average citation count rose to more than eight citations per article, likely due to influential publications that became key references in the field. After 2007, citation patterns fluctuated, with moderate peaks in years such as 2012, 2016 and 2021. Despite these increases, citation averages declined again in 2024 and 2025. This variation indicates that citation impact does not grow linearly with publication volume; rather, it depends on factors such as publication quality, thematic relevance and the adoption of emerging theories and methodologies within the research community.

The next analysis highlights the most relevant publication sources in the field of quality management and character education in vocational schools. As shown in Figure 4, *Quality Assurance in Education* was the most productive journal, contributing six documents and serving as a leading publication outlet in this research domain. It was followed by the *TQM Journal*, which features five documents, reflecting a strong scholarly interest in TQM within educational contexts. Several other journals—such as *Higher Education, Skills and Work-Based*

Learning and the *International Journal of Quality and Reliability Management*—each contributed three publications, indicating meaningful engagement with topics that link quality, workforce skills and vocational education.

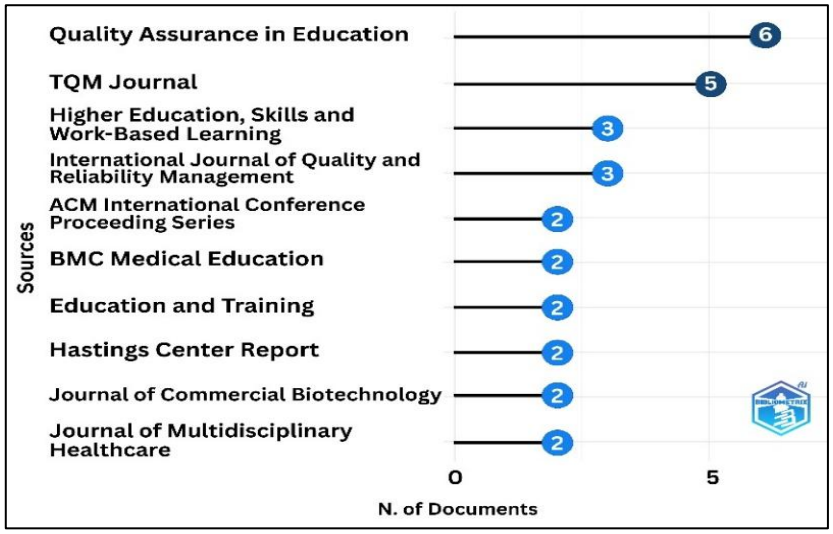

Figure 4: Top 10 Journal Sources of Publications on Quality Management and Character Education in Vocational Schools

Furthermore, several sources with two publications, including *ACM International Conference Proceeding Series, BMC Medical Education, Education and Training, Hastings Center Report, Journal of Commercial Biotechnology* and *Journal of Multidisciplinary Healthcare,* demonstrated that research on quality management and character education extends beyond education-focused journals. The presence of publications in cross-disciplinary outlets highlighted the broad relevance of quality and character issues to fields concerned with professional practice, ethics and quality development. This diversity underscored the wide scope and interdisciplinary interest in the topic within the international academic community.

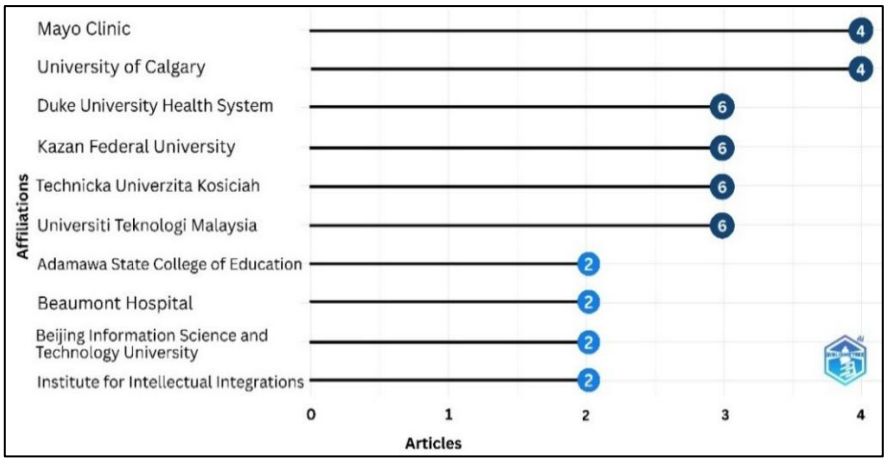

Figure 5: Top 10 Affiliated Authors in Publications on Quality Management and Character Education in Vocational Schools

The analysis of the most relevant affiliations, as shown in Figure 5, indicates that research contributions in the field of quality management and character education in vocational schools originated from a wide range of institutions with diverse disciplinary backgrounds. The Mayo Clinic and the University of Calgary led with four publications each, reflecting strong engagement from both health and higher education sectors in quality management research, particularly in character and professional ethics. *Duke University Health System, Kazan Federal University, Technická Univerzita Košiciach and Universiti Teknologi Malaysia* followed with three publications each, reflecting interest from institutions across North America, Europe and Asia.

Additionally, several institutions—including *Adamawa State College of Education, Beaumont Hospital, Beijing Information Science and Technology University* and the *Institute for Intellectual Integrations*—contributed two publications each. This distribution showed that research on quality management and character education is conducted not only by vocational education institutions but also by research universities, healthcare institutions and international educational organizations. The diversity of affiliations underscored the multidisciplinary and global nature of this research domain, reflecting an increasing cross-sectoral engagement with issues of quality and character development in vocational contexts. The analysis of corresponding author countries is presented in Figure 6.

