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Diversitas Journal
ISSN 2525-5215
Volume 11, Number 3 (Jul./Spt. 2026) p.001 – 015
https://diversitasjournal.com.br/diversitas_journal

Assessing Secondary Vocational Education in Hainan, China as a Foundation for Industry-Academe Integration

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A B S T R A C T

This study assessed secondary vocational education in Hainan, China, as a foundation for strengthening industry–academe integration. It used a quantitative, descriptive, cross-sectional survey of 203 teachers from Hainan Provincial Tourism School and Haikou Vocational Tourism School who were recruited through criterion-based purposive sampling. Frequencies, percentages, and weighted means were used. Teachers rated the condition of vocational education favorably (M = 3.70/5) and perceived graduates as prepared for work (M = 3.62). After negatively worded items were reverse-scored, alignment between taught competencies and industry requirements was moderate (M = 3.12), with the lowest score for industry-specific knowledge (M = 3.10). Opportunities for collaboration were high (M = 3.75), but respondents also reported substantial challenges (M = 3.60), particularly resource constraints (M = 3.67) and mismatched expectations (M = 3.65). The most strongly endorsed strategies were joint curriculum development (M = 3.93), industry participation in governance (M = 3.91), and stronger alumni linkages (M = 3.90). The findings show that favorable institutional conditions do not eliminate specific competency mismatches. An integrated agenda combining curriculum renewal, work-based learning, shared governance, and continuous outcome monitoring is therefore recommended.

RESUMO

Este estudo avaliou a educação profissional secundária em Hainan, China, como base para fortalecer a integração entre instituições de ensino e o setor produtivo. Adotou-se um desenho quantitativo, descritivo e transversal, com questionário aplicado a 203 professores da Escola Provincial de Turismo de Hainan e da Escola Profissional de Turismo de Haikou, selecionados por amostragem intencional baseada em critérios. A análise utilizou frequências, percentuais e médias ponderadas. Os docentes avaliaram favoravelmente as condições da educação profissional (M = 3,70/5) e a preparação dos egressos para o trabalho (M = 3,62). Após a recodificação dos itens formulados negativamente, o alinhamento entre as competências ensinadas e as exigidas pela indústria foi moderado (M = 3,12), com menor média em conhecimentos específicos do setor (M = 3,10). As oportunidades de colaboração foram altas (M = 3,75), mas também foram percebidos desafios relevantes (M = 3,60), especialmente limitações de recursos (M = 3,67) e expectativas divergentes (M = 3,65). As estratégias mais apoiadas foram o desenvolvimento curricular conjunto (M = 3,93), a participação da indústria na governança (M = 3,91) e o fortalecimento das redes de ex-alunos (M = 3,90). Os achados indicam que uma base institucional favorável não elimina lacunas específicas de competências; por isso, recomenda-se uma agenda integrada de atualização curricular, aprendizagem no trabalho, governança compartilhada e avaliação contínua de resultados.

ARTICLE INFORMATION

Article process:
Submitted: 23/10/2025
Approved: 12/07/2026
Published: 07/21/2026

Keywords:
vocational education; industry–academe integration; workforce preparedness; skills alignment; Hainan.

Palavras-chave:
educação profissional; integração indústria–academia; preparação para o trabalho; alinhamento de competências; Hainan.

DOI: 10.48017/dj.v11i3.3670

Introduction

Technical and vocational education and training (TVET) is expected to connect learning with productive work, but this connection must be continually renewed as occupations, technologies, and service standards change. International policy increasingly treats TVET not only as a route to employment but also as an institutional mechanism for reskilling, equitable transitions, and regional development (UNESCO, 2022). In China, the scale of vocational education creates substantial workforce-development capacity, while uneven links among schools, employers, and local economies continue to affect the relevance of training (Kuczera & Field, 2010; UNESCO-UNEVOC, 2020).

