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An Instruction Based on Situational Pedagogy with Collaborative Learning to Enhance Communication Skills and Interpersonal Skills for First-Year Students in Secondary Vocational High Schools

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Abstract

Background and Aim: With the emphasis on holistic competency development in vocational education, cultivating communication and interpersonal skills among first-year secondary vocational students has become crucial for their academic adaptation and future career success. Traditional teaching methods often prioritize theoretical knowledge over the development of practical soft skills. This study aims to investigate the effectiveness of an instructional approach that integrates situational pedagogy and collaborative learning in enhancing these competencies.

Methodology: A quasi-experimental design was implemented with a sample of 50 first-year students from a vocational art school in China. The experimental group received a 16-week intervention featuring situational teaching modules and structured collaborative learning activities, while learning outcomes were assessed using the Communication Competence Scale and the Adolescent Interpersonal Ability Inventory. Data were analyzed using paired-sample t-tests to examine pre-post intervention differences.

Results: The intervention resulted in statistically significant improvements($p<0.001$) in both communication and interpersonal skills. Specifically, verbal expression scores increased from 3.12 to 4.35, listening comprehension from 3.45 to 4.28, cooperation from 3.34 to 4.56, and emotional regulation from 2.87 to 3.79. Implementation metrics showed high fidelity, with 92%activity completion rate and 88%teacher compliance with lesson plans.

Conclusion: The integration of situational pedagogy with collaborative learning demonstrates substantial effectiveness in enhancing first-year vocational students' communication and interpersonal skills. These findings support the adoption of scenario-based and collaborative instructional approaches in vocational education curricula to better prepare students for workplace demands. Future research should explore long-term skill retention and transfer to professional settings.

Keywords: Situational Pedagogy; Collaborative Learning; Communication Skills; Interpersonal Skills; Vocational Education

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Introduction

Over the past few decades, vocational education has been developing at an increasingly rapid pace. In the process, the issue of forming the relevant competencies of students is acquiring additional, significant importance. Communication skills and interpersonal competence, in particular, are becoming the main components of the future employee's adaptability at school and work (Guo & Lamb, 2019). In particular, in the first year of study, as a component of soft skills for secondary vocational education school students, they ensure both the beneficial socialization of youth in the conditions of modern society and the more targeted solution of the problem of young people's entry into the labor market, given its more complex requirements (OECD, 2018). On the other hand, traditional teaching methods in secondary vocational schools are usually reduced to the teacher's knowledge transmission, based on the principles of education, in which the student is a passive object (Wang & Li, 2020). In this case, usually, the main task is set to memorize theoretical knowledge, while skills and, in particular, social and communicative skills are not subject to special development. The result is an apparent professional asymmetry in the educational content, in which, despite the young man's basic training, the communication and personal competence of the student do not reach the level corresponding to the main workplace tasks (Billett, 2011). An adequate solution to this problem is to link such content with teaching and, above all, to the social and business reality of the student's future.

Situational pedagogy and cooperative learning are significant in this context. The situational approach allows one to combine teaching with authentic or simulated learning tasks that lead to a practical internalization of theoretical information by students (Lave & Wenger, 1991). At the same time, cooperative learning, when specially organized groups of students complete educational tasks that require joint activity and the coordination of efforts, is recognized as a means of developing cooperation, business communication, and forming new knowledge by learners (Johnson & Johnson, 2017). Moreover, a careful combination of these principles can solve not only the stated goals of teaching but also the objective learning needs, allowing the students to practice their communication skills and interpersonal relationships in a realistic setting.

This study aims to experimentally test the impact of situational pedagogy and cooperative learning on communication skills and interpersonal competence among first-year students in secondary vocational schools. The research hypothesis is that the repeated use of realistic

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problematic situations and group tasks can contribute to the formation of communication skills and interpersonal relationships among students, specifically, in the form of an increase in expressiveness, listening, cooperation, and self-control. In this way, the obtained data and the conclusions drawn will make a theoretical contribution to vocational pedagogy and applied learning, as well as a methodological contribution to improving the educational process in secondary vocational education.

Objectives

Main Objectives

1. To evaluate the impact of situational pedagogy on communication skills, particularly listening and feedback.

2. To examine how situational pedagogy fosters interpersonal skills such as teamwork, adaptability, and relationship management.