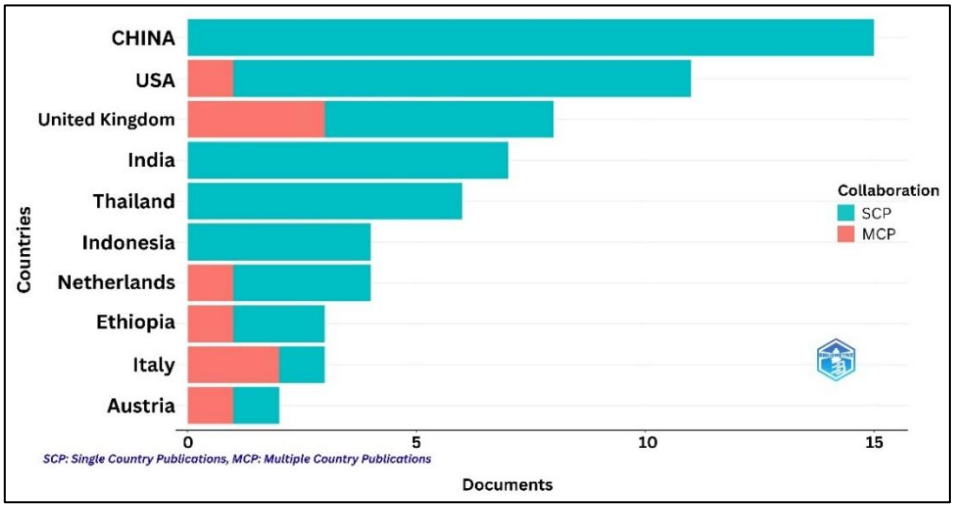

Figure 6: Top 10 Relevant Countries in Publications on Quality Management and Character Education in Vocational Schools

Figure 6 shows that several countries with varying levels of productivity dominated research contributions in quality management and character education within vocational education. China occupied the leading position, with all publications categorized as single-country publications (SCPs), indicating a lack of international collaboration. The United States ranked second, contributing mostly SCPs but also demonstrating notable activity in multiple-country publications (MCPs), suggesting an emerging pattern of international collaboration. The United Kingdom ranked third, with a nearly balanced distribution between SCPs and MCPs, reflecting active participation in cross-

border research networks. India, Thailand and Indonesia showed steady contributions primarily through SCPs. Meanwhile, countries such as the Netherlands, Ethiopia, Italy and Austria exhibited more varied collaboration patterns, with Italy displaying a higher proportion of MCPs, indicating a stronger international engagement. These variations in SCP and MCP trends illustrated differences in research capacity, national priorities and collaborative networks that shape the global development of scholarship in quality management and character education within vocational settings.

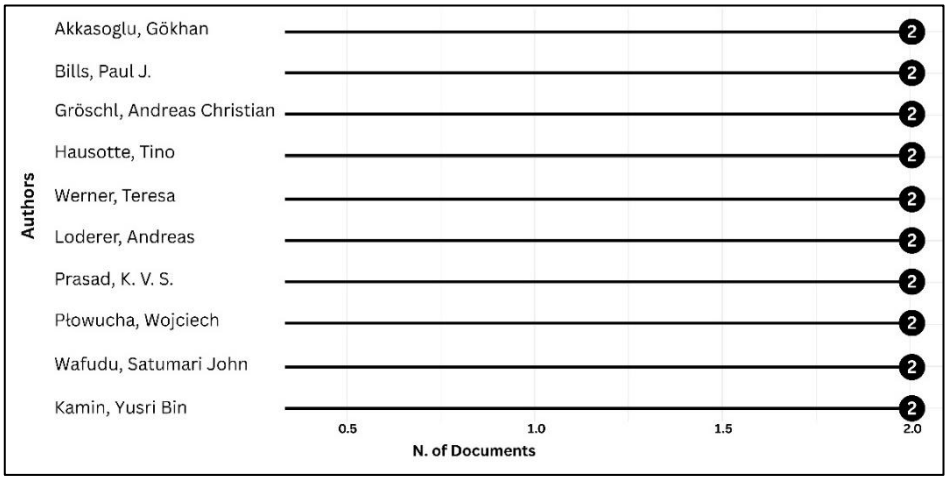

Figure 7: Ten 10 Productive Authors in Publications on Quality Management and Character Education in Vocational Schools

The analysis of the most productive authors, presented in Figure 7, showed that research output on quality management and character education in vocational schools was evenly distributed, with no single author dominating the field. The top ten authors—Akkasoglu, Bills, Gröschl, Hausotte, Werner, Loderer, Prasad, Płowucha, Wafudu and Kamin—each contributed two publications. This pattern suggests that scholarly discourse in this domain is still emerging and remains open to diverse academic perspectives. The collaborative and distributed nature of authorship also indicated a multidisciplinary research environment involving expertise from education management, character development, quality evaluation and vocational practice. Overall, the absence of dominant authors reflected a developing field with significant potential for further growth through cross-disciplinary and international collaboration. Furthermore, the results of the analysis of the top 10 most cited documents are presented in Table 1.

The analysis of the most influential documents, as shown in Table 1, revealed that the publication with the highest global citation count is Hammick et al. (2007), published in *Medical Teacher*, with 826 citations. This figure positioned the article significantly above all others in the dataset, demonstrating its substantial impact on academic discussions related to educational quality and professional learning. Other highly cited works included Walsh et al. (2005) in *Nurse Education in Practice*, with 77 citations and Indrawati and Kuncoro (2021) in *Bulletin of Indonesian Economic Studies*, with 75 citations. Staniškis and Katiliūtė (2016) in the *Journal of Cleaner Production* received 69 citations, reinforcing the link between

quality management, sustainability and vocational learning. Influential contributions to the *TQM Journal* included those of Jain et al. (2013), with 61 citations, Sahney et al. (2010), with 57 citations and Sahu et al. (2013), with 38 citations. Additional influential works include Sauber et al. (2008) in *Quality Assurance in Education* and Onstenk and Blokhuis (2007) in *Education and Training*, each with 37 citations, followed by Gamboa and Melão (2012) in the *International Journal of Quality and Reliability Management* with 36 citations. Overall, the citation distribution shows that influential literature in this field comes not only from vocational education journals but also from cross-disciplinary publications focusing on QA, sustainability and professional competency development.

