

Article

Between Paperwork and Performance: Students' Experiences of Assessment in Industry-Education Integration in Chinese Higher Vocational Education

Tengteng Zhuang and Yuxin Yang *

Institute of Higher Education, Beijing Normal University, Beijing 100875, China

* Correspondence: yangyuxin@mail.bnu.edu.cn

How To Cite: Zhuang, T., & Yang, Y. (2026). Between Paperwork and Performance: Students' Experiences of Assessment in Industry-Education Integration in Chinese Higher Vocational Education. *Journal of Educational Technology and Innovation*, 8(3), 52–63. <https://doi.org/10.61414/6p41wq42>

Received: 12 May 2026

Revised: 6 September 2026

Accepted: 19 September 2026

Published: 30 September 2026

Abstract: Industry-education integration has become a central strategy for connecting vocational education with occupational practice, yet the assessment of learning across school and workplace settings remains comparatively underexamined. This study investigates how Chinese higher vocational students experience assessment within internships, apprenticeships, enterprise-oriented classes, work-study arrangements, and production-based training. Drawing on semi-structured interviews with 15 students from higher vocational institutions across multiple regions and occupational fields, the study adopts an interpretive qualitative design and reflexive thematic analysis. The findings reveal substantial variation in assessment arrangements. Some students experienced relatively integrated systems combining workplace observation, enterprise ratings, practical tasks, school examinations, reports, attendance, and skills tests. Others encountered assessment dominated by written documentation, weakly consequential supervisor ratings, or standardized forms that students regarded as largely procedural. Across the interviews, students distinguished between school-based indicators of achievement and workplace judgements concerning whether they could actually complete tasks, solve problems, work responsibly, and meet occupational standards. Assessment authenticity therefore depended not simply on whether learning took place in a real enterprise but on whether assessment captured consequential workplace performance and supported learning from that performance. Students also described an asymmetry of evaluative power: schools and enterprises routinely assessed students, whereas students often had limited formal opportunities to evaluate enterprises, supervisors, or placement quality. The study argues that industry-education integration does not necessarily entail assessment integration. Meaningful vocational assessment requires alignment among school requirements, workplace standards, students' learning processes, and reciprocal opportunities for evaluative participation.

Keywords: Chinese higher vocational education; industry-education integration; assessment; work-integrated learning; student voice

1. Introduction

Vocational education is increasingly expected to connect formal education with the knowledge, practices, technologies, and standards of contemporary workplaces. In China, industry-education integration has become an important mechanism through which higher vocational institutions seek to strengthen practical learning and



Copyright: © 2026 by the authors. This is an open access article under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Publisher's Note: Scilight stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

improve students' transitions into employment. These arrangements take diverse forms, including internships, modern apprenticeships, order-oriented classes, enterprise-delivered courses, school-based production facilities, work-study alternation, and joint training projects. Although organizational forms vary, they share a central promise: learning should move closer to occupational practice.

Assessment occupies a particularly important position within this promise. What is assessed communicates what counts as valued knowledge and competence. In conventional educational environments, achievement may be represented through examinations, written assignments, attendance, or course grades. Workplaces operate with different forms of judgement. Workers may be evaluated according to whether they can complete tasks, meet quality specifications, respond to unexpected problems, cooperate with colleagues, follow safety requirements, satisfy clients, or achieve performance indicators. When vocational students move between school and workplace, they therefore encounter not simply two learning environments but potentially two different systems for defining and recognizing competence.

Research on work-integrated learning has increasingly identified assessment as a central but difficult component of educational-workplace integration. Assessment becomes complex when learning occurs beyond the direct control of the educational institution and when college teachers, workplace supervisors, students, and employers may understand desirable performance differently (Ferns & Zegwaard, 2014; Jackson, 2018). In particular, the authenticity of work-integrated assessment depends on alignment among workplace activities, educational assessment, industry participation, and students' emerging professional selves (Ajjawi et al., 2020). Assessment can, in turn, shape whether students interpret workplace participation as meaningful learning and whether they begin to see themselves as developing practitioners (Boud et al., 2023).

Against this background, the diversity of assessment methods used in work-integrated learning becomes important. Workplace-supervisor evaluations, reports, learning logs, self-assessment, oral assessments, and other approaches are commonly combined, frequently with the stated purpose of supporting learning rather than merely certifying performance (Luk & Chan, 2024). Yet the existence of multiple assessment methods does not itself guarantee meaningful assessment. Written reports may become exercises in documentation rather than reflection. Employer ratings may appear authentic because they originate in the workplace but become educationally weak when criteria are unclear or when supervisors routinely award uniformly high scores. Conversely, an apparently conventional practical examination may strongly represent occupational competence when students must independently produce an artefact meeting genuine technical specifications.

For this reason, the problem is not simply whether vocational programs contain practical assessment. More important questions concern what is made visible by assessment, whose judgement is authoritative, how school and enterprise evaluations relate to one another, what consequences assessments carry, and whether students themselves participate in determining the quality of their work and learning environment.