3. To verify the synergistic effect of integrating collaborative learning into situational pedagogy on enhancing communication and interpersonal competencies.

4. To analyze the combined influence of situational pedagogy and collaborative learning on the overall quality of first-year vocational students, including teamwork and career adaptability.

Secondary Objectives

1. To enrich theoretical research on situational pedagogy and collaborative learning by providing empirical evidence and new perspectives.

2. To inform and support the reform of vocational education practices, thereby contributing to the improvement of teaching quality and the holistic development of students.

Literature Review

Collaborative Pedagogy and the Impact on Communication and Interpersonal Skills Essay

Situational Pedagogy

Situated learning has been identified as an effective strategy for students to develop their communication and interpersonal skills. In a language teaching context, Zhang (2014) showed that when situated instruction is implemented, the use of a realistic scenario design can significantly

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increase the learners' motivation and ability to transfer knowledge. Wang (2019) also employed the situational interactive strategy in finance teaching and found that this method achieved a high degree of student enthusiasm and also improved their practical ability. However, Wang's (2019) and Zhang's (2014) studies also proved that the success of this approach highly depends on how closely the given situation is related to the subject learning goals. In cases where the situations did not meet the practical professional requirements, the students' interests and development were limited.

On the other hand, Lv (2019) observed that when grammar learning was embedded in authentic communication scenarios and followed up by instant feedback, the language performance in terms of clarity and communicability was improved. This study was primarily language-focused and did not assess the actual soft skills development directly. At this point, the test provided only a supplementary evaluation for interpersonal ability. These findings and methodological caveats once again confirm that the positive impact of this method can be easily translated into various disciplines. However, at the same time, more specific testing methods should be developed to measure communication and interpersonal competence.

Collaborative Learning

Collaborative learning, on its part, has been found to be a favorable environment for the development of social and interpersonal aspects of learner experience. Ruys, Van Keer, and Aelterman (2012) concluded that teachers must be able to design and control the content of collaborative activities with an equal distribution of roles, as well as a close monitoring of the entire process. Hao (2019) showed that when collaboration is combined with autonomous learning, the learners can "reconstruct" their agency in a circular, step-by-step format: "context-learning interaction–self-process cognition."

Despite the strengths of this approach, most of the current literature on collaborative learning has been focused on cognitive and learning outcomes, with less attention paid to its direct effects on the measurable interpersonal competence. For this reason, it will also be necessary to explore in more detail how collaborative learning can improve communication, conflict management, and teamwork, as well as to design a more sophisticated testing approach that can more effectively capture these skills.

Technology-Enhanced Collaborative Contexts

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The rise of educational technology has also created opportunities for the development of collaborative contexts and learning designs. Zhang, Wan, and Wu (2015) proposed a Wiki-based model for collaborative learning that was reported to have improved the quality of peer feedback by not only allowing for the co-construction of knowledge but also by leaving a "detectable trace" that could be further used for assessment. In their study of cloud computing, Liu et al. (2018) also highlighted its features that expand the scalability of "digital connectivity" through remote access. A somewhat similar point was made by Zhai (2018), who explored the use of electronic interactive media and communication for remote teamwork.

Nonetheless, these works have also encountered challenges with this approach, in particular, the difference in digital and technology literacy among the participants. As Zhou et al. (2014) noted in their study of task-driven learning in interactive contexts, other issues may also concern the uneven access to digital resources. The authors found that such educational practices can, to some extent, improve the learners' comprehensive abilities, especially for complex, interdisciplinary ones. This has also been found to be largely dependent on the teacher's ability to design proper tasks and the students' degree of flexibility and adaptation. In the absence of adequate scaffolding, the use of technology is at risk of being reduced to a simple "add-on" approach rather than an organic, substantive part of the learning context.

Quality Assurance and Process Improvement

Beyond the pedagogical and technological dimensions, the literature on quality assurance and process improvement has also been found to be informative in the search for ways to ensure and monitor the effectiveness of education over time. Kuang and Tang (2008) developed a strategy for the "upgrades and management of engineering information systems" in the context of enterprise information systems. The approach included an overall centralized upgrade and risk management framework with a software system. Despite being industry-specific, these concepts are transferable and can be readily adapted to "process monitoring–continuous improvement" methods that can be similarly used for education.