Table 1: Top 10 Most Global Cited Documents in Publications on Quality Management and Character Education in Vocational Schools

Paper	DOI	TC	TC / Y
Hammick et al. (2007), Med Teach	10.1080/01421590701682576	826	43,47
Walsh et al. (2005), Nurse Educ Pract	10.1016/j.nepr.2004.12.004	77	3,67
Indrawati and Kuncoro (2021), Bull Indones Econ Stud	10.1080/00074918.2021.1909692	75	15,00
Staniškis and Katiliūtė (2016), J Clean Prod	10.1016/j.jclepro.2015.09.086	69	6,90
Jain et al. (2013), TQM J	10.1108/17542731311307456	61	4,69
Sahney et al. (2010), TQM J	10.1108/17542731011009621	57	3,56
Sahu et al. (2013), TQM J	10.1108/17542731311286432	38	2,92
Sauber et al. (2008), Qual Assur Educ	10.1108/09684880810906517	37	2,06
Onstenk and Blokhuis (2007), Educ Train	10.1108/00400910710819136	37	1,95
Gamboa and Melão (2012), Int J Qual Reliab Manage	10.1108/02656711211224848	36	2,57

3.2 Major Themes in Quality Management and Character Education Research in Vocational Schools

The results of the network visualization of publications on quality management and character education in vocational schools, as retrieved from the Scopus database, are presented in Figure 8. Figure 8 reveals four main clusters that form the thematic structure of research on quality management and character education in vocational education. The first cluster (red), consisting of 43 keywords, focuses on institutional and pedagogical dimensions within vocational education.

Keywords such as student, university, vocational colleges, quality control, quality assurance, quality management, curriculum, teaching and training indicated strong relevance to curriculum development, QA implementation and instructional processes in vocational institutions. The presence of terms such as accreditation, perception, engineering education, technical education, education computing, apprentices and decision making underscored the link between quality standards, educational technology and the development of technical skills.

Overall, this cluster highlights institutional structures and teaching quality as central themes of research.

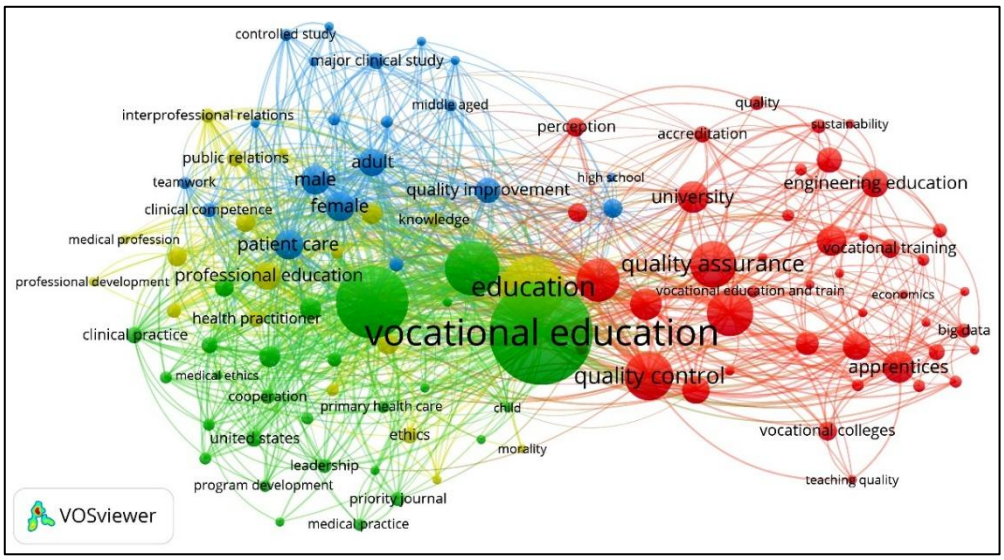

Figure 8: Network Visualization of Keyword Co-Occurrence Analysis

The second cluster (green), which included 28 keywords, focused on organizational management and professional practice in vocational education. Dominant terms such as vocational education, total quality management, organization and management, program evaluation and leadership indicated managerial strategies aimed at enhancing educational quality. The appearance of terms such as cooperation, clinical practice, patient satisfaction, medical society and medical practice suggested an intersection with professional training in the health sector. Meanwhile, keywords such as interdisciplinary communication and adolescent reflected the importance of cross-disciplinary coordination and the developmental characteristics of learners. This cluster represents the integration of quality management with professional practice in vocational contexts.

The third cluster (blue), comprising 20 keywords, described demographic characteristics of learners and the dynamics of quality improvement within professional training environments. Terms such as "adult", "male", "female" and “middle-aged” indicated a focus on diverse learner populations, particularly in health and professional development settings. Keywords such as benchmarking, quality improvement, patient care, teamwork, clinical competence and interprofessional education emphasized the connection between quality improvement and professional collaboration. The presence of psychology and interpersonal communication illustrates the relevance of psychological and communication factors within this cluster.

The fourth cluster (yellow), comprising 19 keywords, focused on professional education, values and ethics in vocational contexts. Terms such as education, education program, professional education, learning, knowledge, skills and health personnel highlighted the development of competencies in work-based learning environments. Keywords such as ethics, morality, public relations,

interprofessional relations and healthcare delivery indicated a strong focus on moral values, professional relationships and healthcare settings as contexts for vocational learning. These themes showed a close relationship between professional character formation, technical competence and interprofessional interaction. Overall, the keyword structure demonstrates that research on quality management and character education in vocational education is multidisciplinary, with clusters interconnected through themes of educational quality, professional competence, ethics and character development, all anchored in the central context of vocational education.