The issue is especially salient in Hainan. The Hainan Free Trade Port master plan calls for economic opening, modern services, tourism, digitalization, and international exchange, all of which depend on a workforce able to adapt to changing occupational requirements (CPC Central Committee & State Council, 2020). Secondary vocational schools therefore face a dual expectation: they must provide stable educational structures and resources while updating curricula, workplace learning, and partnerships quickly enough to remain aligned with local industries.

Previous research identifies recurring mechanisms for improving this alignment. Human Capital Theory explains why investments in curriculum, facilities, teachers, and applied competencies can raise productive capacity (Becker, 1993). Situated Learning Theory emphasizes that occupational competence develops through participation in authentic communities of practice rather than classroom instruction alone (Lave & Wenger, 1991). The Triple Helix model positions educational institutions, industry, and government as interdependent actors in innovation and regional development (Etzkowitz & Leydesdorff, 2000). A skills-gap lens then draws attention to mismatches between competencies developed in education and those required in the workplace (Molnar et al., 2015).

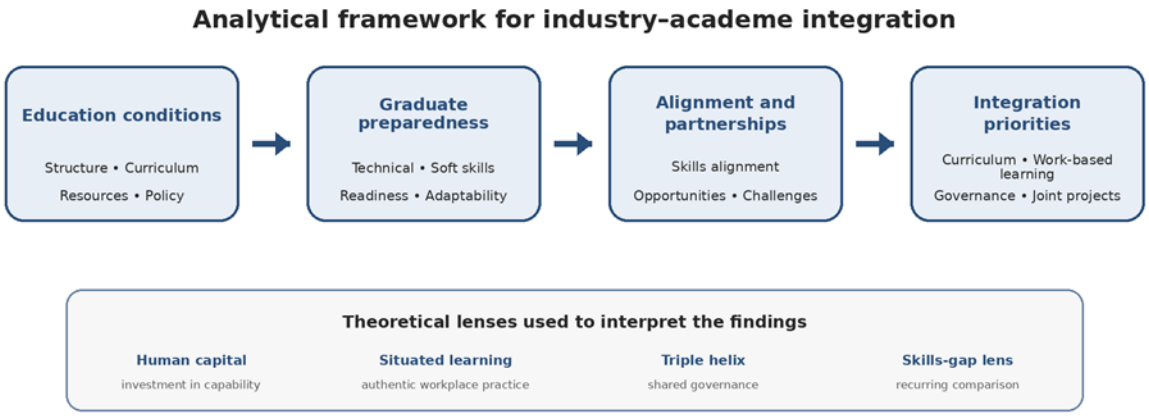
These perspectives are often discussed separately, and available evidence on Chinese TVET is commonly national or system-wide. Less is known about how teachers in a rapidly transforming province simultaneously assess institutional conditions, graduate preparedness, competency alignment, partnership opportunities, collaboration barriers, and specific integration strategies. This localized combination is the study's principal contribution. It offers contextual evidence rather than a new causal theory, and it avoids treating favorable institutional ratings as proof that no skills gaps exist.

Accordingly, the study assessed: (1) the state of secondary vocational education in terms of structure, curriculum, resources, and policy; (2) teachers' perceptions of graduate preparedness in technical skills, soft skills, industry readiness, and adaptability; (3) alignment between taught competencies and industry needs; (4) opportunities for and challenges to

industry–academe collaboration; and (5) strategies that respondents considered most useful for improving integration. The framework in Figure 1 links educational conditions to perceived workforce outcomes and partnership conditions, which in turn inform practical integration priorities.

Figure 1.

Analytical framework used to connect educational conditions, perceived outcomes, partnership conditions, and integration priorities



Materials and Methods

Design and delimitations

A quantitative, descriptive, cross-sectional survey design was used because the research questions concerned the distribution and central tendency of teachers' perceptions rather than causal effects or group differences (Creswell & Creswell, 2018). The study was delimited to two tourism-oriented secondary vocational schools in Hainan and to the perspectives of teachers employed in those schools. It did not directly assess graduates' performance, employers' evaluations, employment records, or the views of students and policymakers. These boundaries are important when interpreting the results.

