

Reframing Vocational Teachers' Roles in the Digital Turn: School–Enterprise Partnership and AI-Enabled Pedagogy in Liaoning Province

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Abstract: Digital transformation in vocational education is often discussed in terms of platforms, infrastructure, or curricular modernization. Less attention has been paid to the redistribution of pedagogical and organizational work that accompanies these changes. This article examines how vocational teachers' professional roles are being reshaped at the intersection of school–enterprise partnership and AI-enabled pedagogy. The study adopts an integrative review of scholarship on vocational education digitalization, teacher professionalism, work-based learning, and artificial intelligence in education, combined with a policy-text analysis of national Chinese and Liaoning provincial documents. The analysis shows that digital transformation does not simply add new tools to existing routines. It expands teachers' work in five directions: learning design, boundary-spanning coordination with industry, data-informed mentoring, curriculum and resource curation, and ethical governance of AI use. School–enterprise partnership functions as an organizational mechanism because it redistributes curriculum development, assessment, and practice supervision across institutional boundaries. AI-enabled pedagogy functions as a pedagogical mechanism because it changes how teachers diagnose learner needs, organize practice, provide feedback, and monitor progression. In Liaoning Province, where digital campus construction and industrial upgrading are advancing together, the coupling of these two mechanisms is especially visible. The article argues that the future vocational teacher is neither a traditional lecturer nor a mere platform operator, but a professional who connects occupational standards, digital resources, and student development. On this basis, the paper proposes practical pathways for vocational colleges, including teacher industry residency, discipline-specific AI professional development, workload recognition for partnership work, and human-centered governance of educational data and AI applications.

Keywords: Vocational Education; Digital Transformation; Teacher Roles; School–Enterprise Partnership; Artificial Intelligence; Liaoning Province; Educational Management

Published: Apr 27, 2026

DOI: <https://doi.org/10.62177/amit.v2i2.1343>

1. Introduction

Digital transformation has moved from a supporting function to a structuring force in vocational education. In China, education digitalization is no longer framed simply as an issue of hardware access or online resource supply; it is increasingly tied to governance reform, smart platforms, curriculum modernization, and the building of a national learning infrastructure ^[1]. This shift matters especially in vocational education because occupational standards, production processes, and required

technical skills are being reshaped by industrial digitalization. Recent policy directions have therefore linked vocational education reform with industrial upgrading, stronger enterprise participation, and the cultivation of digitally capable technical talent ^[2].

The literature on vocational education has captured important parts of this change. Existing studies describe the expansion of digital campuses, online resources, virtual simulation, and platform-based teaching in vocational settings ^[3,4]. Yet the more consequential question is professional rather than technical: what happens to the work of teachers when vocational education becomes more data-rich, industry-connected, and AI-aware? Long before the current wave of smart education, scholarship on vocational teacher quality had already emphasized that VET teachers occupy a complex professional position. Their work depends on the combination of occupational expertise, pedagogical judgement, and institutional role performance ^[5]. In this sense, digital transformation should be read not as a narrow technology project, but as a reorganization of teacher knowledge and responsibility ^[6].

Two processes are central to that reorganization. The first is school–enterprise partnership, which has long been treated as a defining feature of vocational education in China and elsewhere ^[7-10]. The second is the growing use of artificial intelligence in teaching, assessment, feedback, and student support ^[11-15]. These two strands are often discussed separately. Studies of school–enterprise cooperation focus on practice bases, curriculum relevance, and work-based learning, while studies of AI in education tend to concentrate on personalization, automation, analytics, or generative tools. Far less attention has been paid to how they operate together in the daily work of vocational teachers. That gap is significant in an industrial province such as Liaoning, where regional vocational education reform has been explicitly connected to digitalization, industrial transformation, and the modernization of school governance ^[16-18].

The difficulty is that these two processes rarely operate as separate reforms. In practice, a vocational teacher may redesign a course with enterprise engineers, move part of the training sequence onto a digital platform, use AI-supported feedback to monitor students' errors, and still remain responsible for occupational safety and formative judgement. Role change therefore emerges from the interaction between organizational arrangements and pedagogical tools. Treating digital transformation only as technology adoption risks missing this interaction; treating school–enterprise cooperation only as an external partnership similarly underestimates how teachers translate industrial knowledge into teachable tasks ^[5,7-10].

