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Industry-Oriented Career Guidance Model for Improving Employability of Vocational Education Students

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Abstract

Career guidance is widely seen as a key lever to help align vocational education with industry needs, but integrated and industry-driven career services are still commonly lacking. The study aims to investigate the impact of an industry-oriented career guidance model on improving vocational students' employability and alignment with workforce needs. A Systematic Literature Review (SLR) following the PRISMA framework was conducted to analyze twenty peer-reviewed journal articles published between 2015 and 2026. The review focuses on identifying conceptual developments, implementation practices, and effectiveness factors related to industry-oriented career guidance. The review also highlights enabling factors, such as institutional support, career counsellor competencies, engagement with professional industries and students' ability to adapt to careers. In addition, career guidance is an ecosystem-oriented process that acts as a link between curriculum development, the formation of professional identity, and portfolio readiness. Theoretically, this paper has highlighted the need to reposition career guidance as a strategic element of vocational education reform; and practically it has provided avenues for developing industry-responsive guidance systems.

KEYWORDS

career guidance; vocational education; employability; industry-oriented model; link and match; workforce alignment; career preparedness systematic literature review.

Introduction

Vocational education plays a strategic role in preparing a skilled workforce that meets industrial demands and supports economic development. However, numerous studies indicate the persistence of a mismatch between vocational graduates' competencies and labor market requirements, which negatively affects graduate employability. One promising strategy to address this issue is the development of career guidance models that are directly aligned with industry needs. Industry-oriented career guidance enables students to understand occupational requirements, develop adaptive competencies, and strengthen career readiness through structured exposure to workplace environments and professional expectations (Jackson et al., 2025; Zhou & Brown, 2020.).

The rapid transformation of industries driven by digitalization, automation, and global economic changes has intensified the demand for multidimensional competencies, including technical expertise, transferable skills, and career adaptability. In this context, career guidance is no longer viewed as a conventional counseling service but as an integrated educational strategy that supports professional identity formation and long-term career planning. Previous research emphasizes that integrating industry-based learning experiences into career guidance programs significantly improves students' employability and facilitates smoother school-to-work

transitions (Jackson et al., 2025; Jackson & Tomlinson, 2026).

Despite growing attention to career guidance in vocational education, existing studies predominantly focus on traditional counseling approaches and have not systematically developed career guidance models that explicitly incorporate industry-driven workforce requirements. Moreover, several studies emphasize general employability skills development without fully integrating collaboration between educational institutions, industry stakeholders, and labor market policies into career guidance design. This limitation suggests the need for a more structured and industry-responsive framework for vocational career guidance (Dodd et al., 2019; Robertson, 2018a).

Furthermore, there remains limited research examining how industry-oriented career guidance can comprehensively enhance vocational students' employability through authentic workplace experiences, labor market intelligence integration, and career literacy development. Many existing studies also lack a comprehensive conceptual framework that integrates career development theories with contemporary workforce demands. Therefore, further research is necessary to develop a sustainable and adaptive career guidance model that responds to evolving industrial transformations (Hooley & Rice, 2019; Joho et al., 2024).

Based on the identified research gaps, this study aims to address several key research questions. First, how can an industry-oriented career guidance model be developed within vocational education to improve students' employability? Second, how does the integration of industry requirements within career guidance programs enhance vocational students' career readiness and workforce alignment? Third, what factors influence the effectiveness of implementing industry-oriented career guidance in strengthening the alignment between vocational graduates' competencies and labor market needs? Addressing these research questions is expected to contribute both theoretically and practically to the development of industry-responsive career guidance models that support sustainable workforce development.

Methods

This study employed a Systematic Literature Review (SLR) to synthesize empirical and conceptual research on industry-oriented career guidance in vocational education. The SLR approach was selected to ensure methodological rigor, transparency, and replicability in identifying, evaluating, and synthesizing existing literature (Galdames-Calderón et al., 2024; Marzi et al., 2025). The review process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 guidelines, which provide a standardized framework for reporting systematic reviews.