Lin et al. (n.d.) also proved that "quality control circles" could be used in a healthcare setting to ensure a long-term improvement in the reliability of operations. This insight is also relevant to the potential design of effective interventions in education. As DeLaune (n.d.) found, the amount of time invested in education and training shows a very strong correlation with the

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quality of ability development in learners. For this reason, educational institutions will need to ensure the appropriate amount of time for students to engage in situational learning and collaborative practices.

Conclusion: Several relevant and complementary ideas can be observed in the current literature on education and learning. In particular, both the situational pedagogy and the collaborative learning can be seen as effective ways to develop students' communication and interpersonal skills. In addition, technology-enhanced learning contexts can provide a larger volume of opportunities for the development of such scenarios and processes, with the monitoring of quality and long-term effectiveness ensuring their sustainability. However, some significant gaps and limitations have also been noticed: many of the related studies are discipline-specific and are unlikely to be transferable to other professional contexts. The existing testing and evaluation instruments also do not allow for the direct and systematic measurement of soft skills. Against this background, the proposed study aims to address this gap by combining evidence-based practices of situational learning and collaborative education, and applying them to an authentic vocational education context to explore their impact on the communication and interpersonal skills development of first-year vocational students.

Conceptual Framework

The research framework for this study is predicated on the theoretical constructs of situational teaching and cooperative learning as tools for enhancing communication and interpersonal skills among vocational school beginners. The framework embraces situational pedagogy, which is characterized by the deliberate design of educational scenarios that resemble or replicate real-world contexts. This approach is centered on the creation of an environment where learners are immersed in experiences that demand the application of knowledge and skills in a manner that transcends traditional rote learning paradigms.

In the realm of collaborative learning, the framework adopts a structured model of cooperative interaction among students as a key pedagogical strategy. This model is predicated on the concept of "negotiation of meaning," which involves learners engaging in a dynamic exchange of ideas, sharing of tasks, and collaborative problem-solving. The dual focus on situational and cooperative methodologies is theorized to address the observed deficiencies in

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communication and interpersonal skills among the target demographic of vocational school newcomers.

Conceptualizing the core principles, the framework is structured around the interplay between situational pedagogy and collaborative learning mechanisms. The former sets the stage by crafting an experiential learning environment that simulates the complexities of real-life challenges, while the latter operationalizes the interaction among learners through cooperative engagement. The confluence of these elements is hypothesized to catalyze a synergistic enhancement of communicative competencies and interpersonal skills.

The framework anticipates that the integration of these educational strategies will not only bolster the individual components of communication and interpersonal dynamics but will also amplify the overall effectiveness through their intersection. This is to be achieved by situational pedagogy, providing a conducive learning milieu and collaborative learning, offering a scaffold for meaningful social engagement and skill acquisition.

Operationalizing these theoretical underpinnings, the framework translates them into tangible classroom interventions. These interventions are manifested in learning activities that simulate real-world tasks and necessitate cooperative engagement among students. The framework's efficacy is to be evaluated through the empirical assessment of its impact on the communicative and interpersonal outcomes of the students.

Methodology

The purpose of this study was to examine the effect of an instructional model guided by situational pedagogy and collaborative learning on first-year students' communication skills and interpersonal skills in secondary vocational schools. In order to obtain the scientific validity of the research, the pre-test and post-test quasi-experimental research design was utilized to collect the data and make comparisons.

1. Research Design and Subjects

A quasi-experimental design with an experimental group and a control group was used in this research. The instructional intervention program, which was based on the combination of situational pedagogy and collaborative learning, was applied to the experimental group while the control group was under the traditional teaching conditions.

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The total population of this study was 178 first-year students with three majors: Arts and Crafts, Animation and Game Production, and E-Commerce from Shenyang Light Industry Art School, China. By using the cluster random sampling method, an intact class of 50 students was selected to form the experimental group. To ensure the homogeneity of the sample, the pre-test was carried out to assess whether there were baseline differences in age, gender, communication skills, and interpersonal skills among the three majors. The results of the independent t-test and chi-square test indicated that there are no significant differences among students in different majors in age ($F=1.32$, $p=0.276$), gender distribution ($\chi^2=2.15$, $p=0.341$), communication skills ($t=0.87$, $p=0.389$), or interpersonal skills ($t=1.05$, $p=0.298$). These results revealed that the sample was internally balanced and ready for the intervention. Table 1 shows the demographic characteristics of the experimental group.