These questions are particularly significant for Chinese higher vocational education because industry-education integration brings together institutions whose purposes overlap but are not identical. At the broader higher-education level, teaching-focused university-industry collaboration in China has increasingly sought to bring industrial resources, technologies, professional expertise, and enterprise participation into educational provision, while persistent tensions remain around enterprises' long-term incentives and the relative primacy of educational and industrial actors (Zhuang et al., 2024). Colleges are responsible for curriculum, academic progression, certification, and student welfare, whereas enterprises are concerned with productivity, work discipline, occupational standards, and the identification of potentially employable workers. Students may simultaneously seek practical competence, occupational experience, qualifications, employment opportunities, and protection against low-quality placements. Thus, school, enterprise, and student enter the same educational arrangement with partially different expectations.

Within such arrangements, assessment is one location in which these different expectations become especially visible. An enterprise may understand a successful student as someone reliable and immediately useful at work; a college may require documentary evidence capable of being recorded within an academic system; a student may judge success according to whether the experience produced genuine competence or a desirable employment opportunity. As a result, the resulting assessment system is not necessarily coherent even when the broader program is institutionally described as integrated.

Even so, existing Chinese vocational-education research has paid considerable attention to school-enterprise cooperation, employability, occupational transitions, and relationships between vocational institutions and employers (Müller, 2024; Wang & Wang, 2023). Comparatively less attention has been directed toward how students themselves experience the assessment arrangements through which their learning and workplace performance are recognized. Student perspectives are especially important because students move directly between

the two evaluative environments. They experience what is formally graded, what supervisors actually notice, what workplace competence demands, and which parts of their learning remain invisible to institutional assessment.

To address this gap, this study examines assessment as experienced by higher vocational students participating in different forms of industry-education integration. Rather than assuming that workplace assessment is necessarily authentic or that dual school-enterprise assessment is necessarily integrated, the analysis investigates how students interpret the relationship among school requirements, enterprise judgements, practical performance, documentary tasks, feedback, and opportunities for student voice. It is guided by three research questions:

- (1) How do Chinese higher vocational students experience the different standards and practices through which their learning is assessed in school and workplace settings?
- (2) How are school-based and enterprise-based forms of assessment combined within different models of industry-education integration?
- (3) What do students perceive existing assessment practices as recognizing, overlooking, or preventing them from evaluating?

By addressing these questions, the study conceptualizes assessment integration as a distinct dimension of industry-education integration. It argues that placing students in workplaces, involving enterprise instructors, or introducing practical activities does not by itself integrate assessment. Assessment becomes meaningfully integrated when educational and occupational standards are connected without reducing workplace learning either to school paperwork or to unexamined employer judgement, and when students are enabled to participate in evaluating the quality of both their own performance and the learning arrangements in which that performance occurs.

2. Theoretical Framework: Authentic Assessment and Evaluative Judgement across School-Work Boundaries

This study understands assessment not only as a mechanism for allocating grades but as a social practice through which competence is defined, made visible, and recognized. This perspective is particularly appropriate for industry-education integration because students participate in overlapping educational and occupational environments in which different actors may apply different standards of quality.

Authentic assessment is useful for examining the school-work boundary because it directs attention to the relationship between assessment tasks and the practices in which competence will eventually be used. Authenticity is not a property of a task in isolation; it depends on the extent to which assessment reproduces meaningful features of professional practice and requires students to exercise judgement in context (Ashford-Rowe et al., 2014). In work-integrated learning, this relationship is especially complex because educational requirements, workplace activity, and students' developing professional identities may not align automatically (Ajjawi et al., 2020). Thus, a workplace location may increase realism without necessarily making the assessment itself educationally authentic (Villarroel et al., 2018).

This distinction is especially important in work-integrated learning. A task completed inside an enterprise is not automatically authentic as an assessment. A workplace-based assignment may be largely administrative, disconnected from the work students actually perform, or scored according to criteria that participants do not understand. Conversely, a structured training task can be highly authentic when it requires students to integrate knowledge and action under standards that closely resemble occupational performance. In this sense, students' perceptions of authenticity depend on alignment among placement activities, assessment activities, industry participation, and their anticipated professional futures (Ajjawi et al., 2020).

A second lens concerns evaluative judgement: students' capacity to make informed decisions about the quality of their own and others' work (Tai et al., 2018). This capacity matters in vocational settings because competence is not exhausted by completing a prescribed task; learners must increasingly recognise standards, interpret feedback, and judge whether performance is adequate for a particular context. Assessment that supports such judgement can therefore contribute to learning beyond the immediate course or placement, an orientation closely related to sustainable assessment (Boud, 2000).

This is particularly relevant in vocational contexts. The ability to identify whether a manufactured component meets tolerance requirements, whether a vehicle fault has been properly diagnosed, whether an operational plan responds to market data, or whether a construction procedure satisfies safety and quality requirements involves evaluative capability as well as technical skill. Workplace mentors may contribute to this development because their feedback is grounded in occupational experience. Employer participation in assessment can provide students with a real-world perspective, although its educational value depends on clear expectations, useful feedback, and coordination between educational and industry actors.

The third element of the framework concerns the school-work boundary. Industry-education integration places assessment across organizational settings with different purposes. Educational institutions require

comparability, documentation, progression decisions, and evidence of curricular achievement. Workplaces operate through situated judgements responsive to productivity, quality, customer needs, deadlines, safety, and organizational expectations. Assessing workplace learning therefore generates unavoidable tensions between standardization and situated performance (Jackson, 2018).