Participants and sampling

Participants were 203 teachers from Hainan Provincial Tourism School and Haikou Vocational Tourism School. Eligible respondents had at least one year of experience teaching in secondary vocational education. Recruitment was criterion-based and purposive, with school administrators assisting in distributing the survey across available teachers and tenure groups. This nonprobability approach enabled access to respondents with direct knowledge of curriculum and instructional practice, but it does not support statistical generalization to all vocational teachers in Hainan. Data were gathered from September 2022 to January 2023.

Instrument

The online questionnaire contained demographic questions and 90 closed-ended statements organized into six sections: current conditions of vocational education (20 items); graduate preparedness (20 items); skills alignment (20 items); opportunities for collaboration (10 items); challenges to collaboration (10 items); and integration strategies (10 items). The domains were derived from the study objectives and literature on TVET, work-based learning, employability, and adult skills (Billett, 2011; OECD, 2013). Responses were rated on a five-point agreement scale from 1 (strongly disagree) to 5 (strongly agree).

The final questionnaire was developed based on the reviews and pilot testing, as questions needed to be clear and reliable. Approvals from school administrators were formalized, and ethical standards were strictly followed. The surveys were administered electronically. Responses were gathered within a fixed period, and all participants received reminders to complete the survey. The data obtained were archived in a database and analyzed using statistical software.

Procedure and ethical safeguards

Formal permission was obtained from the management of the two schools. The survey invitation explained the study's purpose, the voluntary nature of participation, the right to withdraw, and the intended use of the data. Written informed consent preceded participation. Responses were anonymized, stored in a restricted database, and reported only in aggregate form. No ethics-review approval number was recorded in the source documents; consequently, the present article reports only the safeguards that can be documented.

Data analysis

Frequencies and percentages summarized respondent characteristics, while weighted means summarized the six substantive domains. For consistent interpretation, means of 4.51–5.00 were classified as very high, 3.51–4.50 as high, 2.51–3.50 as moderate, 1.51–2.50 as low, and 1.00–1.50 as very low. In the skills-alignment section, negatively worded gap statements were reverse-scored before calculating dimension means, so higher values consistently indicate stronger alignment and a narrower gap. This correction prevents agreement with a negative statement (for example, that training lags behind technology) from being misclassified as evidence of good alignment.

Results and ethical safeguards

Respondent profile

The sample combined relatively early-career and more experienced teachers (Table 1). Respondents aged 26–35 formed the largest group (43.35%), followed by those aged 25 or below (24.14%) and 36–45 (22.17%). Women represented 55.17% of the sample.

Table 1.

Demographic Profile of the Respondents

	f	%
Age		
25 years old and below	49	24.14%
26-35 years old	88	43.35%
36-45 years old	45	22.17%
46-55 years old	21	10.34%
56 years old and above	49	24.14%
Total	203	100%
Gender		
Male	91	44.83%
Female	112	55.17%
Total	203	100%
Length of Tenure in the Company		
1 year to 2 years	52	25.62%
2 years to 3 years	61	30.05%
3 years to 4 years	49	24.14%
More than 4 years	41	20.2%
Total	203	100%

Tenure was distributed across all reported categories, with 30.05% having two to three years of service and 20.20% having more than four years. The profile suggests that the results capture both recent entry into vocational teaching and accumulated institutional experience, although they remain perceptions from only two schools.

Current state of secondary vocational education

Table 2.