Against this background, the article asks three questions. First, what professional roles are being reconfigured in digitally transforming vocational education? Second, through what mechanisms do school–enterprise partnership and AI-enabled pedagogy drive that reconfiguration? Third, how does the Liaoning context shape these dynamics? The contribution of the paper is conceptual rather than statistical. It develops an analytical framework for understanding role change in vocational teaching and translates that framework into practical implications for college management and teacher development.

2. Materials and Methods

2.1 Review design and source selection

This article is a conceptual review rather than an empirical survey. It adopts an integrative review design in order to synthesize four bodies of literature that are usually treated as separate conversations: digital transformation in vocational education, vocational teacher professionalism, school–enterprise partnership, and artificial intelligence in teaching. This design is appropriate because the problem under discussion is not confined to one disciplinary lens. Role change in vocational education is simultaneously pedagogical, organizational, and policy-driven.

Peer-reviewed studies were selected because they addressed at least one of the following themes: the digital transformation of vocational education ^[3,4]; the knowledge base and institutional role of vocational teachers ^[5,6]; collaboration between schools and workplaces, including Chinese school–enterprise cooperation ^[7-10]; and AI-supported teaching, teacher professional development, or teacher roles in AI-rich environments ^[11-15]. In addition, official policy documents were included to capture the Chinese and Liaoning governance context in which vocational digitalization is currently being advanced ^[1,2,16-18]. Recent work on digital competence challenges in vocational education and on global teacher digital skills frameworks was also consulted to sharpen the discussion of implementation constraints ^[19,20].

2.2 Analytical procedure

The material was read through three analytical questions. First, what new tasks are teachers expected to perform under conditions of digital transformation? Second, through what organizational and pedagogical mechanisms do these tasks emerge? Third, which dimensions of professional judgement remain non-substitutable even when platforms and AI tools become more capable? The coding process therefore focused on recurring descriptions of teacher work, institutional arrangements, and boundary changes between school, workplace, and technology.

The aim was not to test causal mediation in a statistical sense. Instead, the review sought to build a coherent explanatory framework. The resulting analysis treats school–enterprise partnership as an organizational mechanism of role change and AI-enabled pedagogy as a pedagogical mechanism of role change. Liaoning Province is used as a policy-grounded regional context in which these mechanisms can be interpreted concretely.

2.3 Conceptual framing

For the purposes of this review, digital transformation is understood as an institutional process through which vocational colleges reorganize teaching, assessment, management, and industry-facing services around digital infrastructures. This definition is deliberately broader than the use of online courses or smart classrooms. It includes changes in curriculum decision-making, evidence collection, resource circulation, professional development, and governance. Teacher-role reshaping is understood as the redistribution of expectations attached to teachers' work, including what they design, whom they coordinate with, what evidence they interpret, and what forms of responsibility they carry.

The proposed framework distinguishes an enabling condition, two mediating mechanisms, and a professional outcome. Digital transformation functions as the enabling condition because it supplies the platforms, data systems, simulation tools, and AI applications that make new forms of teaching possible. School–enterprise partnership mediates this condition at the organizational level by bringing occupational standards, workplace tasks, and enterprise mentors into curriculum practice. AI-enabled pedagogy mediates it at the instructional level by changing diagnosis, feedback, personalization, and assessment. The outcome is not a single new role but a layered professional identity in which teachers combine pedagogical, technical, managerial, and ethical judgement ^[6,11-15].

3. Reconfigured Teacher Roles in the Digital Turn

Digital transformation in vocational education changes more than the tools available in classrooms. It alters the division of pedagogical labour, the tempo of curriculum updating, and the boundaries between teaching, mentoring, coordination, and governance. What emerges is not one new role, but a cluster of interrelated responsibilities.

3.1 Teacher as learning designer

One of the clearest shifts is from content delivery to learning design. In many vocational programs, teaching now moves across physical workshops, online platforms, virtual simulation systems, enterprise projects, and self-paced resource banks. Teachers must decide what is best learned through direct demonstration, what can be simulated, what requires enterprise exposure, and how these elements should be sequenced around work-process logic rather than textbook order ^[3,4].

This is not a minor technical adjustment. It requires teachers to organize tasks, evidence, and feedback across multiple learning environments. In vocational fields, the design question is especially demanding because knowledge is often procedural, contextual, and safety-sensitive. A digital resource that is adequate for theoretical explanation may be insufficient for judging whether a learner can complete a process under workplace conditions. TPACK, in this setting, becomes less a general theory of technology integration than a practical framework for curriculum engineering under conditions of occupational change ^[6].