Rather than treating one side as inherently superior, this study examines how their relationship is organized. A school examination can provide useful evidence of conceptual or technical knowledge that a temporary placement cannot expose. Workplace observation can reveal responsiveness, reliability, judgement, communication, and problem solving that are difficult to capture through written examination. Reports can encourage reflection, yet they can also become detached from the complexity of actual performance. Employer ratings can provide occupational legitimacy, yet they can become ceremonial if virtually every student receives the same result.

From this perspective, meaningful assessment integration has at least four dimensions. First, alignment concerns whether assessment corresponds to what students actually learn and do. Second, plurality of judgement concerns how school, enterprise, and student perspectives contribute to decisions about quality. Third, consequence concerns whether assessment influences learning, progression, responsibility, or occupational opportunity rather than existing merely as documentation. Fourth, reciprocity concerns whether students are only objects of assessment or are also enabled to judge their own performance and the quality of the environments in which they learn.

These concepts informed later stages of interpretation without operating as predetermined coding categories. The analysis first attended to how students themselves described assessment practices and then used authenticity, evaluative judgement, and school-work alignment to interpret patterned differences across cases.

3. Methodology: Research Design and Participants

This study employed a qualitative interview design to investigate how Chinese higher vocational students understood assessment within industry-education integration. Qualitative interviews were appropriate because assessment is experienced not merely through formal instruments but through students' interpretations of expectations, feedback, workplace relationships, perceived fairness, meaningfulness, and consequences.

An interpretive approach was adopted. Participants' accounts were treated as situated understandings of how assessment operated in their particular programs rather than as objective audits of institutional assessment policy. This distinction is important. A student may not know the precise mathematical weighting assigned to an enterprise evaluation, yet their understanding of whether the evaluation matters, whether supervisors distinguish performance, and whether feedback affects learning remains analytically important.

The dataset comprised 15 semi-structured interviews with students from higher vocational institutions in different Chinese regions. Participants represented nursing, accounting, numerical-control technology, e-commerce, water engineering, landscape/agricultural studies, energy and automotive technology, finance, electric power, mechatronics, statistics and big-data analysis, tourism, rail transportation, and computing. Most were in the final year of three-year higher vocational programs, while several were second-year students and one was completing a five-year integrated vocational program.

Their forms of industry-education integration also varied. Some undertook conventional or school-mediated workplace placements. Others participated in modern apprenticeship, order-oriented education, work-study alternation, enterprise-oriented project classes, or production-based training located within the college. This variation enabled comparison between assessment arrangements with different levels of school-enterprise coupling.

The interviews were conducted in Mandarin. Students were asked about the form of industry-education integration they experienced, their activities and responsibilities, relationships with school and enterprise teachers, connections between school knowledge and workplace practice, difficulties and support, perceived outcomes, assessment practices, feedback mechanisms, and overall evaluation of their programs.

Assessment questions addressed school assessment, enterprise assessment, practical testing, examination, attendance, reports and logs, performance criteria, student evaluation of enterprises, and feedback mechanisms. Because the interviews examined the wider experience of industry-education integration rather than assessment alone, assessment accounts were interpreted in relation to students' descriptions of actual workplace tasks, mentoring, curricular alignment, and employment expectations.

The analysis adopted thematic analysis to explore how students understood assessment within industry-education integration. This approach provided a flexible yet systematic way to identify and interpret patterns of meaning across the interview data (Braun & Clarke, 2006). It took a reflexive orientation, treating these

understandings as situated and acknowledging the researcher's interpretive role rather than prioritising coding reliability (Braun & Clarke, 2021).

Interviews were transcribed in Chinese. Analysis was undertaken using the Chinese transcripts, and quotations were translated into English for reporting. Translations prioritize substantive meaning and readability rather than literal word-for-word equivalence.

All participants were informed about the research and provided consent. Names, specific workplaces, and identifying institutional details should be anonymized in publication. The present participant codes are used solely to distinguish accounts analytically.

Table 1. Anonymized Characteristics of Interview Participants.

Participant ID	Field of Study	Academic Status	Main Form of Industry-Education Integration
P01	Nursing	Third year	Workplace placement
P02	Accounting	Third year	School-based practical training and workplace experience
P03	Numerical-Control Technology	Second year	School-based enterprise production and apprenticeship
P04	E-commerce	Third year	Workplace placement with enterprise mentoring
P05	Water Engineering	Third year	Workplace placement in construction
P06	Landscape/Agricultural Studies	Third year	Research-institute placement
P07	Energy/Automotive Technology	Third year	Work-study alternation and enterprise placement
P08	Finance	Third year	Modern apprenticeship/workplace placement
P09	Electric Power Technology	Third year	Workplace placement
P10	Mechatronics	Third year	Order-oriented class and workplace placement
P11	Mechatronics	Second year	Work-study alternation/apprenticeship
P12	Statistics and Big-Data Analysis	Second year	Enterprise-oriented project class
P13	Tourism Management	Fifth year	Order-oriented/industry-linked class
P14	Rail Transportation	Second year	Order-oriented training and workplace practice
P15	Computing	Third year	Enterprise training project/workplace placement

4. Findings

Students did not experience a single model of assessment associated with industry-education integration. Instead, their accounts ranged from technically detailed performance assessment to loosely monitored internships and largely procedural documentation. Across this diversity, five themes demonstrated how assessment operated at the school-work boundary.