Assessment of the Current State of Secondary Vocational Education in Hainan

Parameter	Mean Score	Verbal Interpretation
Structure		
The organizational structure of our vocational school clearly defines roles and responsibilities.	3.67	Positively High
The vocational education programs are well-structured to allow for progression to higher levels of education.	3.68	Positively High

The structure of vocational education in our school facilitates effective collaboration between different departments.	3.59	Positively High
The class sizes in our vocational programs are appropriate for effective learning.	3.60	Positively High
Our school's administrative processes support timely and efficient student enrollment into vocational programs.	3.68	Positively High
Overall Mean	**3.64**	**Positively High**
Curriculum		
The vocational curriculum is regularly updated to reflect the latest industry standards and practices.	3.86	Positively High
Our curriculum includes a balance of theoretical knowledge and practical skills relevant to the students' future careers.	3.83	Positively High
There is sufficient flexibility within the curriculum to tailor learning experiences to individual student needs.	3.79	Positively High
Industry experts are regularly consulted in the development of our vocational curriculum.	3.75	Positively High
The curriculum prepares students for the realities of the workplace through real-life case studies and scenarios.	3.70	Positively High
Overall Mean	**3.78**	**Positively High**
Resources		
Our school has state-of-the-art equipment and facilities for vocational training.	3.66	Positively High
There are adequate digital resources (e.g., software, online databases) available for students in our vocational programs.	3.58	Positively High
The learning materials (e.g., textbooks, manuals) used in our vocational courses are up-to-date and comprehensive.	3.61	Positively High
Our school provides sufficient financial resources for vocational programs to operate effectively.	3.66	Positively High
There is ongoing investment in professional development for staff teaching vocational courses.	3.74	Positively High
Overall Mean	**3.65**	**Positively High**
Policy		
The policies governing vocational education in our school align with national educational standards and objectives.	3.68	Positively High
Our school has clear policies to ensure that vocational programs are accessible to all students, including those with disabilities.	3.75	Positively High
There is a transparent policy framework in place that supports partnerships with industry stakeholders.	3.81	Positively High
The school's policies facilitate continuous improvement and innovation in vocational education programs.	3.73	Positively High
There are effective policies in place for evaluating and enhancing the quality of vocational training.	3.81	Positively High
Overall Mean	**3.75**	**Positively High**
Overall Results	**3.70**	**Positively High**

Note. 4.51–5.00 = very high; 3.51–4.50 = high; 2.51–3.50 = moderate; 1.51–2.50 = low; 1.00–1.50 = very low.

Teachers evaluated the four institutional dimensions favorably, with an overall mean of 3.70 (Table 2). Curriculum received the highest mean (M = 3.78), followed by policy (M = 3.75), resources (M = 3.65), and structure (M = 3.64). At the item level, regular curriculum updating was the strongest result (M = 3.86), whereas access to digital resources (M = 3.58) and collaboration across departments (M = 3.59) were among the lower results. The pattern is therefore positive but not uniform: formal curriculum and policy appear stronger than some of the organizational and technological conditions needed to implement them.

From a human-capital perspective, these results indicate that the schools have a credible basis for skill formation, but the lower-resource and coordination items identify where additional investment may yield the greatest return. Facilities and policies alone do not produce occupational competence; their value depends on whether teachers can translate them into current, connected, and practice-oriented learning experiences.

Perceived graduate preparedness

Table 3.

Perceived preparedness of graduates for the labor market

Parameter	Mean Score	Verbal Interpretation
Technical Skills		
Graduates possess the technical skills required to perform effectively in their specific trade or occupation.	3.53	Prepared
The vocational training provided is adequate for graduates to operate contemporary industry equipment.	3.58	Prepared
Graduates demonstrate a high level of competency in applying industry-specific techniques and methodologies.	3.51	Prepared
Our vocational programs equip students with a strong foundational knowledge in their chosen technical fields.	3.57	Prepared
Graduates from our vocational programs are proficient in using technology relevant to their vocational area.	3.61	Prepared
Overall Mean	**3.56**	**Prepared**
Soft Skills		
Graduates exhibit strong communication skills appropriate for a professional environment.	3.69	Prepared
Our students graduate with the ability to work collaboratively in team settings.	3.67	Prepared
The curriculum emphasizes the development of critical thinking skills among graduates.	3.66	Prepared
Graduates show a high level of problem-solving ability when faced with work-related challenges.	3.64	Prepared
Vocational education programs instill a strong work ethic and time management skills in graduates.	3.56	Prepared
Overall Mean	**3.64**	**Prepared**
Industry Readiness		
Graduates are ready to enter the workforce immediately after completing their vocational education.	3.72	Prepared
The vocational training programs include sufficient internships or apprenticeships to prepare students for industry demands.	3.73	Prepared

