# Upskilling and Reskilling Vocational High School Teachers: A Systematic Literature Review on Strategies for Strengthening Professional Competence in the Marketing Field

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**Abstract**
*The accelerating digital transformation and shifts in industrial structures require vocational high school (VHS) teachers, particularly in the marketing field, to possess professional competencies that align with the evolving needs of the labor market. This study examines strategies for upskilling and reskilling VHS teachers through a systematic literature review guided by the PRISMA 2020 protocol. Eleven peer-reviewed articles published between 2020 and 2025 were thematically analyzed using the 5C Framework, which includes Content, Context, Commitment, Capacity, and Clients or Coalition. The synthesis reveals that the effectiveness of teachers' professional development depends on the integration of industry- and technology-based training design (content and capacity), institutional support and personal motivation (context and commitment), and multi-stakeholder collaboration involving schools, industries, and teacher communities (clients or coalition). Overall, the enhancement of vocational teachers' professional competence requires the development of a reflective, collaborative, and industry-oriented learning ecosystem that enables vocational education to adapt effectively to the digital era and the transition toward Industry 5.0.*
***Keywords****: upskilling, reskilling, vocational teacher, professional competence, vocational education, 5C Framework, marketing*

**Abstrak**
Transformasi digital yang semakin cepat dan pergeseran struktur industri menuntut guru Sekolah Menengah Kejuruan (SMK), khususnya di bidang pemasaran, untuk memiliki kompetensi profesional yang selaras dengan kebutuhan pasar tenaga kerja yang terus berkembang. Studi ini mengkaji strategi peningkatan dan pelatihan ulang keterampilan guru SMK melalui tinjauan pustaka sistematis yang dipandu oleh protokol PRISMA 2020. Sebelas artikel tinjauan sejawat yang diterbitkan antara tahun 2020 dan 2025 dianalisis secara tematis menggunakan Kerangka Kerja 5C, yang meliputi Konten, Konteks, Komitmen, Kapasitas, dan Klien atau Koalisi. Sintesis ini mengungkapkan bahwa efektivitas pengembangan profesional guru bergantung pada integrasi desain pelatihan berbasis industri dan teknologi (konten dan kapasitas), dukungan institusi dan motivasi pribadi (konteks dan komitmen), serta kolaborasi multi-pemangku kepentingan yang melibatkan sekolah, industri, dan komunitas guru (klien atau koalisi). Secara keseluruhan, peningkatan kompetensi profesional guru SMK memerlukan pengembangan ekosistem pembelajaran yang reflektif, kolaboratif, dan berorientasi industri yang memungkinkan pendidikan vokasi beradaptasi secara efektif dengan era digital dan transisi menuju Industri 5.0.
**Kata kunci**: peningkatan keterampilan, pelatihan ulang keterampilan; guru kejuruan, kompetensi profesional, pendidikan kejuruan, Kerangka Kerja 5C, pemasaran

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## INTRODUCTION

Global transformation driven by digitalization and automation has fundamentally reshaped the structure of work, creating a skills mismatch between the competencies of the workforce and the evolving demands of industry (OECD, 2021; World Economic Forum, 2020). Within this context, vocational education plays a pivotal role in bridging the gap between education and employment. However, the effectiveness of vocational education largely depends on the capacity and professional competence of teachers as the primary agents of skills-based learning. Vocational teachers serve not only as transmitters of knowledge but also as facilitators of learners' competence transformation, enabling them to adapt to the dynamics of the labor market.

In Indonesia, Vocational High Schools (SMK) constitute a key component of the national vocational education system, designed to produce industry-ready graduates. SMK teachers are required to master emerging technologies and contemporary industrial practices to ensure that instruction remains relevant to labor market developments (Ministry of Education, Culture, Research, and Technology, 2022). These challenges are particularly complex in the marketing field, where digitalization has shifted traditional paradigms toward business ecosystems that demand competencies in areas such as digital branding, e-commerce management, and data-driven marketing (Yuliyanto & Rahmanto, 2023). Strengthening the professional competence of SMK teachers has therefore become essential to maintaining the relevance and quality of vocational education.