4.1. Two Standards of Being “Good”: From Academic Achievement to Work Performance

A recurring distinction concerned what counted as successful performance in school and what counted in the workplace. Students did not necessarily reject examinations or theoretical knowledge, but they understood that workplace participation introduced another basis for judgement.

P09, an electric-power student, expressed the difference particularly clearly. Reflecting on what made someone a good student compared with a good employee, she questioned whether school judgement was ultimately based on grades. In the enterprise, she argued, the project itself became the criterion: if the project was completed well, the worker had demonstrated competence.

This distinction appeared in more concrete forms in technical fields. P03, studying numerical-control technology, described a semester assessment in which students independently programmed and produced a component. The resulting object was judged according to characteristics such as precision and surface roughness. The task was created for assessment rather than commercial sale, but the standards applied to it resembled those relevant to actual production.

For P14 in rail transportation, assessment similarly centred on whether students could actually do what they claimed to know. Enterprise mentors and school staff considered performance during practice, the completion of assigned tasks, and a final practical task in which students had to demonstrate that they could perform the work. He contrasted this with merely describing what one knew.

These accounts suggest that occupational assessment changed the object of evaluation. Rather than primarily demonstrating remembered knowledge, students were required to transform knowledge into an acceptable product, action, decision, or completed task.

P05 experienced an especially consequential version of this shift in a construction placement. Although still an intern, he described occupying the position of a trainee construction technician and being evaluated against monthly indicators similar to those applied to formal workers.

“After around two months, our technical summaries and the company’s monthly KPI indicators were basically the same as those for formal construction staff.” (P05)

4.2. When School and Enterprise Both Assess: Integration through Multiple Judgements

Several programs attempted to connect these evaluative environments through multiple assessors and forms of evidence. The most elaborate arrangements combined enterprise observation, school records, practical testing, reports, and attendance.

P04, an e-commerce student, described one such system. The enterprise completed an evaluation covering daily attendance, work attitude, and task completion. Students also submitted internship logs. Enterprise and school information was then combined within the student’s academic record. Practical competence was assessed twice: the enterprise considered workplace operations such as backend procedures and routine e-commerce processes, while the college organized a professional skills test after the student returned to school.

For this student, assessment therefore operated across time and location. The enterprise evaluated performance during participation in actual work; the school translated aspects of this experience back into an academic judgement.

P07 described a comparable arrangement in an automotive-related apprenticeship. School staff considered attendance, enterprise feedback, and students’ weekly or daily records, while workplace masters evaluated practical ability. The student understood the final result as a composite rather than as the judgement of a single actor.

P11, a second-year mechatronics student, similarly distinguished between school and enterprise responsibilities. School assessment included course examinations, training reports, and practical-training scores, while the enterprise conducted everyday skills assessment. Rather than replacing one system with the other, the program retained both.

These cases demonstrate that assessment integration can involve combining heterogeneous evidence rather than searching for one universal measure of competence. Written knowledge, sustained workplace behaviour, task completion, and practical performance reveal different aspects of learning. However, the presence of multiple assessments does not itself establish integration. The educational value of a dual system depends on whether the different judgements inform one another.

4.3. “It Is Still a Form”: When Workplace Assessment Becomes Procedural

Some of the strongest critiques concerned assessment that appeared formally complete but substantively weak.

P09 described an enterprise evaluation form covering performance, work attitude, and theoretical knowledge. In principle, such an instrument represented direct employer participation. In practice, she regarded it as largely ceremonial.

She reported no skills test, no internship report at that stage, and little assessment beyond the final score. The presence of an enterprise assessor therefore did not make the assessment meaningfully occupational. Because scores did not discriminate among levels of performance, the rating provided little information about competence or development.

P15 in computing described a different form of weak coupling. The college required an overall training report summarizing what had been done during the company project, but the experience did not enter the regular semester grade. There was no formal skills test and the school did not monitor workplace attendance. The enterprise observed individual and group performance but did not issue an explicit numerical score.

These cases reveal two forms of proceduralization. In the first, assessment exists visibly as a score but has little discriminating meaning. In the second, documentation confirms that participation occurred without strongly representing the quality of occupational learning.

The problem was not paperwork itself. Logs and reports could support reflection and provide evidence across a placement. The issue arose when documentary completion substituted for judgement of what students had actually learned or could do.

P06’s research-institute placement illustrated this issue. Her school evaluated students primarily through internship reports, weekly reports, and experimental records. She characterized this approach as more written. The documentation provided an educational record of activity but only indirectly represented the developing experimental competence she described elsewhere in the interview.

The contrast across cases suggests that authentic workplace learning can coexist with relatively inauthentic assessment. Students may participate in genuine experiments, commercial operations, construction, care, or production while the educational institution continues to recognize that learning largely through reports and completion records.