3.3 Potential for Future Research Themes on Quality Management and Character Education in Vocational Schools

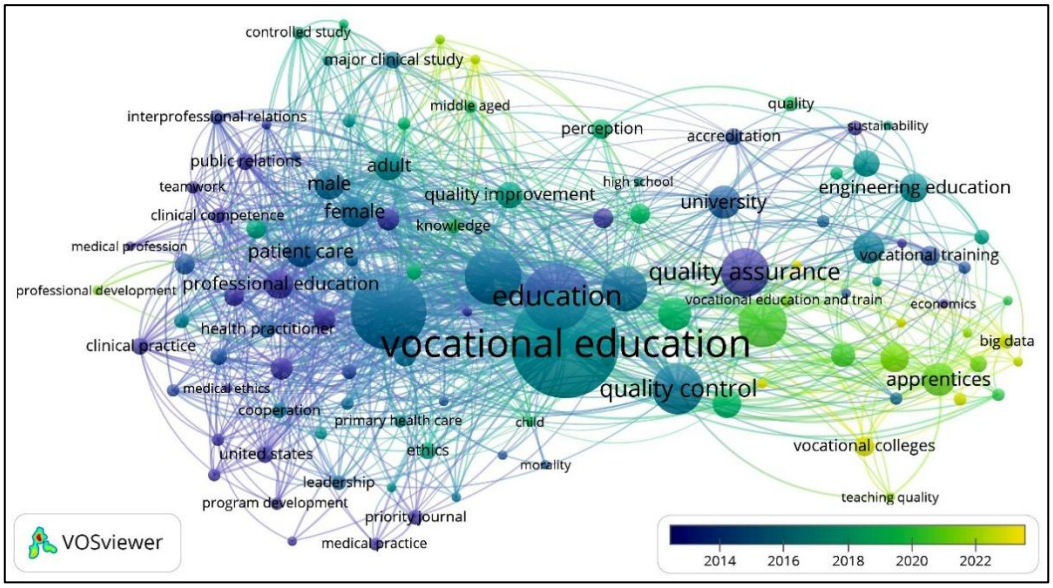

Figure 9: Overlay Visualization of Keyword Co-Occurrence Analysis

Figure 9 presents the results of the overlay visualization showing the temporal evolution of research themes in the study of quality management and character education in vocational schools. In the early period, up to around 2014, research predominantly focused on foundational concepts of education and quality management, as indicated by the dominance of keywords such as education, learning, training, quality assurance, professional education, organization and management, university, curriculum and accreditation. This phase reflected the strengthening of conceptual frameworks, particularly those related to education quality and accreditation systems that support character education in vocational institutions.

Entering the middle period, around 2018, research began shifting toward the implementation of quality strategies and the enhancement of learning quality, as evidenced by the emergence of keywords such as vocational education, human resources, quality improvement, total quality management, quality control, technical education and engineering education. This shift suggests an increased

emphasis on the relationship between quality management, technical skills and industry-oriented vocational practices.

In the most recent period, around 2022, more technologically and data-driven keywords emerged, including vocational colleges, young adults, aging, e-learning, data mining, big data, benchmarking, knowledge, personnel training, vocational education and training, education computing, education quality and apprentices. The emergence of these keywords indicated a research direction that integrates digital technologies, data analytics and evidence-based evaluation to enhance character development and professional competence among vocational students. Consequently, themes such as the application of big data in QA, the integration of e-learning in character education, multilayer benchmarking strategies in vocational schools and quality enhancement in contexts involving young adults and apprenticeships represented promising avenues for future research.

4. Discussion

4.1 Trends and Research Overview on Quality Management and Character Education in Vocational Schools

The increase in publications after 2010, followed by a sharper rise after 2016, indicated that quality management and character education in vocational settings were increasingly recognized as strategic issues in educational policy and practice. This trend aligns with previous findings showing a systemic shift toward more accountable governance in vocational education through the adoption of QA and TQM frameworks (Gianni et al., 2024; Wafudu & Kamin, 2024). In both Europe and Asia, stronger emphasis on benchmarking, quality audits and curriculum alignment with industry needs further accelerated research development in this area (Lengyelová & Dimopoulou, 2023). Thus, the post-2016 growth reflected not only an increase in publication volume but also an academic response to structural demands for integrating quality management and character education within vocational systems.

The non-linear citation pattern suggested that research influence was shaped more by theoretical and methodological contributions than by publication volume alone. The citation peak in 2007 was associated with two influential studies. Hammick et al. (2007) strengthened the theoretical foundation of interprofessional education as a mechanism for improving collaboration and service quality. Onstenk and Blokhuis (2007) examined the interaction between school-based and industry-based learning within apprenticeship systems. Both studies became seminal references in discussions of quality and vocational learning.

Subsequent citation fluctuations reflected shifts in research priorities, particularly toward QA and TQM frameworks, evaluation methods and outcome-oriented learning (Gianni et al., 2024; Wafudu et al., 2022). The decline in citations during 2024–2025 likely reflected a publication time lag, as recently published studies had not yet accumulated citations. Overall, the citation pattern indicated that research in this field progressed through waves of conceptual development shaped by policy reform, labor market change and evolving educational needs.

Analysis of publication sources showed that research on quality management and character education in vocational schools was concentrated in journals focused on QA and learning improvement. *Quality Assurance in Education* emerged as a key outlet, particularly through studies emphasizing the need for structured QA frameworks in vocational education (Wafudu & Kamin, 2024). Research on school quality culture also appeared prominently, highlighting pluralistic perspectives on how organizational dynamics influence quality practices (Markowitsch, 2018).

The *TQM Journal* contributed studies on structured improvement strategies, including student placement processes and critical success factors for TQM implementation (Sahu et al., 2013). *Higher Education, Skills and Work-Based Learning* expanded the discussion through studies addressing competency assessment challenges and cross-institutional collaboration in benchmarking practices (Pepper et al., 2024; Tekle et al., 2025). Meanwhile, the *International Journal of Quality and Reliability Management* offered a systemic perspective on quality management training and education (Yaya et al., 2017). In addition to these core journals, interdisciplinary outlets such as *Education and Training, BMC Medical Education* and *Journal of Multidisciplinary Healthcare* contributed to the field. Collectively, these publication patterns highlighted the cross-sectoral relevance of quality management and character education in vocational contexts.

Affiliation analysis showed that research on quality management and character education in vocational education involved a wide range of institutions, including health organizations, research-intensive universities and international education bodies. Health institutions played a prominent role in shaping conceptual and methodological perspectives. The Mayo Clinic contributed influential studies demonstrating how interprofessional education and quality improvement interventions enhanced professional competence in vocational learning contexts (Myers et al., 2018). Similarly, the University of Calgary emphasized the role of mentorship in reinforcing professional identity and character development among health workers, with implications for vocational education systems (Harper et al., 2025). The Duke University Health System extended the quality management perspective by applying Lean thinking as a sustainable improvement model adaptable to vocational governance (Anderson et al., 2019).