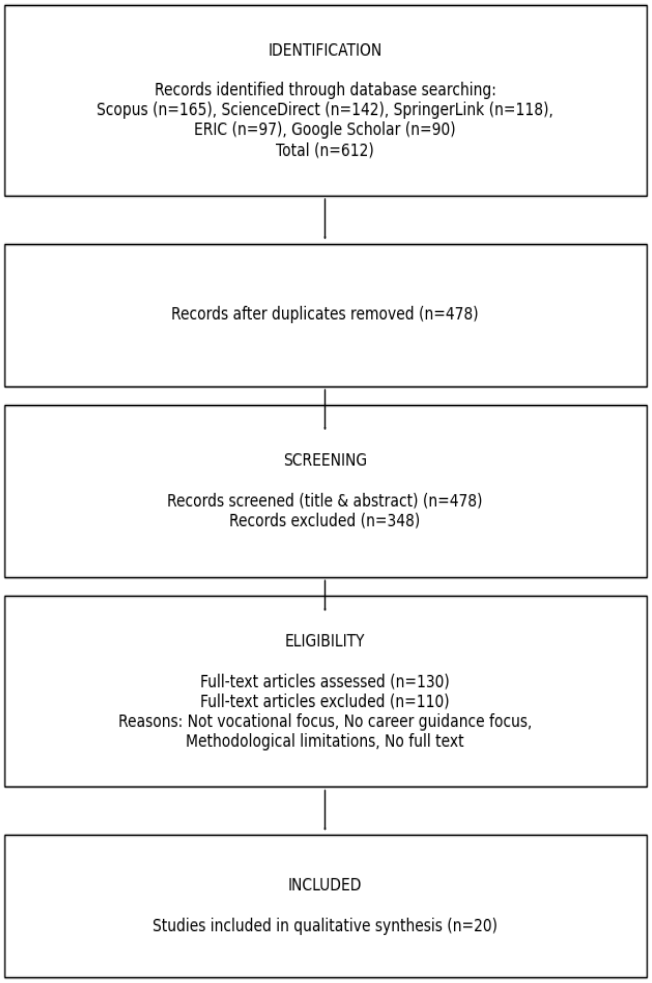

Figure 1. Flowchart Study Selection Process

Study Selection Process

The study selection process followed four stages in accordance with the PRISMA framework: identification, screening, eligibility, and inclusion. Initially, 612 records were identified through database searching. After removing duplicate entries, 478 records remained for title and abstract screening. During this stage, articles that did not meet the inclusion criteria were excluded. Subsequently, full-text screening was conducted to assess the relevance of each study in relation to industry-oriented career guidance and vocational employability. Following this evaluation, 20 articles met all eligibility criteria and were included in the final qualitative synthesis. (See Figure 1)

Data Extraction and Analysis

Data extraction was conducted using a structured coding framework to ensure systematic analysis. Key information extracted from each article included authorship, publication year, research objectives, methodology, theoretical framework, key findings, and implications for vocational career guidance.

A thematic synthesis approach was applied to analyze the selected studies. The analysis involved three stages: (1) initial coding of relevant findings, (2) grouping codes into descriptive themes, and (3) generating analytical themes aligned with the research questions. This process enabled the identification of dominant patterns, effective models, challenges, and future directions in industry-oriented career guidance.

Quality Assurance

To enhance the reliability and validity of the review, the screening and data extraction processes were conducted systematically and transparently. The use of the PRISMA framework ensured methodological rigor and minimized selection bias. Additionally, only articles published in peer-reviewed academic journals were included to ensure the credibility and reliability of the evidence synthesized in this review. Peer-reviewed publications undergo a formal evaluation process in which submitted manuscripts are critically assessed by independent experts before publication. This process helps ensure that the research meets accepted academic standards in terms of methodological rigor, theoretical grounding, data analysis, and scholarly contribution. By limiting the dataset to peer-reviewed journal articles, the review reduces the risk of including studies with insufficient methodological transparency or unverified findings. Furthermore, the selected articles were drawn from widely recognized academic databases in the fields of education and vocational training, which apply established indexing and publication standards. This approach supports the inclusion of studies that provide robust and credible insights into the implementation and outcomes of industry-oriented career guidance within vocational education contexts.

Result and Discussion

This systematic literature review synthesized evidence from 20 peer-reviewed journal articles published between 2015 and 2026 addressing career guidance in vocational education. The analysis examines key dimensions identified in the literature, including model components of industry-oriented career guidance, implementation practices in vocational institutions, evidence related to employability outcomes, and enabling factors that support industry–education alignment. The selected studies originate from diverse educational contexts, including Europe, Asia, Australia, and developing economies, reflecting the global relevance of industry-oriented career guidance.