To address these challenges, the Indonesian government, through the Directorate of Partnerships and Alignment between Education and Industry (Mitras DUDI), has implemented the Upskilling and Reskilling Program for SMK Teachers since 2020. This initiative aims to align teachers' competencies with industry needs through blended-learning training models and collaborations with industrial partners (Directorate General of Vocational Education, 2023). Such an approach is consistent with the national policy of vocational education revitalization, which emphasizes contextual and collaborative learning between schools and industries. This policy direction also aligns with international frameworks, including the OECD's Future of Education and Skills 2030 initiative, which underscores the importance of continuous professional learning for teachers (Schleicher, 2022), and UNESCO's (2023) guidance on transforming Technical and Vocational Education and Training (TVET) to prepare educators for the future of work.

Although the program has been implemented across various fields, empirical evidence on its effectiveness remains limited. Most previous studies have focused on technical aspects of implementation or participant satisfaction, rather than on the extent to which training outcomes are transferred into classroom practice (Misbah et al., 2021; Rosidah et al., 2019). This indicates a persistent gap between training program design and the actual enhancement of teachers' professional competence.

To date, no comprehensive systematic review has mapped the approaches, challenges, and success determinants of upskilling and reskilling programs for vocational teachers. Therefore, this study conducts a systematic literature review (SLR) to identify global trends, best practices, and strategic implications for strengthening the professional competence of SMK teachers, with a specific focus on the marketing specialization. The synthesis of literature is expected to provide a conceptual foundation for future empirical research and serve as a reference for developing more adaptive and sustainable vocational teacher capacity-building policies.

## METHODE

This study employed a **Systematic Literature Review (SLR)** approach, guided by the **PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)** protocol developed by Page et al. (2021). The PRISMA 2020 framework emphasizes transparent, complete, and replicable reporting across all stages of the review process, including the identification of literature sources, study selection, eligibility assessment, and synthesis of results.

The adoption of this approach aimed to ensure traceability and objectivity throughout the process of identifying and synthesizing literature relevant to the effectiveness of upskilling and reskilling programs for Vocational High School (SMK) teachers in the marketing specialization. Through this SLR, the study integrates empirical and conceptual findings to produce an evidence-based and comprehensive understanding of strategies for enhancing vocational teachers' professional competence within the context of industry-oriented educational transformation.

The literature search was limited to articles published in **Indonesian and English** between **2020 and 2025**, to maintain alignment with the most recent policies and practices in vocational education. The initial search through **Google Scholar** and other academic databases yielded approximately **200 potential articles**. The first **screening stage** was conducted based on titles, keywords, and abstracts to determine relevance to the research focus, resulting in **24 studies** that demonstrated substantial connection to the issue of professional competence development among vocational teachers.

The subsequent **eligibility assessment** involved full-text reading of **16 articles** that met methodological and contextual criteria. Each article was evaluated based on the relevance of its research object, depth of analysis, and its connection to upskilling and reskilling training programs. Following this assessment, **11 articles** were determined to meet the inclusion criteria and were used as the basis for the final synthesis of literature, as recommended by the PRISMA 2020 guidelines to ensure transparency and reproducibility of review outcomes.