Industry professionals affirm that our graduates meet the expectations of their respective sectors.	3.72	Prepared
Our vocational education programs maintain a high employment rate for graduates within six months of completion.	3.65	Prepared
Graduates understand the current trends and demands of the industry they are trained for.	3.64	Prepared
Overall Mean	**3.69**	**Prepared**
Adaptability		
Graduates are adaptable and capable of transferring their skills across different roles within their industry.	3.48	Prepared
Our students are trained to be flexible and responsive to changes in workplace technology and processes.	3.55	Prepared
The vocational curriculum prepares graduates to continuously learn and upgrade their skills post-graduation.	3.60	Prepared
Graduates possess the necessary skills to innovate and drive improvements in their work environment.	3.71	Prepared
Our vocational programs encourage a mindset of lifelong learning that enables graduates to adapt to various career advancements.	3.62	Prepared
Overall Mean	**3.59**	**Prepared**
Overall Results	**3.62**	**Prepared**
1.00 - 1-50= Not Prepared / 31.51 - 2.50= Less Prepared / 2.51 - 3.50= Neither Prepared nor Not Prepared Low / 3.51 - 4.50= Prepared / 4.51 - 5.00= Very Much Prepared		

Note. Higher means indicate stronger teacher-perceived preparedness.

Graduate preparedness was rated high overall (M = 3.62). Industry readiness had the highest dimension mean (M = 3.69), followed by soft skills (M = 3.64), adaptability (M = 3.59), and technical skills (M = 3.56). Internship and apprenticeship preparation (M = 3.73) and immediate readiness to enter work (M = 3.72) were among the strongest items. In contrast, adaptability across different roles and work settings was only moderate (M = 3.48), indicating that the broad positive assessment does not apply equally to all aspects of employability.

The prominence of work-based preparation is consistent with Situated Learning Theory: workplace participation provides learners with access to tools, routines, norms, and feedback that are difficult to replicate in classrooms (Lave & Wenger, 1991). It also aligns with evidence that well-designed work-integrated learning can support employability skills when academic and workplace learning are deliberately connected (Jackson, 2015). The lower adaptability item suggests that placements should include varied tasks and reflective learning rather than narrow job shadowing.

Skills alignment

The original scoring mixed positively and negatively worded statements, making the reported 'narrow gap' conclusion difficult to interpret. After reverse-scoring negative statements, overall skills alignment was moderate (M = 3.12), not high (Table 4). Technical skills had the highest corrected mean (M = 3.14), followed by soft skills (M = 3.12), readiness for technological advancement (M = 3.11), and industry-specific knowledge (M = 3.10). The

close clustering indicates a cross-cutting alignment problem rather than a single isolated weakness.

Table 4.