The learning designer role also grows in importance because vocational knowledge does not remain stable for long. Where equipment, software, or production routines change quickly, teachers increasingly curate, adapt, and sometimes create teaching resources instead of relying on fixed printed materials. Their value lies not only in knowing content, but in shaping coherent trajectories through digital and practical learning tasks.

Learning design in this setting is also a matter of sequence. A teacher must decide which competences should be introduced through explanation, which should be rehearsed through simulation, which should be verified through workshop performance,

and which require enterprise-based exposure. A poorly sequenced digital course may look modern but still fail to produce occupational competence. The teacher's design work therefore has to preserve the logic of work processes rather than merely transferring existing lectures into digital formats ^[3,4,6].

3.2 Teacher as boundary-spanning coordinator

School–enterprise partnership adds a second role: the teacher as boundary-spanning coordinator. When vocational colleges move beyond symbolic cooperation and build sustained links with firms, teachers are drawn into negotiations over occupational standards, equipment updates, internship content, enterprise mentors, and assessment criteria ^[7-9]. In these settings, the teacher becomes a translator between the language of production and the language of schooling.

This translation work is frequently underestimated because it is less visible than classroom teaching. Yet it is indispensable if curriculum relevance is to be more than a slogan. Chinese research on school–enterprise cooperation has repeatedly shown that effective collaboration depends on stable institutional arrangements rather than one-off agreements ^[7,8]. International work on workplace collaboration points in the same direction, emphasizing that relevance in vocational education is strengthened when schools and workplaces jointly shape learning tasks, supervision, and evaluation ^[9].

Teacher industry placement sharpens this function further. Time spent in contemporary work settings gives teachers access not only to updated technical knowledge, but also to workflow expectations, communication patterns, tacit standards, and quality-control routines that are difficult to infer from documents alone ^[10]. This experience strengthens the teacher's capacity to coordinate across institutional boundaries and to keep school-based learning aligned with actual work processes.

Boundary spanning also affects teachers' authority. In a strong partnership, teachers are not passive recipients of enterprise requirements; they negotiate which workplace tasks are suitable for beginners, which standards can be assessed within school conditions, and where safety, cost, or confidentiality limits direct workplace reproduction. This negotiation is a professional activity. It requires enough technical knowledge to speak with firms and enough educational judgement to protect learning progression ^[7-10].

3.3 Teacher as data-informed mentor and evaluator

A third shift concerns feedback and evaluation. Digital platforms and AI-supported systems generate new forms of evidence about student participation, mistakes, progression, and response patterns. In principle, these data can support earlier intervention and more differentiated instruction ^[11-13]. In practice, however, raw data do not teach. Teachers remain responsible for interpreting what patterns mean, deciding which signals are educationally important, and linking digital traces to observable performance in classrooms, workshops, and practice settings.

This point is particularly important in vocational education. Platform analytics may indicate low quiz scores or limited engagement, but they cannot by themselves explain whether the difficulty lies in conceptual misunderstanding, tool misuse, weak procedural memory, or anxiety in performance situations. Vocational teachers therefore move toward a mentoring role in which they triangulate system-generated feedback, direct observation, and performance evidence. AI-supported education may extend the reach of formative feedback, but it also increases the need for professional interpretation ^[14].

The evaluator role changes accordingly. Assessment can no longer rely only on end-point testing. Teachers are increasingly asked to combine process evidence, digital records, practical demonstrations, and workplace-related outcomes. This does not reduce professional judgement; it makes that judgement more continuous and more explicit.

3.4 Teacher as ethical steward of AI use

The rise of generative AI introduces a fourth role: ethical stewardship. AI tools can now generate drafts, code, designs, explanations, and troubleshooting suggestions with remarkable speed. For vocational learners, this can be useful. It can also create new forms of opacity. Outputs may appear fluent while containing technical errors, weak reasoning, or unsafe assumptions. In assignments related to maintenance, accounting, marketing, programming, or design, the line between assistance and substitution becomes difficult to manage ^[14,15].