The reviewed literature indicates a growing trend toward the development of competency-based and collaborative career guidance frameworks that integrate stronger industry engagement. Several studies suggest that such approaches complement or extend traditional career guidance practices by emphasizing employability skills, industry exposure, and school–industry collaboration. However, the strength of evidence varies across studies, as many contributions are conceptual or context-specific, and empirical evaluations remain limited in some vocational education settings. Research has shown that career guidance can facilitate structured collaboration between vocational institutions and industry stakeholders to expose students to real-world work environments through internships, apprenticeships, mentoring and project-based learning experiences (Alsaleh, 2020; Hooley & Rice, 2019). By integrating third parties, career guidance programmes close the gap between labour market information and meaningful learning paths where students are better positioned to understand occupational standards and best practices. The relevant literature reviewed does, however, consistently indicate that career guidance is most effective when it is integrated as an ongoing developmental process throughout the course of this vocational education experience than when provided near graduation point as a one-off event.

Additionally, this integration with industry requirements in career guidance programs is a critical factor for enhancing students' career readiness and employability. Most studies (e.g., a majority of the included articles) report positive associations between career guidance activities and outcomes such as improved career decision-making,

Table 1. Journal Relevant

Title	Key Findings	Gaps
The Role of the Technical and Vocational Education and Training (TVET) Curriculum in Enhancing Workforce Readiness (Teferi et al., 2025)	- TVET curriculum is essential for skilled labor force, but discrepancies exist between learned skills and job market demands. - Integrating theoretical and practical instruction, technical and soft skills, and aligning with industry needs improves flexibility, problem-solving, and lifelong learning. - Strong TVET enhances organizational performance, career prospects, and socioeconomic development. - Data-driven changes help adapt to labor market demands; gaps in digital literacy, soft skills, and entrepreneurial competencies.	- Undervaluation of preparing graduates for tech-driven workplaces. - Notable gaps in digital literacy, soft skills, entrepreneurial competencies, and adaptability to industry trends. - Need for ongoing monitoring of industry satisfaction and skills gaps.

Title	Key Findings	Gaps
in the curriculum: What is an academic's role?(Dean et al., 2022.)	- Academics perceive roles in facilitating CDL within curriculum, with a taxonomy of practices: absent, implicit, and explicit approaches. - CDL enhances student employability through reflection and planning; academics fill mentoring gaps and integrate CDL into teaching. - University-wide agenda recommended for embedding CDL in core curricula to meet employability needs.	- Shortcomings in student mentoring and awareness of labor market vagaries. - Limited understanding and planned integration of CDL strategies in teaching contexts.
Impact of Career Counseling & Vocational Guidance on Employment in TVET Sector (Arshad et al., 2018)	- Career counseling is important for understanding and enhancing employment of TVET graduates in the job market. - Empirical validation needed from developed and underdeveloped economies. - Incorporating economic variables with career counseling can enrich understanding.	- Focused on specific aspects; opportunities for future research on broader applications. - Need for more studies on career counseling's impact in diverse economies.
Career Guidance Intervention to Improve the Employability Skills of Students in Vocational High School (Amirullah et al., 2025)	- Career guidance intervention statistically enhances employability skills in all areas for vocational high school students. - Mismatch between job market expectations and graduate skills; over 50% of stakeholders can't find right competencies. - Need for educational mechanisms providing knowledge, skills, and experiences for suitable employment.	- Limited research population to specific school category. - Need for future studies evaluating efficacy of each activity component.
Evidence on adult career guidance and its role in skills development (Hooley, 2023)	- Career guidance leads to productivity gains, reduced skills gaps/shortages, lower unemployment, and enhanced income. - Need for coherent systems without gaps or overlap; significant gaps in occupational information and labor market intelligence. - Longer-term qualitative/quantitative outcomes; limitations of economic models require other metrics.	- Gaps in system for adult career guidance, including occupational information and service provision. - Shortage of evidence on longer-term impacts; need to address duplication and enhance quality.
Employment Tactics and Strategies of Technical-Vocational Education Students for Career and Professional Development in the Labour Market of Vietnam (Kieu et al., 2023)	- Difficulty in obtaining desirable/high-paying jobs despite ease in finding basic employment. - Low satisfaction and resilience due to poor conditions; strategies: maintain low-pay jobs, update skills, change to suitable jobs. - Strategies lead to sustainable career promotion and professional development.	- Shortage of studies on TVE graduates' employment experiences in Vietnamese labor market. - Need for more research on practical skills' advantages in technical jobs.
Career Services as an institutional approach to employability (Hughes et al., 2021)	- Historical reconstruction of Career Services in education; main approaches in 20th century reflect educational intentions. - Career Services as pathways for life project building and work transitions; future role as hubs for connections and community engagement. - Involves stakeholders in creating value and social transformation in evolving global contexts.	- Limited exploration of organizational models beyond academic level. - Need for more studies on internationalization and interconnection in higher education challenges.
Ensuring quality in career guidance: a critical review **(**Hooley & Rice, 2019**)**	- Quality assurance central to effective career guidance delivery across lifespan. - User perspectives critical but need awareness of limitations; satisfaction important but may require supplementary measures. - Role of evidence-based policy and continuous improvement.	- Reservations on user satisfaction metrics; need for broader understanding of quality contours. - Gaps in connecting quality assurance to wider policy goals.
Analyzing teachers' competencies in career guidance: a systematic review (Joho et al., 2024)	- Teachers hold positive attitudes toward career guidance but recognize gaps in knowledge and skills; need for further training. - Significant research gaps: direct measurement of knowledge, self-regulation, motivational orientations. - Lack of theoretical modeling for teachers' competencies in career guidance.	- Significant gaps in professional knowledge domains; motivational and self-regulation aspects underexplored. - Narrow focus on English/German studies; potential overlooked pertinent studies. - Need for concerted efforts from researchers, policymakers, educators.