Research universities and international institutions also made significant contributions. Kazan Federal University emphasized benchmarking and intellectual integration to enhance international education quality, which was relevant to cross-border QA practices (Sibgatullina-Denis et al., 2020). Technická Univerzita Košiciach contributed through studies on the EFQM Model, demonstrating how formal quality frameworks supported continuous improvement and character development (Sütőová et al., 2022). Universiti Teknologi Malaysia further strengthened this discourse by developing QA frameworks for vocational learning that integrated technical competence and character education (Wafudu & Kamin, 2024). Additional contributions from institutions in Africa, Europe and Asia reinforced the multidisciplinary and global nature of this research field. Overall, the diversity of affiliations highlighted

strong potential for expanded international collaboration to advance quality management and character education in vocational schools.

Analysis of the countries of corresponding authors revealed uneven patterns of contribution and collaboration. China emerged as the largest contributor in terms of publication volume, yet all its outputs were single-country studies, indicating strong domestic research capacity but limited international collaboration. In contrast, the United States and the United Kingdom showed a balance between national and collaborative publications, reflecting open and interdisciplinary research ecosystems. Their studies often integrated cross-sector perspectives, including process improvement, benchmarking and professional education (Anderson et al., 2019; Sibgatullina-Denis et al., 2020).

Italy and the Netherlands exhibited higher proportions of multi-country publications, demonstrating active participation in global research networks, particularly in benchmarking and quality standard development. Meanwhile, India, Thailand and Indonesia contributed mainly through national publications, suggesting growing domestic research capacity but still limited global engagement. These variations indicated that national policy priorities, institutional capacity and the strength of international networks influenced the development of research in quality management and vocational education. The findings underscored the importance of expanding global partnerships to enrich perspectives and foster innovation in vocational education quality.

The analysis of author productivity showed that research on quality management and character education in vocational education remained decentralized and was not dominated by a single research group. The top 10 authors each contributed two publications, indicating a diverse and open research landscape. Several authors collaborated on an international study led by Gröschl et al. (2014) that examined quality issues in vocational training from technical and industry-based perspectives. Wafudu and Kamin (2024), along with earlier work by Wafudu et al. (2022), consistently contributed to the development of QA frameworks and instruments for vocational and engineering education. Prasad (2018, 2020) study examined perceptions of TQM from both student and management perspectives, highlighting the role of stakeholders in quality evaluation. Overall, these patterns reflected a multidisciplinary research ecosystem with significant opportunities for deeper collaboration across disciplines and regions.

The most influential publications further demonstrated that the theoretical and methodological foundations of quality management and character education in vocational education were shaped by interdisciplinary scholarship, particularly from health education and professional learning. Hammick et al. (2007) emerged as the most influential study, with high citation impact due to its comprehensive synthesis of evidence on interprofessional education. Its emphasis on collaboration, ethical practice and service improvement aligned closely with QA principles in vocational contexts. Walsh et al. (2005) strengthened this foundation by proposing an interprofessional capability framework centered on ethics, reflection and teamwork. Other influential studies addressed broader dimensions

of quality and sustainability. Indrawati and Kuncoro (2021) examined workforce readiness for industrial transformation, while Staniškis and Katiliūtė (2016) highlighted the integration of social responsibility and quality evaluation in engineering education. Additional works emphasized educational service quality, stakeholder perspectives and institutional improvement through quality management frameworks (Jain et al., 2013; Sahney et al., 2010; Sahu et al., 2013). Studies on competency-based learning, work-based education and quality standards further enriched the field (Gamboa & Melão, 2012; Onstenk & Blokhuis, 2007; Sauber et al., 2008). Collectively, these influential publications indicated that research on quality management and character education in vocational education was driven by multidisciplinary contributions spanning QA, collaborative learning, professional competence, institutional quality and sustainability.

4.2 Major Themes in Quality Management and Character Education Research in Vocational Schools

The network mapping revealed four thematic clusters that highlighted the complexity and multidisciplinary nature of research on quality management and character education in vocational education. The first cluster highlighted the prevalence of institutional and pedagogical themes, as evident in keywords such as quality assurance, quality management, curriculum, technical education and apprenticeship. This theme aligns with the work of Wafudu and Kamin (2024), who emphasized the importance of learning standards and structured QA frameworks, and with Markowitsch (2018), who highlighted the role of school quality management culture. The focus on accreditation, learning technology and technical skill development also reflected ongoing efforts to enhance the quality of vocational education processes, echoing the findings of Upadhayay and Vrat (2016) and Sahu et al. (2013) within TQM-related research. Overall, this cluster illustrates the systemic foundations that supported both the quality of vocational education and character development through effective governance and pedagogy.

The second and third clusters broadened the thematic landscape by emphasizing the integration of quality management with professional practice, particularly in health education and interprofessional training contexts. The emergence of keywords such as clinical practice, patient satisfaction, teamwork and interprofessional education demonstrated a strong connection to research showing that quality improvement was shaped by interprofessional collaboration, leadership and program evaluation (Hammick et al., 2007; Myers et al., 2018; Walsh et al., 2005). The presence of diverse learner populations (adults, young adults, middle-aged adults) indicated that vocational education—especially in health-related fields—required cross-age and cross-disciplinary learning approaches. These findings also aligned with the EFQM mapping for vocational schools proposed by Sütőová et al. (2022), which highlighted the importance of processes, stakeholder perceptions and organizational performance in fostering sustainable quality improvement.