Teachers therefore retain an indispensable gatekeeping function. They must decide where AI use is pedagogically legitimate, how assessment should be redesigned to preserve diagnostic value, and how students should be taught to verify rather than merely accept AI outputs. UNESCO's recent guidance is clear on the need for human-centred governance, especially in

relation to privacy, bias, age appropriateness, and educational purpose^[15]. In vocational education, the issue is not abstract ethics alone. It concerns whether the use of AI supports sound occupational judgement or obscures its absence.

3.5 Teacher as curriculum and resource curator

A further role is curriculum and resource curation. Digital transformation increases the volume of available learning materials, including open resources, platform content, simulation modules, enterprise cases, and AI-generated examples. Abundance does not automatically improve teaching. Teachers must select resources that correspond to occupational standards, local equipment, student readiness, and assessment requirements. In this sense, curation becomes a professional filter between the digital knowledge environment and the vocational classroom^[3,4].

This curatorial role is particularly relevant in Liaoning, where different colleges may serve different industrial clusters and operate with uneven equipment conditions. A resource that is effective in one major, college, or enterprise setting may not be transferable without adaptation. Teachers therefore need the authority and time to localize digital resources, update cases, remove obsolete procedures, and combine enterprise materials with pedagogically usable scaffolds. Without this work, digital resource construction may become a repository project rather than a teaching reform.

Taken together, these changes suggest that the future vocational teacher is defined less by unilateral content transmission than by orchestration, translation, curation, interpretation, and judgement.

Table 1. Emerging teacher roles in digitally transforming vocational education

Emerging role	Core work	Institutional support
Learning designer	Organizes blended resources, virtual simulation, project tasks, and assessment around work-process logic.	Curriculum redesign time, platform access, and cross-departmental support.
Boundary-spanning coordinator	Aligns enterprise standards, internships, mentors, and classroom tasks; translates between industry language and curricular requirements.	Stable school–enterprise governance, teacher industry placement, and work-load recognition.
Data-informed mentor	Uses analytics and AI-supported feedback to diagnose needs, monitor progression, and provide differentiated guidance.	Data literacy, redesigned assessment, and interoperable systems.
Ethical steward of AI use	Sets boundaries for acceptable AI use and addresses bias, privacy, safety, and academic integrity.	Institutional policy, human oversight, and discipline-specific AI guidelines.
Curriculum and resource curator	Selects, adapts, and updates digital resources, enterprise cases, and AI-generated materials according to occupational standards and local teaching conditions.	Time for resource localization, access to enterprise materials, and departmental review mechanisms.

4. Discussion: Dual Mechanisms of Role Change

4.1 School–enterprise partnership as an organizational mechanism

School–enterprise partnership reshapes teacher work because it redistributes parts of curriculum authority beyond the classroom. In a conventional arrangement, teachers teach within the school and the firm receives students during practice. Under deeper partnership, however, enterprise standards influence curriculum content, equipment selection, internship design, and competence expectations^[7-9]. The teacher’s task therefore expands into coordination, negotiation, and quality assurance.

This shift has strong implications for teacher professionalism. Vocational teachers have long occupied a dual position between education and occupation^[5]. Digital transformation makes that dual position more demanding, not less. When enterprises update software, process standards, and technical systems more quickly than schools can revise textbooks, teachers become the key translators who keep the curriculum legible to both sides. Partnership thus changes teacher roles not simply by increasing external contact, but by altering the institutional location of vocational knowledge itself.

4.2 AI-enabled pedagogy as a pedagogical mechanism

AI-enabled pedagogy works through a different pathway. It changes the micro-structure of teaching: content generation,

adaptive explanation, automated feedback, chat-based support, prediction of learning difficulties, and the analysis of large volumes of student interaction data ^[11-13]. Some of these uses save time. More importantly, they change the evidence available to teachers and the pace at which pedagogical decisions can be made.

Yet efficiency should not be mistaken for educational improvement. The practical value of AI depends on whether teachers can contextualize outputs, judge their reliability, and connect them to authentic vocational performance. Used well, AI may free time for coaching and allow teachers to focus on higher-value interventions. Used poorly, it can produce superficial assessment, encourage passive completion, or shift attention toward what systems can easily measure rather than what vocational competence actually requires ^[13-15].

4.3 Why the two mechanisms need to be read together

The current transformation of vocational teaching becomes clearer when these mechanisms are read together. AI without industry context may make learning more efficient while remaining weakly connected to real occupational tasks. School–enterprise partnership without digital capacity may remain episodic and administrative, dependent on individual contacts rather than stable systems. The coupling of enterprise-linked teaching and AI-enabled pedagogy is what makes the present moment distinctive.