Alignment between taught competencies and industry requirements

Parameter	Mean Score	Verbal Interpretation
Technical Skills		
Graduates have demonstrated proficiency in the technical skills necessary for their chosen fields.	3.74	Narrow Gap
There is a significant gap between the hands-on technical skills of graduates and the expectations of the industry.	3.71	Narrow Gap
The technical training provided to students keeps pace with the advancements in the industry.	3.68	Narrow Gap
Graduates require additional training to handle technical tasks independently in their jobs.	3.77	Narrow Gap
The vocational school's workshops and labs are equipped to simulate real-world technical scenarios accurately.	3.75	Narrow Gap
Overall Mean	**3.73**	**Narrow Gap**
Soft Skills		
Graduates are well-prepared with communication skills suited for professional and customer interactions.	3.59	Narrow Gap
There is a noticeable gap in graduates' abilities to work effectively in team environments.	3.55	Narrow Gap
Graduates are adept at problem-solving and critical thinking in workplace situations.	3.60	Narrow Gap
The vocational education curriculum sufficiently covers leadership and project management skills.	3.67	Narrow Gap
Graduates often require further development in negotiation and conflict resolution skills.	3.72	Narrow Gap
Overall Mean	**3.62**	**Narrow Gap**
Industry-Specific Knowledge		
The vocational curriculum is aligned with the latest trends and practices of the industry.	3.58	Narrow Gap
Graduates possess adequate knowledge of industry regulations and standards.	3.55	Narrow Gap
There is a gap between the industry-specific theoretical knowledge taught and the actual practices in the field.	3.67	Narrow Gap
Vocational education sufficiently covers the economic and business aspects of the industry.	3.65	Narrow Gap
Graduates are often unaware of the global context and international standards of their industry.	3.59	Narrow Gap
Overall Mean	**3.61**	**Narrow Gap**
Readiness for Technological Advancements		
Graduates are well-prepared to adapt to new technologies introduced in the workplace.	3.74	Narrow Gap
The vocational education system is currently lagging in providing training on emerging technologies relevant to the industry.	3.85	Narrow Gap
Graduates have received adequate education on digital literacy and information technology pertinent to their fields.	3.75	Narrow Gap
There is a skills gap in data literacy and the ability to leverage technology for problem-solving among graduates.	3.83	Narrow Gap
Vocational schools are effective in teaching students how to learn and update their technological skills continuously.	3.76	Narrow Gap
Overall Mean	**3.79**	**Narrow Gap**
Overall Results	**3.68**	**Narrow Gap**
1.00 - 1-50= Very Wide Gap / 31.51 - 2.50= Wide Gap / 2.51 - 3.50= Neither Wide nor Narrow Gap / 3.51 - 4.50= Narrow Gap / 4.51 - 5.00= Very Wide Gap		

Note. Negatively worded gap statements were reverse-scored so that higher scores consistently indicate stronger alignment.

Item patterns reveal an important tension. Respondents agreed that students acquired relevant technical and digital competencies, but they also agreed that additional practical training was needed (raw M = 3.77), that exposure to emerging technologies lagged behind industry (raw M = 3.85), and that data literacy remained insufficient (raw M = 3.83). This coexistence of general confidence and specific concern is more informative than a single favorable average. It supports the skills-gap argument that curriculum relevance must be tested continuously against changing occupational tasks, not inferred solely from institutional provision (Molnar et al., 2015).

Opportunities for industry–academe collaboration

Table 5.

Opportunities for collaboration

Parameter	Mean Score	Verbal Interpretation
1. Industry Partnership Opportunities: There are ample opportunities for partnerships between our vocational institution and local industries.	3.78	High Opportunities
2. Integration of Practical Experience: Our curriculum provides sufficient opportunities for students to gain practical industry experience.	3.77	High Opportunities
3. Guest Lectures and Workshops: Industry professionals are regularly involved in guest lectures and workshops at our institution.	3.75	High Opportunities
4. Collaborative Research and Projects: There are substantial opportunities for joint research and development projects between our institution and industry partners.	3.70	High Opportunities
5. Internship and Apprenticeship Programs: Our vocational education programs offer robust internship or apprenticeship opportunities that are well-integrated with industry needs.	3.74	High Opportunities
6. Feedback Mechanisms: There is an effective system in place for receiving and incorporating industry feedback into our educational programs.	3.75	High Opportunities
7. Career Placement Services: Our institution provides strong career placement services that actively involve industry partners.	3.76	High Opportunities
8. Industry Advisory Boards: The involvement of industry experts in advisory boards or committees significantly contributes to the relevance of our curriculum.	3.75	High Opportunities
9. Collaboration in Curriculum Development: Industry representatives actively participate in the development and updating of our curriculum.	3.70	High Opportunities
10. Networking and Relationship Building: There are ample opportunities for faculty and students to build networks and relationships with industry professionals.	3.78	High Opportunities
Overall Mean	**3.75**	**High Opportunities**
1.00 - 1-50= Very Low Opportunities/ 31.51 - 2.50= Low Opportunities/ 2.51 - 3.50= Neither High nor Low Opportunities / 3.51 - 4.50= High Opportunities / 4.51 - 5.00= Very High Opportunities		

Note. Higher means indicate stronger perceived opportunity.