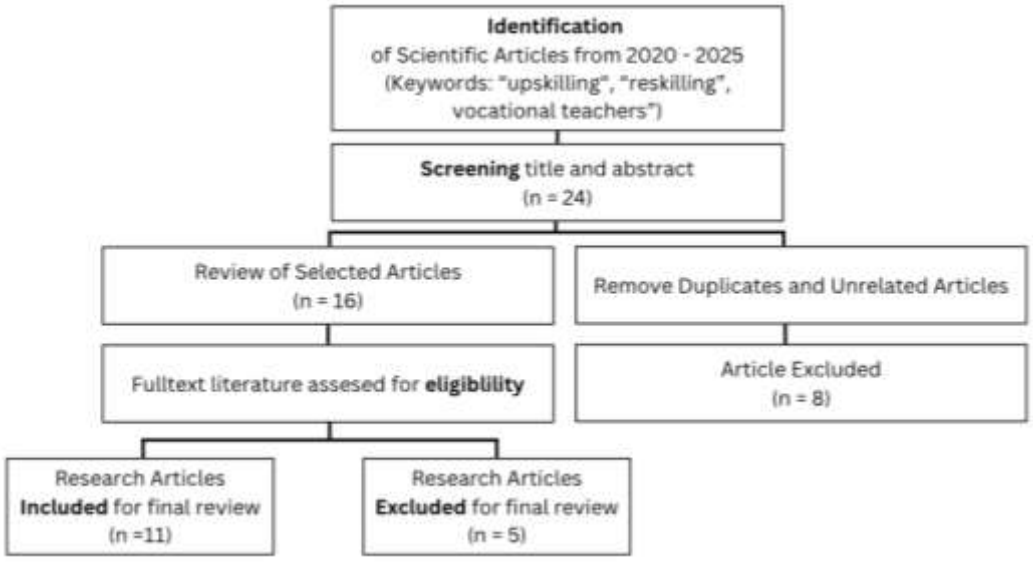


*Figure 1. Flowchart of the Literature Review Process*

The literature was analyzed through a **deductive thematic analysis** using the **5C Framework** developed by Najam (1995) as the main conceptual foundation. This framework was selected because it provides a comprehensive understanding of the implementation of education and training programs across five key dimensions: **content** (training substance and design), **context** (institutional and policy

environment), **commitment** (stakeholder motivation and support), **capacity** (resource capability), and **clients or coalitions** (beneficiaries and collaborative networks).

In this study, the 5C Framework was applied to analyze the interrelationships among training design, institutional support, teacher motivation, and cross-sectoral collaboration that influence the effectiveness of upskilling and reskilling programs. Recent studies affirm that the 5C approach remains relevant for evaluating educational programs, particularly in understanding the social and institutional factors that determine implementation success (Ali & Hassan, 2021; Dwi & Haris, 2022; Abbas & Rahman, 2024). Therefore, the framework functions not only as a thematic categorization tool but also as an analytical lens to assess the dynamics of synergy among stakeholders involved in strengthening vocational teachers' competencies.

## RESULT AND DISCUSSION

A total of sixteen scientific articles published between 2021 and 2025 were fully reviewed to examine the practices of upskilling and reskilling among Vocational High School (SMK) teachers and vocational educators across various national and international contexts. Of these, eleven were empirical studies (qualitative and quantitative), while five were conceptual papers or systematic reviews that reinforced the theoretical context of this research.

Geographically, most studies were conducted in Indonesia (Hasanah et al., 2023; Mahmudah et al., 2021; Nurhayati et al., 2022; Nurdin, Khofifah, and Herlianto, 2024), followed by Malaysia (Zainuddin et al., 2023), the Philippines (Quimpan and Bauyot, 2024), Nigeria (Igulu et al., 2025), and the United Arab Emirates (Al Mutairi, 2023). Several international and global studies were also included to strengthen the macro perspective on upskilling and reskilling trends (Penalva, 2023; Sari et al., 2024).

The reviewed studies employed a variety of research methodologies, including descriptive qualitative approaches (Hasanah et al., 2023; Nurdin et al., 2024), case studies (Mahmudah et al., 2021), quantitative and correlational surveys (Quimpan and Bauyot, 2024; Igulu et al., 2025), and mixed-method designs utilizing evaluative models such as Kirkpatrick (Yusuf et al., 2024). Several conceptual papers (Allen, 2022; Penalva, 2023) emphasized the importance of technology integration, industry collaboration, and reflective learning in strengthening vocational teachers' professional capacity.