When authentic enterprise tasks, digital platforms, simulation environments, and AI-assisted feedback are aligned, teachers can connect work-process knowledge, personalized support, and competence assessment within one learning architecture. That alignment, however, also raises the threshold for teacher competence and institutional support. From this perspective, role change is not a side effect of technology adoption. It is a structural consequence of reorganizing how vocational knowledge is produced, updated, and taught.

4.4 Role intensification and conditions for mediation

The mediation described above is not automatic. Both partnership and AI can intensify teachers' workload if they are introduced without institutional redesign. Enterprise cooperation may add meetings, documentation, internship coordination, and quality assurance duties. AI-enabled systems may add platform monitoring, data interpretation, prompt design, and new forms of academic integrity management. In such cases, role reshaping becomes role accumulation, and the professional benefits of digital transformation may be weakened.

Effective mediation therefore depends on organizational conditions. Teachers need protected time for curriculum redesign, access to enterprise practice, technical support for platform use, and recognition of coordination work in promotion and performance systems. They also need shared rules about data, authorship, privacy, and acceptable AI assistance. Where these conditions are absent, teachers may comply with digital reform requirements at the surface level while retaining traditional routines underneath ^[15,19,20].

5. Liaoning Province: Opportunities and Constraints

Liaoning offers a useful context for this discussion because vocational education reform there is tied closely to regional industrial restructuring. Provincial reports and policy documents have framed “digital vocational education” as part of the broader agenda of Digital Liaoning and intelligent manufacturing, while calling for the deep integration of internet-based tools, big data, cloud computing, and new-generation AI with vocational education ^[16-18]. The digital campus agenda is therefore not an isolated educational initiative; it is linked to regional economic strategy.

Recent provincial measures have included a dedicated plan for the construction of digital campuses in vocational education, the development of data bases and application systems, the expansion of online and virtual simulation resources, and the use of industry-facing platforms to improve the match between educational provision and enterprise demand ^[17,18]. Liaoning has also promoted or upgraded programs related to robotics, cloud computing, intelligent manufacturing, artificial intelligence, and other digitally intensive fields ^[16,18]. These developments reposition teachers at the interface of industrial upgrading and curriculum change.

Several opportunities follow from this. Liaoning's industrial base gives vocational colleges relatively strong grounds for enterprise-linked teaching. The provincial digital campus agenda creates conditions for shared resources, stronger data use, and more integrated governance. The pressure to prepare technicians for digitally transformed industries also increases the

strategic value of teachers' boundary-spanning work. In such a context, the vocational teacher becomes an important mediator between economic transformation and talent cultivation.

At the same time, the constraints are substantial. Digital competence in vocational education is uneven, and recent research suggests that teachers often face a gap between policy expectations and practical readiness^[19,20]. Generic training in software use rarely resolves discipline-specific problems, such as how AI should be used in logistics scheduling, hotel operations, mechatronics maintenance, e-commerce communication, or accounting practice. Workload systems may also undervalue enterprise coordination, platform design, and mentoring, treating them as peripheral rather than central forms of academic labour. There is a further risk of formalism: colleges may build platforms or sign agreements without changing the deeper organization of teaching.

These constraints are not merely technical. They concern the relationship between regional industrial change and college-level capacity. Liaoning's manufacturing, equipment, petrochemical, transportation, and service sectors require vocational graduates who can work with increasingly digitalized processes, yet colleges differ in their access to enterprise projects, updated equipment, and staff with recent industry experience. Digital transformation may therefore widen differences between institutions if infrastructure investment is not accompanied by teacher development and partnership governance.

The Liaoning case also suggests that local adaptation is essential. A provincial digital campus plan can provide standards and direction, but teacher-role change occurs in departments, workshops, training bases, and enterprise projects. Colleges serving advanced manufacturing may emphasize simulation, industrial software, and equipment data; colleges serving healthcare, logistics, tourism, or business services may face different AI and platform needs. A mature policy response should therefore combine provincial coordination with discipline-specific implementation, rather than assuming that one digital model can serve all vocational programs^[16-18].