Respondents perceived high opportunities for collaboration (overall M = 3.75). The strongest items concerned general partnership opportunities and professional networking (both M = 3.78), integration of practical experience (M = 3.77), and career placement support (M = 3.76). Even the lowest-rated opportunities—collaborative research and curriculum collaboration—remained high (both M = 3.70). This means that teachers did not view industry engagement as a peripheral activity; they saw multiple feasible entry points across teaching, placement, research, and institutional networking.

The Triple Helix perspective helps interpret these opportunities as a portfolio rather than a single partnership. Advisory boards, curriculum co-design, internships, applied projects, and feedback systems perform different functions and involve different levels of commitment. Research on university–industry collaboration likewise shows that successful relationships depend on mechanisms that match the partners' goals, incentives, and organizational capacities (Ankrah & AL-Tabbaa, 2015).

Challenges to effective collaboration

Table 6.

Challenges to collaboration

Parameter	Mean Score	Verbal Interpretation
1. Communication Barriers: There are significant communication barriers that hinder effective collaboration between our institution and industry partners.	3.62	High
2. Alignment of Goals and Objectives: There is a misalignment between the goals and objectives of our vocational institution and those of the industry partners.	3.59	High
3. Resource Allocation: Limited resources and funding are major challenges to initiating and sustaining industry-academe collaboration.	3.67	High
4. Bureaucratic Hurdles: Bureaucratic procedures within our institution often delay or complicate collaborative efforts with the industry.	3.56	High
5. Cultural Differences: Cultural differences between academic and industry environments pose a significant challenge to effective collaboration.	3.56	High
6. Intellectual Property Concerns: Concerns about intellectual property rights and confidentiality impede the sharing of information and resources.	3.63	High
7. Lack of Industry Relevance: The academic research and training in our institution are often perceived as not being relevant or applicable to current industry needs.	3.61	High
8. Insufficient Industry Engagement: There is a lack of active engagement and interest from industry representatives in collaborating with our institution.	3.48	Neither High nor Low
9. Lack of Incentives: There are inadequate incentives for faculty members to engage in industry-academe collaboration.	3.63	High
10. Mismatched Expectations:	3.65	High

There is often a mismatch in expectations regarding outcomes and timelines between our institution and industry collaborators.		
Overall Mean	**3.60**	High
1.00 - 1-50= Very Low/ 31.51 - 2.50= Low/ 2.51 - 3.50= Neither High nor Low/ 3.51 - 4.50= High / 4.51 - 5.00= Very High		

The same respondents also reported high barriers to collaboration (overall M = 3.60). Resource constraints were the most prominent challenge (M = 3.67), followed by mismatched expectations about outcomes and timelines (M = 3.65). Intellectual-property concerns and insufficient incentives for faculty both scored 3.63, while communication barriers scored 3.62. Insufficient industry engagement was comparatively lower but still moderate (M = 3.48). Opportunities and barriers should therefore not be treated as contradictory: schools may recognize the value of partnership while lacking the time, funding, rules, and coordination needed to sustain it.

These results shift the practical question from whether collaboration is desirable to how it should be governed. Clear roles, realistic timelines, shared criteria for success, arrangements for intellectual property, and recognition of faculty workload are enabling conditions. Without them, isolated internships or guest lectures may occur, but they are unlikely to produce durable integration.

Strategies for stronger integration

Table 7.