“They are all positive evaluations. If ten is the full score, everyone gets ten. It is still a formality.” (P09)

4.4. What the Final Product Cannot See: The Learning Process as an Assessment Blind Spot

Another important distinction concerned the difference between assessing an output and understanding how learning occurred.

P12, studying statistics and big-data analysis in an enterprise-oriented workshop class, completed professional courses through projects rather than conventional final examinations. Enterprise teachers designed a concluding project and students’ completion of that project functioned as the end-of-course assessment.

At first sight, this represented strong alignment between project-based teaching and assessment. Yet the student identified an important limitation. Students completed work orders or project records showing what they understood after a training activity, but she believed these documents mainly highlighted the final product. Smaller pieces of knowledge acquired during the process, difficulties encountered, and adaptation to the enterprise teacher’s instructional approach were much less visible.

This account complicates a simple celebration of performance assessment. A final occupational product can be more authentic than a conventional written examination while still obscuring important learning. Students may arrive at similar outputs through different levels of independence, different amounts of mentoring, trial and error, or conceptual understanding. Assessment focused only on completion may therefore underrepresent development.

P04 expressed a related concern from the perspective of program evaluation rather than personal grading. Her internship questionnaire asked about overall experience, satisfaction with school-enterprise services, and suggestions for improvement. She regarded the questions as broadly relevant but too general. They could capture whether the internship was satisfactory overall but could not adequately represent specific problems encountered during practical work or differences between classroom training and actual enterprise operations.

Students thus drew attention to a broader assessment problem: standardized instruments privilege what institutions have already decided is important. Incidental learning, changing confidence, difficulties, mentor relationships, contradictions between curriculum and current workplace technology, and other emergent experiences may remain outside formal categories.

From the students’ perspective, meaningful assessment needed to capture not only whether a task was completed, but how competence was developing through engagement with real and changing work.

4.5. Assessed by Everyone, but Who Assesses the Program? The Asymmetry of Student Voice

A final theme concerned the direction of assessment. Schools and enterprises possessed multiple mechanisms for evaluating students, but students frequently described far fewer mechanisms for evaluating the enterprises, supervisors, or industry-education arrangements themselves.

P15 reported that the school did not ask students formally to evaluate the company. Although students could approach a teacher when practical problems arose and the teacher could communicate with the company, this was an informal problem-resolution channel rather than a systematic evaluation mechanism.

P10 likewise described school visits, workplace mentor evaluation, practical scores, reports, attendance, and skills assessment, but did not recall a formal questionnaire through which students evaluated the company.

P14 said that students could discuss the internship orally and communicate problems to teachers or masters, but there was no project evaluation form. The existence of communication therefore did not necessarily give students a formal role in judging placement quality.

The strongest example came from P13, a tourism student in an industry-linked program. Enterprise teachers could teach courses and assess students through examinations, but students were not formally asked by the school to evaluate the enterprise arrangement. The student was highly critical of the program, particularly discrepancies between earlier employment promises and later outcomes, and argued that an effective feedback channel was necessary to prevent unresolved problems from escalating.

Not all programs lacked reciprocal evaluation. P03 reported a more explicitly two-way arrangement in his school-based production facility: enterprises evaluated students, students evaluated enterprises, and open-ended items invited suggestions about teaching time and content. P04 also reported a student questionnaire, although she criticized its limited capacity to capture detailed experience.

The comparison demonstrates that student voice was possible but unevenly institutionalized. This matters theoretically because students were not merely recipients of training. They occupied the intersection of school and enterprise and were often uniquely positioned to identify misalignment between classroom knowledge, workplace tasks, mentoring, assessment criteria, and promised outcomes.

The interviews therefore reveal an asymmetry of evaluative power. Students were expected to demonstrate competence to schools and enterprises, while enterprises did not always have to demonstrate educational quality to students through an equally structured process.

5. Discussion

This study examined how Chinese higher vocational students experienced assessment within different forms of industry-education integration. The findings demonstrate that assessment cannot be understood simply as a technical component added after practical learning. It is one of the principal mechanisms through which the relationship between education and work is organized. Students encountered heterogeneous arrangements ranging from technically detailed performance assessment to loosely monitored reporting and apparently ceremonial enterprise ratings. Across these differences, they distinguished educational judgements concerning examinations, documentation, and course completion from occupational judgements concerning whether they could perform tasks, solve problems, meet quality requirements, work responsibly, and function within actual organizational routines.

The central argument is therefore that industry-education integration and assessment integration are related but distinct. A curriculum can be highly integrated with a workplace while its assessment remains largely school-centred. An enterprise can participate in assessment while providing little meaningful judgement. Conversely, a carefully designed practical task can connect educational and occupational standards even when conducted in a controlled training context.

5.1. Industry-Education Integration Does Not Automatically Produce Assessment Integration

The findings extend research emphasizing the complexity of work-integrated assessment. Perceived authenticity depends on alignment among workplace experience, assessment activity, and stakeholder participation (Ajjawi et al., 2020). At the same time, Chinese teaching-focused university-industry collaboration depends on sustained enterprise engagement and on the productive coordination of educational and industrial resources, interests, and responsibilities (Zhuang et al., 2024). The present interviews show what misalignment can look like from the student perspective when organizational collaboration is visible but assessment remains only weakly connected across settings.