6. Managerial and Policy Implications

First, teacher development in vocational colleges needs to move beyond one-off software training. A more credible model combines industry residency, enterprise project participation, and discipline-specific training in digital curriculum design and AI-supported teaching. Industry exposure matters not only because it updates technical knowledge, but because it helps teachers understand workflow, communication norms, quality standards, and tacit forms of judgement that AI systems often fail to capture.

Second, college management should recognize partnership work as real academic labour. Curriculum co-development with firms, internship supervision, enterprise liaison, platform-based course redesign, and co-assessment should count in workload allocation and promotion decisions. Without such recognition, school-enterprise partnership depends excessively on personal goodwill and becomes difficult to institutionalize.

Third, AI governance should be brought closer to pedagogy. Institutions need clear guidelines on data use, privacy protection, academic integrity, and acceptable forms of student AI assistance. These rules should not remain abstract or generic. The governance questions that arise in nursing, mechanical design, digital media, and business simulation differ in both risk and pedagogical purpose. Human oversight should remain explicit in high-stakes assessment and in tasks with safety implications. Fourth, digital campus construction should focus on interoperability rather than platform accumulation. When learning management systems, virtual simulation tools, student support platforms, and industry-facing systems do not communicate well, teachers face higher clerical burdens and fragmented evidence. Integration matters because the mentoring and coordination roles described in this article depend on teachers being able to move across data, tasks, and institutional boundaries without excessive administrative friction.

Fifth, teacher evaluation systems should be adjusted to capture the invisible labour of digital transformation. Course redesign, platform maintenance, enterprise communication, digital assessment design, and AI governance are often time-consuming but weakly represented in conventional teaching-load calculations. If these tasks remain unrecognized, colleges may unintentionally discourage the very practices that digital reform requires.

Sixth, vocational colleges should build discipline-based communities of practice. General training on AI or digital platforms is useful at the introductory stage, but teachers ultimately need examples from their own occupational fields. Communities

that bring together teachers, enterprise engineers, instructional designers, and data-support staff can turn isolated experimentation into shared routines, reusable resources, and more stable professional learning.

Seventh, school–enterprise cooperation should be governed through joint accountability rather than episodic contact. A useful arrangement is to specify, for each cooperative major, which enterprise tasks will enter the curriculum, which teachers and enterprise mentors will co-assess student performance, how often cases and equipment standards will be reviewed, and how feedback from internships will be returned to course teams. These arrangements reduce dependence on informal personal relations and make partnership knowledge visible inside the college. They also help prevent AI-supported teaching from drifting away from occupational practice, because the validity of digital tasks can be checked against enterprise expectations and safety requirements ^[7-10,15].

7. Limitations and Future Research

This article is limited by its conceptual review design. It synthesizes policy documents and relevant scholarship, but it does not measure the strength of mediation statistically or compare institutions through field data. The terms “school–enterprise partnership” and “AI-enabled pedagogy” also cover diverse practices. Some partnerships are deeply integrated into curriculum and assessment, whereas others remain ceremonial. Similarly, AI use may range from simple content generation to sophisticated learning analytics. Future research should distinguish these levels more carefully.

Further empirical work could examine how different categories of vocational teachers experience role change. Useful designs include interviews with teachers and enterprise mentors, classroom observations of AI-supported vocational tasks, surveys of digital competence and role strain, and comparative case studies across Liaoning cities or industrial sectors. Quantitative studies could test whether school–enterprise partnership and AI application operate as mediating variables between digital transformation and teacher-role reshaping. Such studies would help move the present framework from conceptual explanation to empirical verification.

8. Conclusion

Digital transformation in vocational education should not be understood as the simple introduction of platforms, smart classrooms, or AI tools. Its deeper consequence is the reconfiguration of teacher professionalism. The analysis developed here argues that vocational teachers are increasingly required to work as learning designers, boundary-spanning coordinators, data-informed mentors, curriculum and resource curators, and ethical stewards of AI. School–enterprise partnership and AI-enabled pedagogy operate as dual mechanisms in this shift: the former reorganizes institutional relationships and curriculum authority, while the latter changes the micro-processes of teaching, feedback, and evaluation.

In Liaoning Province, where digital campus construction and industrial upgrading are advancing together, these dynamics are especially visible. The central challenge is therefore not whether teachers use technology, but whether institutions can support a new form of teacher work that is collaborative, judgement-intensive, and closely tied to industrial change. Future empirical research can test this framework across different vocational sectors and compare role configurations across institutions with different levels of digital capacity and enterprise engagement.

Funding

No

Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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