Title	Key Findings	Gaps
The role of learning and career guidance for managing mid-career transitions **(**Haasler & Barabasch, 2015**)**	- Large gaps in career guidance use between disadvantaged and advantaged groups; prime-age vs. older adults. - Recommendations: Tailor guidance, assess skills with profiling tools, focus on transitions and skill gaps. - Coordination across ministries reduces duplication; online portals useful but face access issues.	- Gaps in service provision, duplication; disadvantaged groups underuse guidance. - Limitations of AES survey (quality not captured); digital exclusion in online portals. - Need for information on flexible pathways and skill gaps analysis.
Developing green skills for sustainable careers (Subrahmanyam, 2025)	Guide to key findings for effective policy and practice in lifelong guidance. - Programmatic interventions more effective than single ones; need for evidence-based policy. - Assessment of data access and gaps for continuous improvement.	- Gaps in national/regional/local data; need to address as part of improvement plans. - Not advisable for comparative assessments; focus on practical data evaluation.
Career adaptability, employability, and career resilience in managing transitions (Duarte et al., 2017)	Systems in Germany and Denmark support mid-career transitions through skills development, but constraints like availability, funding, and information limit benefits; systems assume linear careers, not disruptive ones.	Constraints derive from presupposing linear careers; limited adaptation to horizontal mobility and precarious employment.
Empirical developments in career construction theory (Rudolph et al., 2019)	Overview of concepts with historical perspectives; employability definitions and research review; resilience as part of career motivation; suggestions for self-directed management in transitions.	Lack of integration between adaptability, employability, and resilience; limited application to diverse contexts.
Positive psychology and career development(Robertson, 2018a)	VET should be intentional for pathways, accessibility, progression; advances five salient purposes; open access license emphasizes noncommercial use.	Far longer lists exist; need to prioritize salient purposes; insufficient focus on diverse students.
Employability, Employment and the Establishment of Higher Education Graduates in the Labour Market (Nilsson, 2017)	Structural changes lead to polarization with growth in high/low-paying jobs; shift to service sector increases non-standard employment; data from surveys analyze employability.	Limited comprehensive map of education-work match; need for both individual and statistical data.
Employability Skills –(Soproni, 2023)	Recommendations for HEIs, tutors, students, employees; importance of soft skills in AI era; no conflict of interest.	Undervaluation of vocational training; gaps in digital literacy and entrepreneurial skills.
High skilled workplaces, technological change and employment: Can educational reform do it? (Souto-Otero et al., 2023)	High-skilled workplaces do not protect against automation; company strategies and management perceptions key; need for organizational context in analysis.	Over-reliance on de-contextualized focus; gaps in occupational tasks and specific technologies.
Industrial Education as a Tool for Developing Vocational Skills (Kolawole et al., 2025)	Industrial education equips for employability and entrepreneurship; challenges like funding and infrastructure; strategies include modernization and partnerships.	Inadequate funding, outdated curricula; societal undervaluation of vocational training.
Employability: A review of the literature 2012 to 2016 (Artess et al., 2019.)	Review covers definitions, models, higher education role; themes on skills, attributes, outcomes.	Fragmented literature; inconsistent definitions; need for post-2016 updates.
Positive psychology and career development (Robertson, 2018)	Positive psychology enriches career development with well-being focus; links job satisfaction to health.	Bias toward positive experiences; overlooks socioeconomic contexts.
A Euro-Asian look at challenges to innovation and the greening of industries: implications for TVET and strategic policy formulation **(**Pavlova & Askerud, 2024**)**	Challenges in innovation and greening; implications for TVET policy; references to green jobs and competencies.	Potential conflicts unreported; need for more empirical data on policy impacts.
Building better futures: decent work, inclusion and careers support services in the UK (Hughes et al., 2021)	Decent work indicators; need for inclusive growth; careers support enhances well-being and equality.	Gaps in digital access; challenges in post-COVID recovery.
Mapping the landscape of TVET education: a global bibliometric analysis (Peter et al., 2025)	Growth in TVET research; concentration in South Africa, Malaysia, Nigeria; themes from co-citation analyses.	Issues with interdisciplinary structure; challenges in addressing research subjects.
The value of vocational education and training **(**Harris & Clayton, 2020**)**	VET needs high quality research; themes parallel policy developments; rising international contributions.	Need for detailed, impartial information; gaps in parent awareness.