In particular, several participants undertook authentic and consequential workplace activities while school assessment relied primarily on reports, logs, or completion requirements. The physical location of learning in an enterprise therefore did not ensure that educational assessment represented occupational learning.

This distinction is important for vocational policy. Industry-education integration is often described organizationally: colleges partner with enterprises, students enter workplaces, enterprise personnel teach, or training facilities replicate production. However, assessment asks a different question: whether the standards, evidence, judgements, and consequences used to recognize student learning are themselves connected across school and work.

Where an institution primarily requires attendance and a report, its formal message may remain that participation and documentation are sufficient evidence of learning. Where enterprise ratings automatically produce full marks, employer involvement is visible institutionally but weak educationally. Where students are required to complete realistic technical tasks and receive feedback tied to occupational standards, assessment provides stronger evidence that school and workplace expectations have actually been connected.

Assessment integration should therefore be treated as an independent indicator of the depth of industry-education integration rather than assumed from partnership structures alone.

5.2. Authenticity as Consequential Judgement Rather than Workplace Location

The data also refine the concept of authentic assessment. Authenticity was strongest when students understood why a standard mattered in occupational practice. For the numerical-control student, precision and surface quality were not arbitrary grading categories; they represented whether a component had been produced acceptably. For the construction student, KPI evaluation carried meaning because similar indicators were used for regular workers. For the e-commerce student, workplace assessment concerned actual backend operation, routine processes, task completion, and work attitude.

By contrast, an enterprise form completed with uniformly high marks was workplace-based without being strongly authentic. Its organizational origin was industrial, but its educational information value was minimal.

This pattern supports the view that authentic assessment should not be reduced to surface resemblance to professional practice (Ashford-Rowe et al., 2014; Villarroel et al., 2018). In particular, the present findings suggest that, in vocational industry-education integration, authenticity has a consequential dimension. Students experienced assessment as authentic when criteria corresponded to occupationally meaningful consequences: a component either met tolerance, a task was completed to workplace standard, a construction responsibility affected real work, or performance influenced employment opportunity.

An assessment that cannot meaningfully distinguish satisfactory from weak work tells students little about occupational quality even when completed by an employer.

5.3. From Dual Assessment to Translated Judgement

A second contribution concerns school-enterprise dual assessment. Several cases included both educational and employer judgement. However, calling an arrangement dual does not explain how the two sides relate.

The strongest examples involved some translation between environments. Enterprise assessments of work behaviour and practical operations entered school records; school-based skills tests attempted to use materials linked to workplace experience; teachers communicated with enterprise mentors and considered workplace feedback alongside student documentation.

Other arrangements were more additive than integrated. School and enterprise each evaluated students, but students were uncertain about how the judgements were combined or what consequences they carried.

This distinction corresponds to longstanding concerns about the role of multiple stakeholders in work-integrated assessment (Ferns & Zegwaard, 2014; Winchester-Seeto et al., 2016). Employer participation can enhance authenticity because workplace supervisors observe situated performance that educational staff cannot easily see. Yet enterprise involvement alone is insufficient; the broader collaboration also depends on how educational and industrial actors coordinate their different resources and priorities (Zhuang et al., 2024).

The present study suggests that effective dual assessment requires translation across evaluative systems. Schools need to understand what workplace ratings represent; enterprises need sufficiently clear criteria to distinguish training judgement from routine managerial impressions; and students need to understand the relationship between workplace expectations and academic outcomes. Without such translation, multiple assessors create administrative plurality rather than genuine integration.

5.4. From Assessment of Learning to Assessment for Occupational Judgement

The students' concerns about learning processes point toward another distinction: whether assessment merely certifies completed work or develops the capacity to judge quality.

Assessment in work-integrated learning frequently serves assessment-for-learning purposes rather than certification alone (Luk & Chan, 2024). More broadly, higher education should develop evaluative judgement so that graduates can determine the quality of their own and others' work beyond the period of formal instruction (Tai et al., 2018).

The interviews illustrate both the presence and absence of such development. Students developed evaluative judgement informally when they learned what a mentor considered acceptable, compared classroom procedures with workplace requirements, diagnosed why a task failed, or began to understand the standards governing an actual product. Yet these forms of learning were not always explicitly represented within formal assessment.

P12's observation that the project form emphasized final results while overlooking process is particularly important. The messy learning that occurs through uncertainty, correction, negotiation, and adaptation may be precisely what prepares students for future occupational judgement. A final grade may record competence without helping the student understand how to reproduce, monitor, and improve it independently.

Vocational assessment should therefore create opportunities for students to articulate why work meets a standard, diagnose deficiencies, compare alternative approaches, and reflect on differences between educational and workplace expectations. Reports and logs could contribute to this purpose, but only when designed as tools for interpretation rather than routine evidence of attendance.

5.5. Student Voice and Evaluative Reciprocity

Perhaps the most significant finding concerns reciprocity. Much assessment literature asks how teachers and employers can validly judge students. The interviews suggest that industry-education integration also requires attention to how students judge educational and workplace provision.