Overall, the synthesis shows that the success of vocational teachers' upskilling and reskilling programs is determined not only by training design but also by contextual support, institutional commitment, and collaborative networks among teachers, schools, industries, and government stakeholders. The findings were analyzed using the 5C Framework (Content, Context, Commitment, Capacity, and Clients/Coalition) to map the key factors influencing the effectiveness of vocational teacher training programs. These five dimensions are interrelated and collectively form a holistic professional learning ecosystem. The synthesis of the eleven selected studies indicates that each dimension plays a distinct role in strengthening teacher competence, institutional support, and cross-sectoral collaboration. The main findings based on each 5C dimension are presented below.

### a) Content

The Content dimension covers training design, pedagogical approaches, and the relevance of materials to industrial needs and digital transformation. Most studies highlighted the importance of industry-based and technology-enhanced learning models. Mahmudah et al. (2021) identified three core components of effective training: upskilling, competency assessment, and industry partnership. Allen (2022) added that continuous professional development through courses, seminars, and workshops helps reinforce business teachers' professionalism.

In the international context, Igulu et al. (2025) emphasized the urgency of innovative pedagogies such as blended learning, project-based learning, and the integration of advanced technologies (AI, VR, and cloud computing) to prepare TVET educators for Industry 4.0. Meanwhile, Hasanah et al. (2023) and Nurdin et al. (2024) demonstrated that relevant training content improves teachers' creativity, technological proficiency, and project-based pedagogical skills. Consequently, the quality of training content serves as a key determinant of the effectiveness of vocational teacher upskilling programs.

**b) Context**

The Context dimension represents the institutional environment, education policy, and collaborative ecosystem that support successful training. Zainuddin et al. (2023) found that the effectiveness of industry-driven TVET programs in Malaysia is shaped by government policy support and heutagogical approaches that foster teacher self-directed learning. In Indonesia, Nurhayati et al. (2022) highlighted the role of school principals in *SMK Centers of Excellence (SMK-PK)* as catalysts in providing infrastructure, teacher internships, and industry partnerships.

Similarly, Sari et al. (2024), through a global literature review, emphasized that national policy contexts and TVET globalization are critical in ensuring the sustainability of professional teacher development. Vocational education reforms in China (Li and Zhou, 2023) and the collaborative model in Malaysia demonstrate that systemic policy support can accelerate the reskilling revolution in the vocational education sector.

**c) Commitment**

The Commitment dimension is related to individual motivation, school leadership, and institutional engagement. Nurhayati et al. (2022) found that visionary and collaborative school leadership is a key factor in strengthening the implementation of teacher development programs. Research by Quimpan and Bauyot (2024) in the Philippines also highlighted the influence of achievement motivation and teacher participation in collective decision-making on active engagement in training programs.

Hasanah et al. (2023) further emphasized that intrinsic motivation and professional community support, such as *Subject Teacher Working Groups (MGMP)*, enhance the sustainability of teachers' professional learning. Conceptual studies by Allen (2022) and Penalva (2023) underlined the importance of organizational commitment through incentive policies, mentoring systems, and a culture of innovation to encourage teachers' participation in continuous professional development.

**d) Capacity**

The Capacity dimension includes skill enhancement, pedagogical innovation, and digital competence strengthening. Empirical studies reported significant improvements in teacher capacity following participation in training programs. Mahmudah et al. (2021) and Nurdin et al. (2024) documented improvements in teachers' technical skills and ability to create project-based learning media. Igulu et al. (2025) and Al Mutairi (2023) emphasized that reflective practice and design-thinking-based training foster innovative and adaptive mindsets among teachers.

In addition, Yusuf et al. (2024) and Sari et al. (2024) highlighted that mastery of digital pedagogy competencies, such as TPACK and DigCompEdu, is essential for building 21st-century teacher capacity. Overall, capacity development should encompass technical expertise, professional reflection, and collaborative skills oriented toward innovation.

**e) Clients / Coalition**

The Clients or Coalition dimension focuses on stakeholder involvement in supporting the success of training programs. Nurdin et al. (2024) found that collaboration between schools, businesses, and industries through internship programs enhances teachers' motivation and professional networking. Quimpan and Bauyot

(2024) noted that collaborative work environments increase teachers' participation in professional development activities.