The fourth cluster emphasized the importance of value-based and ethical professional education. Keywords such as ethics, morality, professional education and interprofessional relations indicated that the development of character and

moral competence was an integral component of the quality of vocational education. This finding aligned with Walsh et al.'s (2005) framework for ethical capability development, Staniškis and Katiliūtė's (2016) emphasis on social responsibility and sustainability and Indrawati and Kuncoro's (2021) argument for strengthening labor competencies in the era of Industry 4.0. Furthermore, the presence of terms such as public relations and health personnel reflected how professional character was shaped through social interaction, public service and real-world work environments. Overall, these four clusters showed that research in this field evolved at the intersection of quality, character, professional ethics and industry needs, offering substantial opportunities for more integrated cross-disciplinary studies.

4.3 Potential for Future Research Themes on Quality Management and Character Education in Vocational Schools

The findings of this study indicated a gradual shift in research themes from foundational quality concepts toward the integration of technology. This shift demonstrated that research on quality management and character education in vocational education has evolved in response to industrial demands and developments in professional practice. In the initial phase, the focus on QA, accreditation and curriculum structure reflected efforts to strengthen conceptual and institutional foundations. This trend was evident in the QA framework proposed by Wafudu and Kamin (2024) and the analysis of school quality culture by Markowitsch (2018).

During the mid-term period, themes such as quality improvement, TQM engineering education indicated a growing emphasis on implementing quality strategies within technical and vocational contexts. This progression aligned with the findings of Sahu et al. (2013), who highlighted the need to adapt total quality management principles in technical institutions. This finding also reflected the work of Upadhayay and Vrat (2016), who emphasized aligning selection and learning processes to improve graduate quality. The integration of industrial practice and vocational learning was further supported by Onstenk and Blokhuis (2007), who stressed the importance of strong school–workplace linkages. Overall, the thematic evolution during this period showed that quality management and character development did not evolve independently but interacted to shape vocational competence.

In recent years, research attention has shifted toward the digitization of learning and data-driven evaluation. The emergence of themes such as e-learning, big data, data mining and educational computing reflected increasing interest in leveraging technology to enhance both quality management and character development among vocational students. This shift aligned with studies addressing the challenges of digital transformation in education and the role of international benchmarking in strengthening institutional quality (Indrawati & Kuncoro, 2021; Sibgatullina-Denis et al., 2020). The growing focus on young adult learners and apprentices also highlighted the need for adaptive learning models that simultaneously support professional competence and character formation, consistent with the EFQM framework applied in vocational schools (Sütőová et al., 2022). Based on these developments, several future research directions can be

identified: (1) the application of big data analytics to predict quality and character outcomes; (2) the development of integrated e-learning models that combine technical training with character education; (3) the construction of multilayer benchmarking frameworks for inter-institutional and cross-national quality comparison; and (4) longitudinal studies examining the effectiveness of apprenticeship programs in shaping moral and professional competencies. These directions provide opportunities for more transdisciplinary, data-driven and evidence-based research in vocational education.

Based on the overall findings of this study, future research is recommended to strengthen collaboration across countries and disciplines in order to address the complex challenges of quality management and character education in vocational schools. Researchers are encouraged to integrate qualitative and quantitative approaches better to capture the interaction between quality systems and character outcomes. In addition, policymakers and educational practitioners may use the insights from this study to design more coherent quality management frameworks that explicitly incorporate character education as a core component of vocational education governance.

5. Conclusion

This study aimed to comprehensively describe the scientific landscape of quality management and character education in vocational schools by mapping the development of publications, identifying dominant themes and exploring new research opportunities. The findings revealed a steady increase in scholarly interest, particularly after 2016, when issues of QA, vocational reform and character development gained global attention. Citation trends suggested that several key publications have significantly influenced cross-disciplinary research directions, particularly in health education, quality management and vocational system reform.

Analyses of affiliations and countries revealed that research in this area is not concentrated in a single region but is expanding through contributions from diverse institutions and nations, with international collaboration patterns becoming increasingly evident. The review of productive authors demonstrated that the field remains collaborative and decentralized, offering broad opportunities for contributions from multiple disciplines. Meanwhile, some influential works include the review of interprofessional education by Hammick and other studies on quality, sustainability and vocational learning, which serve as basic references in developing theoretical and methodological frameworks in this field.

The thematic mapping identified four major clusters representing the foundations and orientations of research: institutional quality and pedagogy, organizational management and professional practice, quality improvement through cross-professional training and value-based and ethical education. These clusters illustrate that quality and character are interrelated domains in vocational education. Overlay analysis further indicated a shift toward emerging themes, such as digital learning, data-driven quality evaluation and strengthened

apprenticeship and learning models for young adult learners. These developments presented underexplored research opportunities, including the use of big data analytics, the integration of e-learning for character formation, multilayer benchmarking strategies and longitudinal evaluations of work-based vocational programs. Overall, this study provides a strong evidence base for advancing theories and practices in vocational education management, particularly in strengthening learning quality and student character in vocational schools.

This study has several limitations that should be taken into account when interpreting the results. First, the analysis relies solely on bibliometric methods and therefore does not include an in-depth examination of the content of individual articles. While this approach allows the mapping of publication patterns and knowledge structures, it does not capture detailed theoretical arguments, methodologies, or empirical findings. Second, the use of a single database may introduce bias, as relevant publications indexed in other sources, such as Web of Science, Dimensions, or national databases, may have been overlooked. This limitation may affect the representativeness of the research map and the interpretation of thematic trends. Therefore, future studies are encouraged to combine bibliometric analysis with systematic reviews to produce more comprehensive and accurate syntheses of literature. Future research should also incorporate multiple databases to minimize selection bias and support more comprehensive and reliable knowledge mapping.

Conflict of Interest

The authors affirm that there are no conflicts of interest in the composition and dissemination of this study.

6. Acknowledgment

The authors extend their heartfelt appreciation to Universitas Islam Negeri Raden Intan Lampung, Indonesia, for cultivating an academic atmosphere that supports international research collaboration and publication. This study was carried out as part of the authors' doctoral academic responsibilities, demonstrating the institution's ongoing dedication to promoting high-quality scholarly work. The university's guidance and support have played a crucial role in enabling the completion of this article for submission to a reputable international journal.