This is not merely a satisfaction issue. Students observe whether a mentor actually teaches, whether tasks are occupationally relevant, whether equipment is outdated, whether workload is educationally justified, whether

employment promises are credible, and whether school learning prepares them for workplace demands. Their evaluations therefore contain information about the quality of integration itself.

Yet several participants described arrangements in which enterprises possessed formal authority to judge students while students lacked an equivalent structured opportunity to judge enterprise participation. Complaints could sometimes be communicated to teachers, but problem resolution is different from systematic evaluation.

Developing evaluative judgement should therefore involve more than self-assessment of individual performance. Students should also learn to judge educational and occupational environments against explicit standards: whether tasks are developmentally appropriate, whether feedback is useful, whether supervision is adequate, whether promised learning opportunities are delivered, and whether workplace practices meet agreed expectations.

Reciprocal evaluation would reposition students from passive recipients of institutional judgement toward participants in the governance of industry-education integration.

5.6. Toward Meaningful Assessment Integration

At an aggregate level, the findings suggest that meaningful assessment integration contains four interrelated principles. In the first place, performance alignment requires assessment to represent capabilities actually needed in occupational practice while retaining relevant conceptual knowledge. Practical assessment should not simply imitate work superficially but should require students to make, decide, diagnose, communicate, or perform according to recognizable occupational standards. Following the above, multi-source judgement requires meaningful contributions from educational and occupational actors. Different assessors can observe different dimensions of competence, but criteria and consequences must be intelligible across settings. Then, developmental visibility requires assessment to recognize learning processes as well as final outputs. Students should receive feedback and opportunities to interpret mistakes, progression, mentoring, and changing independence. In addition, evaluative reciprocity requires students to participate as judges as well as objects of judgement. They need opportunities to evaluate their own work, understand quality standards, and provide consequential feedback on enterprises and programs.

These dimensions allow assessment arrangements to be understood along a continuum. At one end lies administrative assessment, dominated by attendance, required documentation, generic reports, or non-discriminating forms. Such assessment confirms that participation occurred but provides limited evidence about learning. A second form is parallel assessment, in which school and enterprise both evaluate the student but operate largely independently. A third is integrated performance assessment, in which school and workplace evidence are deliberately connected and occupational performance contributes substantively to educational judgement. The most educationally developed form could be described as reciprocal developmental assessment. Here assessment not only integrates school and occupational standards but also develops students' capacity to judge quality and provides structured opportunities for students to evaluate the learning environment itself.

The interviews contained examples of elements of all four forms, but no single case consistently embodied the final form. This suggests that assessment may remain one of the less integrated components even within relatively mature industry-education partnerships.

5.7. Implications for Vocational Education Practice

The findings have several implications for the design of industry-education integration. First, colleges should distinguish between evidence of participation and evidence of competence. Attendance, internship logs, and reports may be necessary for administrative accountability, but they should not substitute for assessment of what students can actually do.

Seen in this light, enterprise assessment should avoid generic rating forms that encourage uniformly positive scores. Criteria should relate to observable dimensions of work, and assessors should be able to distinguish stages of performance rather than simply classify students as satisfactory.

In addition, practical assessment should be linked to feedback. A score for technical performance is more educationally useful when students understand why a product or action met or failed to meet the standard and how their next performance can improve.

At the level of school-enterprise coordination, staff on both sides should jointly clarify which aspects of competence each is best positioned to assess. Educational staff may be better placed to evaluate conceptual integration and reflection, while workplace supervisors may be better positioned to evaluate situated performance, reliability, communication, and occupational judgement. Such coordination is consistent with the broader need to align the distinctive resources and responsibilities contributed by educational institutions and enterprises in teaching-focused collaboration (Zhuang et al., 2024).

At the same time, student evaluation of the placement should be treated as part of quality assurance rather than an optional satisfaction survey, since students' engagement in such evaluation plays an important role in quality assurance in higher education (Zhang et al., 2024). Instruments should include opportunities to report specific issues concerning task relevance, mentoring, learning opportunities, technology, safety, workload, workplace treatment, and alignment with curriculum to strengthen students' right to voice their concerns (Zhang et al., 2025).

Finally, these arrangements should give students explicit opportunities to develop evaluative judgement. Students should learn not only to perform occupational tasks but also to explain what good work looks like, interpret criteria, judge examples, evaluate their own performance, and identify when workplace arrangements support or obstruct learning.

5.8. Limitations and Future Research

Several limitations should be recognized. First, the study is based on student interviews and therefore examines experienced rather than formally documented assessment systems. Institutional assessment policies, employer rubrics, marking schemes, and course documentation were not systematically analysed. Future research could compare student accounts with official assessment instruments and interviews with teachers and enterprise supervisors.

Second, we would note that assessment was one component of broader semi-structured interviews rather than the sole topic. Future studies could examine whether students increasingly develop evaluative judgement, how they reinterpret earlier grades after entering employment, and whether particular assessment designs improve occupational learning and transition.

6. Conclusions

This study shows that students experience assessment in industry-education integration as movement between different ways of defining competence. School assessment may prioritize examinations, reports, attendance, and formally recordable evidence, whereas workplace assessment makes visible practical ability, task completion, reliability, responsibility, and response to real problems.