Endorsement of industry–academe integration strategies

Parameter	Mean Score	Verbal Interpretation
1. Joint Curriculum Development: Collaborative development of the curriculum with industry partners will significantly improve the relevance of our vocational training programs.	3.93	Recommended
2. Enhanced Internship Programs: Strengthening internship programs to provide real-world industry experience will greatly enhance student learning and preparedness.	3.83	Recommended
3. Increased Industry Input in Governance: Involving industry professionals in vocational school governance and decision-making processes can lead to more effective industry-academe integration.	3.91	Recommended
4. Regular Industry Feedback: Regular feedback from industry partners is crucial for continuously improving the quality and relevance of our vocational education programs.	3.83	Recommended
5. Faculty Development and Industry Exposure: Providing opportunities for faculty to gain industry exposure and experience is an effective strategy for improving industry-academe integration**.**	3.78	Recommended
6. Flexible and Dynamic Curriculum: A more flexible and dynamically evolving curriculum, responsive to industry changes, is necessary for better integration with industry needs.	3.83	Recommended
7. Collaborative Research Projects: Engaging in joint research projects with industry partners can bridge the gap between academic research and practical industry applications.	3.87	Recommended
8. Incentives for Collaboration: Establishing clear incentives for both faculty and industry partners to engage in collaborative initiatives will enhance integration efforts.	3.78	Recommended
9. Technology Transfer Programs:	3.89	Recommended

Effective technology transfer programs can facilitate the practical application of academic research in industry settings.		
10. Alumni Engagement for Industry Linkages: Leveraging alumni networks to establish and strengthen industry linkages can be a strategic approach to improving industry-academe integration.	3.90	Recommended
Overall Mean	**3.85**	Recommended
1.00 - 1-50= Not Recommended/ 31.51 - 2.50= Less Recommended/ 2.51 - 3.50= Neither Recommended nor Not Recommended/ 3.51 - 4.50= Recommended / 4.51 - 5.00= Highly Recommended		

All proposed strategies received high endorsement, with an overall mean of 3.85. Joint curriculum development ranked first (M = 3.93), followed by industry participation in governance (M = 3.91), stronger alumni linkages (M = 3.90), technology-transfer programs (M = 3.89), and collaborative research (M = 3.87). Faculty development and incentive systems, although still highly endorsed, had the lowest means (both M = 3.78).

Taken together, the rankings support a coordinated integration model. Curriculum co-development should establish occupational standards and learning outcomes; governance participation should keep decisions connected to industry change; internships should provide authentic and varied practice; faculty immersion should update instruction; and feedback, alumni, research, and technology-transfer mechanisms should monitor results and maintain relationships. This package operationalizes the four theoretical lenses: it invests in human capital, embeds learning in practice, creates a school–industry–government interface, and uses recurring feedback to detect skills gaps.

Conclusions

The study answered its descriptive questions by showing that teachers in the two participating schools perceived a generally favorable institutional foundation (M = 3.70) and high graduate preparedness (M = 3.62). The strongest institutional areas were curriculum and policy, while industry readiness was the strongest preparedness dimension. These results suggest that the schools possess structures on which closer industry integration can be built.

At the same time, corrected scoring showed only moderate alignment between taught and required competencies (M = 3.12), with industry-specific knowledge and technological readiness receiving the lowest means across dimensions. This finding qualifies the more optimistic ratings: respondents may regard the system as functional while still observing concrete deficiencies in practice, data literacy, exposure to emerging technology, and role adaptability. The study therefore does not support the conclusion that the skills gap is merely minor.

The practical priority is a governed partnership system rather than a collection of disconnected activities. Joint curriculum development, industry participation in governance, structured internships, faculty industry exposure, alumni networks, collaborative research, and technology transfer should be organized around shared targets and reviewed periodically. Resource commitments, incentives, communication protocols, timelines, and intellectual-property arrangements should be specified at the outset.

The findings are limited by the nonprobability sample, the inclusion of only two tourism-oriented schools, reliance on teacher self-reports, the cross-sectional design, and the absence of direct evidence from graduates, employers, or performance records. The archived documentation also lacked sufficient detail to independently evaluate instrument reliability. Future research should use multi-stakeholder and multi-school samples, report complete evidence of validation and reliability, compare teacher perceptions with employer and graduate outcomes, and track whether partnership interventions improve employment, retention, and skill performance over time.

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