7. Declaration on the Use of Artificial Intelligence

The authors acknowledge the use of artificial intelligence (AI)–based tools during the preparation of this manuscript for the purpose of improving language quality and textual coherence. ChatGPT (version 5.2) was employed to assist with sentence refinement and readability enhancement. The tool was not used for data analysis, interpretation, or the generation of research findings. All content supported by AI tools was thoroughly reviewed and revised by the authors to ensure accuracy and contextual appropriateness. Additionally, Grammarly was used to support grammar checking and language editing.

8. References

Anderson, J. B., Marstiller, H., & Shah, K. (2019). Lean thinking for primary care. primary care. *Clinics in Office Practice, 46*(4), 515 – 527. https://doi.org/10.1016/j.pop.2019.07.009

Asad, M. M., Mahar, P., Datoo, A. K., Sherwani, F., & Hassan, R. (2023). Impact of quality assurance on TVET programs for the digital employment market of IR 4.0 in Pakistan: A quantitative investigation. *Education + Training.* https://doi.org/10.1108/et-08-2022-0295

Fan, X. (2020). Policy-driven development and the strategic initiative of one-million enrollment expansion in China's higher vocational education. *Ecnu Review of Education*. https://doi.org/10.1177/2096531120903879

Gamboa, A. J., & Melão, N. F. (2012). The impacts and success factors of ISO 9001 in education. *International Journal of Quality & Reliability Management, 29*(4), 384–401. https://doi.org/10.1108/02656711211224848

Gandasari, D., Tjahjana, D., Dwidienawati, D., & Sugiarto, M. (2024). Bibliometric and visualized analysis of social network analysis research on Scopus databases and VOSviewer. *Cogent Business and Management, 11*(1), Article 2376899. https://doi.org/10.1080/23311975.2024.2376899

Ghirotto, L., Panfilis, L. De, & Leo, S. Di. (2020). Health professionals learning qualitative research in their workplace: A focused ethnography. BMC Medical Education. https://doi.org/10.1186/s12909-020-02191-5

Gianni, M., Kontou, E., Avdikos, I., Kessopoulou, E., & Xanthopoulou, S. (2024). EFQM in vocational education – Teacher and student perspectives. *Quality Education for All, 1* (1): 222–239 . https://doi.org/10.1108/qea-05-2024-0041

Gröschl, A., Akkasoglu, G., Loderer, A., Płowucha, W., Werner, T., Bills, P., & Hausotte, T. (2014). MUVoT - Establishing an international vocational training program on the topic of measurement uncertainty. *11th IMEKO TC14 Symposium on Laser Metrology for Precision Measurement and Inspection in Industry, LMPMI* 2014, 50 – 53. https://www.scopus.com/pages/publications/84907374073

Hammick, M., Freeth, D., Koppel, I., Reeves, S., & Barr, H. (2007). A best evidence systematic review of interprofessional education: BEME Guide no. 9. *Medical Teacher, 29*(8), 735–751. https://doi.org/10.1080/01421590701682576

Hariyanti, R. A. M., Pahrudin, A., Akmansyah, M., & Fauzan, A. (2025). Evolution and future directions in school leadership development research: A global bibliometric perspective (2015-2025). *European Journal of Sustainable Development Research, 9*(4), em0326. https://doi.org/10.29333/ejosdr/16753

Harper, L., Coderre, S., Lithgow, K., Kelly-Turner, K., Davis, M., & McLaughlin, K. (2025). We should nudge clinicians and trainees to participate in health professions education programmes. *Medical Education*, 59, 1333–1340. https://doi.org/10.1111/medu.15749

Indrawati, S. M., & Kuncoro, A. (2021). Improving competitiveness through vocational and higher education: indonesia's vision for human capital development in 2019–2024. *Bulletin of Indonesian Economic Studies, 57*(1), 29–59. https://doi.org/10.1080/00074918.2021.1909692

Jain, R., Sahney, S., & Sinha, G. (2013). Developing a scale to measure students' perception of service quality in the Indian context. *The TQM Journal, 25*(3): 276–294 . https://doi.org/10.1108/17542731311307456

Jarboua, H. S. M., Bsharat, S. A. M., Abu-Seif, R. M. H., Qarqash, M. J. B., & Assali, A. (2025). Evaluating technical education in Palestinian universities through the lens of total quality management. *International Journal of Learning Teaching and Educational Research, 24*(7), 319–342. https://doi.org/10.26803/ijlter.24.7.16

Killip, G. (2020). A reform agenda for UK construction education and practice. *Buildings and Cities, 1*(1), 525–537. https://doi.org/10.5334/bc.43

Lengyelová, K., & Dimopoulou, N. (2023). Benchmarking of the e-learning quality assurance in vocational education and training: Project results. *Quality Innovation Prosperity*. https://doi.org/10.12776/qip.v27i2.1855

Lester, S. (2020). Creating conditions for sustainable degree apprenticeships in England. *Higher Education, Skills and Work-Based Learning, 10*(5), 701 – 714. https://doi.org/10.1108/HESWBL-04-2020-0062

Lu, Y., & Wang, T. (2023). Quality evaluation model of vocational education in China: A qualitative study based on grounded theory. *Education Sciences, 13(8)*, 819. https://doi.org/10.3390/educsci13080819

Malekani, A., & Mubofu, C. (2019). Challenges of school libraries and quality education in Tanzania: A review. *Library Philosophy and Practice, 2334,* 1–4. https://digitalcommons.unl.edu/libphilprac/2334/

Mara, L. C. (2018). Innovation in the government-run continuing vocational education and training programme for unemployed in Catalonia (Spain): Challenges and opportunities. *Intangible Capital, 14*(3). https://doi.org/10.3926/ic.1298

Markowitsch, J. (2018). Is there such a thing as school quality culture? *Quality Assurance in Education, 26*(1), 25–43. https://doi.org/10.1108/qae-07-2015-0026

Melisa, R., Dakka, L. N., Nurdiansa, E. S., & Wardani, W. O. S. (2025). English language learning in primary schools: A bibliometric review of trends, collaboration, and future research directions. *Primary Education Insight, 1*(1), 14–26. https://doi.org/10.65779/pedi.v1i1.18