Across the cases, the two evaluative environments could complement one another, but they were not automatically integrated. Some students experienced productive combinations of enterprise observation, skills testing, school assessment, and documentary reflection. Others encountered reports disconnected from workplace competence, employer ratings with little discriminating value, or limited opportunities to evaluate the quality of enterprise participation.

The central implication is that authentic learning does not necessarily produce authentic assessment. Industry-education integration becomes educationally deeper when assessment itself crosses the school-work boundary: occupational standards become meaningfully connected to academic judgement; multiple assessors contribute intelligible and consequential evidence; learning processes as well as outputs become visible; and students participate in evaluation rather than remaining only its objects.

For this reason, assessment integration should be understood not as a technical afterthought but as a central criterion for judging the quality of industry-education integration.

Author Contributions

T.Z.: conceptualization, methodology, data curation, writing—original draft preparation; Y.Y.: investigation, data curation, visualization, writing—reviewing and editing. All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Ethics Committee of Faculty of Education, Beijing Normal University (BNU202109100025, 28 September 2021)

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflict of interest.

Use of AI and AI-Assisted Technologies

No AI tools were utilized for this paper.

References

- Ajjawi, R., Tai, J., Huu Nghia, T. L., Boud, D., Johnson, L., & Patrick, C.-J. (2020). Aligning assessment with the needs of work-integrated learning: The challenges of authentic assessment in a complex context. *Assessment & Evaluation in Higher Education*, 45(2), 304–316. <https://doi.org/10.1080/02602938.2019.1639613>.
- Ashford-Rowe, K., Herrington, J., & Brown, C. (2014). Establishing the critical elements that determine authentic assessment. *Assessment & Evaluation in Higher Education*, 39(2), 205–222. <https://doi.org/10.1080/02602938.2013.819566>.
- Boud, D. (2000). Sustainable assessment: Rethinking assessment for the learning society. *Studies in Continuing Education*, 22(2), 151–167. <https://doi.org/10.1080/713695728>.
- Boud, D., Costley, C., Cranfield, S., Desai, J., Nikolou-Walker, E., Nottingham, P., & Wilson, D. (2023). The pivotal role of student assessment in work-integrated learning. *Higher Education Research & Development*, 42(6), 1323–1337. <https://doi.org/10.1080/07294360.2022.2152981>.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>.
- Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328–352. <https://doi.org/10.1080/14780887.2020.1769238>.
- Ferns, S., & Zegwaard, K. E. (2014). Critical assessment issues in work-integrated learning. *Asia-Pacific Journal of Cooperative Education*, 15(3), 179–188.
- Jackson, D. (2018). Challenges and strategies for assessing student workplace performance during work-integrated learning. *Assessment & Evaluation in Higher Education*, 43(4), 555–570. <https://doi.org/10.1080/02602938.2017.1378618>.
- Luk, L. Y. Y., & Chan, C. K. Y. (2024). Assessing student learning in work-integrated learning (WIL): A systematic review on assessment methods and purposes. *Studies in Educational Evaluation*, 81, 101345. <https://doi.org/10.1016/j.stueduc.2024.101345>.
- Müller, A. (2024). Cooperation between colleges and companies: Vocational education, skill mismatches and China's turnover problem. *The China Quarterly*, 260, 986–1004. <https://doi.org/10.1017/S0305741023001868>.
- Tai, J., Ajjawi, R., Boud, D., Dawson, P., & Panadero, E. (2018). Developing evaluative judgement: Enabling students to make decisions about the quality of work. *Higher Education*, 76, 467–481. <https://doi.org/10.1007/s10734-017-0220-3>.
- Villarroel, V., Bloxham, S., Bruna, D., Bruna, C., & Herrera-Seda, C. (2018). Authentic assessment: Creating a blueprint for course design. *Assessment & Evaluation in Higher Education*, 43(5), 840–854.
- Wang, G., & Wang, Z. (2023). Vocational education: A poor second choice? A comparison of the labour market outcomes of academic and vocational graduates in China. *Oxford Review of Education*, 49(3), 408–427. <https://doi.org/10.1080/03054985.2022.2096583>.
- Winchester-Seeto, T., Rowe, A., & Mackaway, J. (2016). Sharing the load: Understanding the roles of academics and host supervisors in work-integrated learning. *Asia-Pacific Journal of Cooperative Education*, 17(2), 101–118.
- Zhang, L., Xiang, Y., & Zheng, L. (2025). Institutional restructuring and practical pathways for quality assurance in Macau higher education: A marketization transition perspective. *Journal of Educational Technology and Innovation*, 7(4), 14–25. <https://doi.org/10.61414/nsf2s091>.
- Zhang, L., Zheng, L., & Zhou, Y. (2024). Assessing and improving the quality of undergraduates in preschool education programs in China: The course experience. *Journal of Educational Technology and Innovation*, 6(3), 31–46. <https://doi.org/10.61414/jeti.v6i3.206>.
- Zhuang, T., Zhou, H., & Sun, Q. (2024). Ushering in industrial forces for teaching-focused university-industry collaboration in China: A resource-dependence perspective. *Studies in Higher Education*, 49(12), 2357–2375. <https://doi.org/10.1080/03075079.2024.2306343>.