stronger professional identity formation, and greater readiness to adapt to workplace requirements. (Abdullah et al., 2020; Joho et al., 2024). Adding an industry validation and feedback model provides contextual accuracy to the skill sets that learners are acquiring—without which, educational organizations cannot effectively bridge their work. Consequently, career guidance becomes an interface that connects educational experience and employment opportunities and also supports the link and match principle in vocational education systems. It is important to highlight that employability outcomes are not solely related to technical competences; rather, relevant literature points out the increasing relevance of career management skills (i.e., self-regulation, career planning and readiness for lifelong learning).

What emerges is that the successful enactment of industry-oriented career guidance services depends upon the interplay of many overlapping factors identified in this review. Institutional readiness was found to be a critical factor, especially regarding curriculum flexibility, institution support and sustainable basis of school–industry collaboration. Crucially, the professionalism of career advisors and educators themselves must also be established, as implementation can only be truly successful if practitioners possess both pedagogical skill and a deep understanding of labor markets. Studies also highlight the importance of real industry involvement stating that collaborative program co-development delivered better employability results than simply symbolic or administrative partnerships. Furthermore, factors related to the student (e.g., intrinsic motivation, career self-efficacy, involvement in experiential learning activities) (Rice et al., 2025; Vidigal-Alfaya et al., 2025) serve as mediators that influence the effectiveness of career guidance interventions.

Overall, the reviewed literature indicates that industry-oriented career guidance supports workforce alignment through multiple interrelated mechanisms, including industry engagement, labor market integration, and competency-based career preparation (see Table 1). First, it enables competency alignment by anchoring vocational learning outcomes to emerging occupational standards. Second, it enables smoother transitions to work by offering structured career planning and exposure to workplace environments. Third, it enhances the adaptive career development of students to respond to groundbreaking changes in labor market conditions. These types of integrated and industry-responsive career guidance seem to cultivate higher readiness for employability among vocational graduates, who demonstrate lower skill mismatch in multiple settings (see point 3).

All in all, they conclude that career guidance is a key strategic element of vocational education reform instead of a supporting service. These studies substantiate that integrating industry orientation as a common thread throughout career guidance practices results in improved alignment between vocational education systems and the needs of employers while also contributing to sustainable employability development. These findings afford the empirical and conceptual foundations for a proposed industry-oriented career guidance model to enhance link and match and employability outcomes of vocational students.