Myers, M. K., Jansson-Knodell, C. L., Schroeder, D. R., O'meara, J. G., Bonnes, S. L., & Ratelle, J. T. (2018). Using knowledge translation for quality improvement: An interprofessional education intervention to improve thromboprophylaxis among medical inpatients. *Journal of Multidisciplinary Healthcare, 11*, 467–472. https://doi.org/10.2147/JMDH.S171745

Nasrum, A., Salido, A., & Chairuddin. (2025). Unveiling emerging trends and potential research themes in future ethnomathematics studies: A global bibliometric analysis (from inception to 2024). *International Journal of Learning, Teaching and Educational Research, 24*(2), 206–226. https://doi.org/10.26803/ijlter.24.2.11

Onstenk, J., & Blokhuis, F. (2007). Apprenticeship in the Netherlands: connecting school- and work-based learning. *Education + Training, 49*(6), 489–499. https://doi.org/10.1108/00400910710819136

Pepper, I., Cox, C., Fee, R., Horgan, S., Jarman, R. A., Jones, M., Policek, N., Rogers, C., & Tattum, C. (2024). The first national subject benchmark statement for UK higher education in policing: The importance of effective partnership and collaboration. *Higher Education Skills and Work-Based Learning*, *14*(5): 1106–1120. https://doi.org/10.1108/heswbl-02-2023-0042

Prasad, K. V. S. (2018). An empirical study of Total Quality Management in engineering education institutions: Perspective of management. *International Journal of Mechanical Engineering and Technology, 9*(2), 547 – 555. https://www.scopus.com/pages/publications/85042723839

Prasad, K. V. S. (2020). Students' opinions of quality management in engineering colleges: An empirical investigation. *International Journal on Emerging Technologies, 11*(2), 756 – 762. https://www.scopus.com/pages/publications/85085052072

Ren, Q., & Wareewanich, T. (2023). *Research on performance evaluation of higher vocational education informatization based on data envelopment analysis*. Stem Education. https://doi.org/10.3934/steme.2023014

Sahney, S., Banwet, D. K., & Karunes, S. (2010). Organizational culture, Sri Lanka, public sector organizations, total quality management, hospitals: An administrative staff perspective in the Indian context. *TQM Journal, 22*(1), 56 – 71. https://doi.org/10.1108/17542731011009621

Sahu, A. R., Shrivastava, R. R., & Shrivastava, R. L. (2013). Critical success factors for sustainable improvement in technical education excellence. *The TQM Journal, 25*(1): 62–74. https://doi.org/10.1108/17542731311286432

Salido, A., Syarif, I., Suparjan, Wana, P. R., Sitepu, M. S., & Melisa, R. (2025). Mapping the landscape of critical thinking skills in higher education in the AI era: A bibliometric and systematic literature review. *Journal of Culture and Values in Education, 8*(2), 139–164. https://doi.org/10.46303/jcve.2025.23

Sauber, M. H., McSurely, H. B., & Tummala, V. M. R. (2008). Developing supply chain management program: A competency model. *Quality Assurance in Education, 16*(4), 375 – 391. https://doi.org/10.1108/09684880810906517

Sibgatullina-Denis, I., Riabov, O. R., Merzon, E. E., & Vančová, A. (2020). Descriptive analysis of benchmarking in respect to SMART/UNI-Q systems' intellectual integrations within the european higher education area. *Integration of Education, 24*(4), 532–551. https://doi.org/10.15507/1991-9468.101.024.202004.532-551

Staniškis, J. K., & Katiliūtė, E. (2016). Complex evaluation of sustainability in engineering education: case & analysis. *Journal of Cleaner Production, 120,* 13–20. https://doi.org/10.1016/j.jclepro.2015.09.086

Sugarman, M., Graham, B., Langston, S., Nelmes, P., & Matthews, J. G. (2021). Implementation of the 'TAKE STOCK' hot debrief tool in the ED: A quality improvement project. *Emergency Medicine Journal*, *38,* 579-584 https://doi.org/10.1136/emermed-2019-208830

Sütőová, A., Teplická, K., & Straka, M. (2022). Application of the EFQM model in the education institution for driving improvement of processes towards sustainability. *Sustainability, 14*(13), Article 7711. https://doi.org/10.3390/su14137711

Tekle, A., Areaya, S., & Habtamu, G. (2025). Stakeholders' perceptions of occupational competency assessment and certification systems in Ethiopia's TVET programs. *Higher Education, Skills and Work-Based Learning, 15*(2), 274 – 289. https://doi.org/10.1108/HESWBL-02-2024-0030

Upadhayay, L., & Vrat, P. (2016). An ANP based selective assembly approach incorporating Taguchi's quality loss function to improve quality of placements in technical institutions. *TQM Journal, 28*(1), 112 – 131. https://doi.org/10.1108/TQM-06-2014-0054

Wafudu, S. J., & Kamin, Y. (2024). Quality assurance: A conceptual framework for teaching and learning standards in vocational and technical education programs. *Quality Assurance in Education, 32*(2): 213–231. https://doi.org/10.1108/qae-11-2023-0184

Wafudu, S. J., Kamin, Y., & Marcel, D. (2022). Validity and reliability of a questionnaire developed to explore quality assurance components for teaching and learning in vocational and technical education. *Humanities and Social Sciences Communications, 9*(3). https://doi.org/10.1057/s41599-022-01306-1

Walsh, C. L., Gordon, M. F., Marshall, M., Wilson, F., & Hunt, T. (2005). Interprofessional capability: A developing framework for interprofessional education. *Nurse Education in Practice, 5*(4), 230–237. https://doi.org/10.1016/j.nepr.2004.12.004

Yaya, L. H. P., Marimon, F., Llach, J., Bernardo, M., & Casadesus, M. (2017). Analysis of training programs related to quality management system: The Spanish case. *International Journal of Quality & Reliability Management, 34*(2), 216–230. https://doi.org/10.1108/IJQRM-05-2015-0071

Zupic, I., & Čater, T. (2015). Bibliometric methods in management and organization. *Organizational Research Methods, 18*(3), 429–472. https://doi.org/10.1177/1094428114562629