Allen (2022) and Zainuddin et al. (2023) emphasized the significance of cross-sector partnerships among educational institutions, industries, and training centers as key drivers of sustainable upskilling. Such multi-stakeholder collaboration ensures the transfer of training outcomes into teaching practices and strengthens the continuous learning ecosystem within vocational schools.

*Table 1. Thematic Synthesis of the 5C Dimensions in Vocational Teacher Upskilling and Reskilling*

| 5C Dimension / Topic | Focus and Thematic Summary | Key Findings / Insights | References |
|---|---|---|---|
| **Content** | Training design, pedagogical innovation, and relevance of materials to industrial needs and digital transformation. | Effective training includes three core components: upskilling, competency assessment, and industry collaboration. Integration of technologies (AI, VR, ICT) and project-based or blended learning enhances creativity and teaching relevance. | [3], [4], [6], [10] |
| **Context** | Education policy, school leadership, and institutional support in implementing upskilling/reskilling programs. | Program success is influenced by systemic policy support and visionary leadership. The Indonesian *SMK Center of Excellence* and Malaysia's industry-driven TVET model demonstrate the importance of school–industry synergy. | [2], [5], [14] |
| **Commitment** | Individual motivation, organizational commitment, and transformative leadership. | Principal leadership and teacher achievement motivation increase training participation. A culture of innovation, mentoring, and organizational incentives supports sustained professional growth. | [1], [5], [8], [11] |
| **Capacity** | Skill strengthening, pedagogical reflection, and digital competence development. | Industry-based training and reflective practice foster adaptive, creative, and collaborative skills. Digital pedagogy frameworks such as TPACK and DigCompEdu underpin 21st-century teacher capacity. | [1], [3], [6], [7], [9], [10] |
| **Clients / Coalition** | Collaboration among teachers, learning communities, and industry partners to support training transfer. | Multi-actor collaboration among schools, industries, training institutions, and teacher communities sustains training outcomes. | [2], [7], [8], [9] |

| 5C Dimension / Topic | Focus and Thematic Summary | Key Findings / Insights | References |
|---|---|---|---|
| | | Collaborative environments reinforce motivation and the transfer of competencies into classroom practice. | |

The findings of this study indicate that vocational teachers' professional development is a systemic and multidimensional process shaped by institutional structures, individual motivation, and collaborative networks. Analysis through the 5C Framework (Content, Context, Commitment, Capacity, and Clients/Coalition) shows that these dimensions interact dynamically to build a sustainable ecosystem for professional learning.

1. Synergy between Content and Capacity as the Core of Teacher Competence Transformation

Among the five dimensions, Content and Capacity emerge as the main levers for transforming vocational teacher competence. This result aligns with previous studies emphasizing that training design, curriculum structure, and learning methodologies are key determinants of effective skill enhancement (Mahmudah et al., 2021; Allen, 2022; Hasanah et al., 2023). Approaches such as project-based learning, blended learning, and the integration of digital technologies including AI, VR, and cloud-based platforms have been shown to improve teachers' adaptive and creative capabilities (Igulu et al., 2025; Al Mutairi, 2023).

Training programs that encourage reflective practice (Al Mutairi, 2023) and establish industry partnerships (Yusuf et al., 2024; Nurdin et al., 2024) also facilitate the transfer of knowledge from training to classroom implementation. Consequently, Content serves not only as a technical component of instruction but also as a catalyst for developing pedagogical capacity that enables teachers to design learning aligned with industrial needs.

2. Context and Commitment as Institutional and Psychosocial Pillars

The success of vocational teacher upskilling and reskilling depends heavily on the interaction between institutional policy support and teachers' personal motivation. Zainuddin et al. (2023) emphasize that industry-driven TVET policies jointly managed by government, industry, and educational institutions help maintain the relevance of training programs to labor market dynamics. Similarly, the SMK Centers of Excellence program in Indonesia illustrates how visionary leadership and school-level management can mobilize resources and partnerships to strengthen teacher development (Nurhayati et al., 2022).