This study thus strengthens the case for career guidance as an institutional bridge connecting competency development, labor market expectations and student career decision-making processes. First, the development of an industry-oriented career guidance model is a direct response to long prevailing skills mismatch problems quoted in vocational education systems around the world. Earlier research highlights that traditional career guidance is more information-orientated (i.e., help students choose a career) and does not actively engage industry in the real time (Godden, 2022; Ong & Lim, 2023). The synthesis provided in this research indicates that the incorporation of industry involvement within guidance mechanisms alters career guidance into a dynamic learning environment. Structured engagement with industry partners allows vocational institutions to dynamically update competency frameworks and align learning pathways with changing occupational standards. This interpretation aligns with human capital and employability theories, which emphasize that workforce readiness emerges from contextualized learning experiences rather than solely from isolated academic endeavors.

Second, incorporating industry requirements in career guidance programs greatly improves students' adaptation to the job market. Due to the diverse nature of the literature reviewed, these findings speak to how professional identity formation, career adaptability and self-regulated learning, are substantially more robust amongst students when exposed to authentic workplace contexts. In this sense, career guidance serves as a transition support system and also serves developmental functions resulting in greater psychosocial preparedness for taking up work. This is consistent with modern-day terms of employability which underscore the importance of transferable skills, a lifelong learning orientation, and adaptive competencies in response to technological disruption and uncertainty over labor market dynamics (Amirullah et al., 2025; Li et al., 2026). This discussion thus adds to the existing body of literature by conceptualising career guidance as a mediating construct that provides an important link between curriculum implementation to employability outcomes.

Third, the effectiveness of practical implementation has distinctive multi-level factors at institutional, professional, industrial and individual levels in regards to industry-oriented career guidance. At an institutional level, the readiness also determines whether career guidance can be embedded within region-wide curricula in a systematic way, rather than being applied as one-off programmes. Another significant factor that emerged in relation to this strategic area were the competences of educators and counsellors, as someone who will successfully do so needs to have the ability to interpret labour market intelligence and promote learning through experience (Aleca & Mihai, 2025; Yulianti & Fitriansyah, 2024). In addition, the quality of engagement with industry has a direct effect on outcomes; co-creation partnerships that are developed in shared responsibility produce more sustainable impacts on employability than symbolic collaboration. At an individual student level, the mediating roles of motivation and psychological variables (eg, career self-efficacy and intrinsic motivation) in the transformations from guidance intervention to employability competencies. Of note, this study is conceptually significant as it reconceptualises career guidance as an ecosystem-based model instead of a single service. The call shows that successful vocational direction occurs through an ongoing interplay between education providers, industry stakeholders, policy makers and learners. An ecosystem perspective enables sustained workforce development by creating a continuous feedback loop between the labor market and educational practices. Therefore, industry-oriented career guidance must be conceived as strategic governance tool in vocational education reform strategies.

In general, the debate shows that for employability to be strengthened in vocational education, systemic integration is necessary as opposed to simply pedagogical improvements. Such industry-oriented career guidance

offers a practical mechanism to translate the long-debated "link and match" principle to action by embedding industry relevance both across students' individual learning journeys as well as their professional development journey.

Limitations and Future Research Directions

This study has several limitations. First, the findings are derived from secondary data and conceptual synthesis rather than empirical validation, therefore functioning as a systematic literature review which limits direct evidence of the proposed industry-oriented career guidance model in practice. Second, the generalizability of the findings may be compromised by national differences in contexts, systems of vocational education and labour market structures. Third, varying ways in which employability is measured across studies pose challenges to comparative evaluation. Most studies that we reviewed also focus on short-term educational outcomes, with less emphasis on longer-term career paths.

As such further empirical and longitudinal research is needed to test the efficacy of industry-oriented career guidance models in a range of settings. Standardized employability indicators must be developed, along with the integration of digital technologies (labor market analytics and innovative guidance platforms) to promote vocational career development.

Conclusion

Overall, this study illuminates the strategic importance of industry-oriented professional career guidance in enhancing vocational students' employability and reinforcing synergies between education and labor market demands. Career guidance needs to shift beyond one-to-one counseling into an integrated approach of aligning the curriculum with industry needs and developing competencies as demonstrated by the findings. Institutional backing, professional competencies and industry engagement are relevant to vigorous implementation. In principle, career guidance is framed as a decision-making process in an ecosystem to facilitate the relevance of learning processes to workforce needs. In general, industry-focused career These approaches provide a sustainable framework for strengthening vocational readiness while enabling training systems to respond more effectively to evolving labor market demands.

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