From a psychosocial standpoint, intrinsic motivation and peer community engagement are essential for sustaining continuous learning (Hasanah et al., 2023; Quimpan & Bauyot, 2024). Organizational cultures that promote innovation, mentorship, and incentives also contribute to long-term professional commitment (Penalva, 2023). Thus, institutional structures provide the necessary direction, while individual and collective commitment ensures sustained participation and engagement.

3. Clients and Coalition as Drivers of Competence Transfer

The Clients or Coalition dimension highlights the importance of stakeholder collaboration in ensuring that training outcomes are effectively applied in professional practice. Partnerships between schools and industries not only increase teacher motivation but also broaden professional networks that enhance experiential learning (Nurdin et al., 2024; Yusuf et al., 2024). In addition, collaborative decision-making and team-based work environments encourage teachers to engage in pedagogical innovation (Quimpan & Bauyot, 2024).

This evidence suggests that teachers benefit most when professional development occurs within a community of practice where knowledge sharing, reflection, and innovation are ongoing. The Clients/Coalition dimension therefore acts as a bridge connecting individual learning outcomes with institutional transformation, ensuring that competence development is continuously translated into improved teaching and stronger industry linkages.

4. Integration of the 5C Dimensions in the Vocational Teacher Learning Ecosystem

The synthesis of findings indicates that the five dimensions of the 5C Framework form an integrated and adaptive model for vocational teacher development. Content and Capacity provide the pedagogical foundation for improving instructional quality, while Context and Commitment strengthen the structural and psychosocial aspects that sustain engagement. Clients/Coalition link the micro-level outcomes of teacher training to broader institutional and industrial systems.

This integrated view positions vocational teacher development as an ecosystemic process rather than a series of isolated training activities. Sustainable professional growth requires balance across personal competence, institutional support, and cross-sector collaboration, allowing teachers to adapt to ongoing industrial and technological transformation.

5. Theoretical and Practical Implications

Theoretically, the findings extend the applicability of the 5C Framework from policy analysis to professional learning research. The framework provides a useful analytical lens for understanding how micro-level training initiatives connect with macro-level policy and institutional structures. This study thereby reinforces the 5C Framework as a comprehensive model for examining vocational teacher development in dynamic educational contexts.

Practically, the results suggest that teacher development policies should prioritize the establishment of collaborative ecosystems involving government agencies, industries, training institutions, and teacher associations. Strategies such as reflective learning, project-based practice, mentoring systems, and incentive mechanisms are essential to sustain competence improvement. Ultimately, vocational teacher transformation should aim not only to enhance adaptability to Industry 4.0 but also to cultivate visionary educators capable of leading the transition toward Industry 5.0.

## CONCLUSIONS

This systematic literature review confirms that upskilling and reskilling programs for Vocational High School (SMK) teachers, particularly in the field of marketing, play a central role in strengthening the relevance of vocational education to the ever-evolving needs of industry. The synthesis results indicate that the effectiveness of teacher competency development is determined by the integration of training design, institutional support, professional capacity, and multi-stakeholder collaboration. Therefore, teacher competency improvement should be understood as an ecosystemic process that holistically involves pedagogical, psychological, and institutional dimensions.

The Content and Capacity dimensions lie at the core of teacher competency transformation, where industry-based training and digital technology integration enhance both the technical and pedagogical skills of vocational teachers. Policy support and organizational commitment reinforce program sustainability, while collaboration among schools, industries, and professional communities fosters a learning ecosystem that promotes continuous competence transfer. This approach demonstrates that training success depends not only on technical aspects but also on consistent structural and collaborative support.

Conceptually, these findings affirm that the 5C framework (Content, Context, Commitment, Capacity, and Clients/Coalition) is effective for analyzing strategies in

vocational teacher professional development. Future strategies for improving the competencies of SMK marketing teachers should focus on building a reflective, collaborative, and industry-based learning ecosystem. This approach will ensure that Indonesian vocational education can adapt to digital transformation and contribute to the development of superior human resources in the era of Industry 5.0.

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