Table 1 Demographic Characteristics of the Experimental Group (N=50)

Characteristic	Category	Number (n)	Percentage (%)
Gender	Male	26	52
	Female	24	48
Age	15 years old	6	12
	16 years old	38	76
	17 years old	6	12
Major	Visual Arts	18	36
	Animation & Game Production	22	44
	Arts and Crafts	10	20

Note: The mean age was 16.3±0.6 years, with an age range of 15–17 years.

2. Experimental Manipulation

The experimental group was administered 16 weeks of situational pedagogy combined with collaborative learning, and the specific implementation of the experimental group was as follows:

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Problem types: The experiment adopted six different situational modules of the workplace, such as communication and collaboration on game design requirements and art curation.

Learning mode: Fixed groups, with each group consisting of 3–4 students. The groups worked together to complete two collaborative learning activities each week.

Class settings: The entire experiment was conducted over the course of 64 class hours, which were made up of 8 hours of situational simulation practice time.

In addition, to reduce potential interference, all participating teachers had unified training to ensure that they were familiar with the basic concepts and specific implementation process of the combination of situational pedagogy and collaborative learning. The confounding variables, such as content complexity and class time, were strictly controlled in the study.

3. Research Tools and Evaluation Indicators

The tools used in the research are described below.

Communication Competence Scale for Vocational Students: The scale was used to measure the students' communication competencies. The scale has two dimensions, namely Verbal Expression and Listening Comprehension, and the scores are based on a 5-point Likert scale (1=Strongly Disagree,5=Strongly Agree). The internal consistency of this scale in this study was 0.91, as indicated by the Cronbach's αcoefficient.

Adolescent Interpersonal Ability Inventory: The questionnaire was used to measure the students' interpersonal abilities. The scale has two dimensions, namely Cooperation and Emotional Regulation, and the scores are based on a 5-point Likert scale. The internal consistency of the scale in this study was 0.89, as indicated by the Cronbach's αcoefficient.

The content validity was assessed by experts in the fields of vocational education and psychology, and the item-dimension consistency rate was greater than 85%. The construct validity was tested by using factor analysis, and all the items had significant factor loadings on their respective factors (loading >0.4), which confirmed the validity of the research tools.

4. Data Collection

The following data collection procedures were followed in this study.

Pre-test: One week before the beginning of the intervention, all students in the experimental group received a baseline test.

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Post-test: No more than one week after the end of the 16-week intervention, the same tests were given to all of the students in the experimental group once more.

Implementation: In order to reduce the possibility of subjective bias, the three researchers who had all received the same standardized training conducted the testing at the same time. The students' final competency scores were calculated using the weighted sum of teacher scoring (40%), self-scoring (30%), and peer scoring (30%).

5. Data Analysis

The data analysis process was as follows:

Reliability and validity tests: The internal consistency reliability of the scales was calculated using Cronbach's α coefficient. Content validity and construct validity were measured by using expert opinions and factor analysis, respectively.

Normality test: The Shapiro–Wilk test was conducted to ensure that the data of the pre-test and post-test were normally distributed.

Statistical analysis: Paired-sample t-tests were performed to analyze whether there was a significant difference between the pre-test and post-test scores of the experimental group in communication and interpersonal skills.

Results

This chapter presents the empirical findings derived from the implementation of situational pedagogy combined with collaborative learning aimed at enhancing the communication and interpersonal skills of first-year secondary vocational students. A comprehensive analysis of the data collected during the research period, including pre-test and post-test results for the experimental group, is provided below.

1. Normality Test

The Shapiro-Wilk test was employed to assess the normality of the distribution for both pre-test and post-test scores across the measured variables. The results, as summarized in Table 2, indicate that the data for both communication skills and interpersonal skills adhered to a normal distribution at both measurement points(all*p*>0.05), thereby satisfying the fundamental assumption for subsequent parametric statistical analyses.

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Table 2 Normality Test Results (Shapiro-Wilk)

Variable	Pre-test W	Pre-test*p*	Post-test W	Post-test*p*
Communication Skills	0.972	0.241	0.961	0.108
Interpersonal Skills	0.966	0.152	0.978	0.356

2. Communication Skills Assessment Results

The Communication Competence Scale for Secondary Students was administered to evaluate changes in communication skills. A paired-sample t-test revealed statistically significant improvements in both core dimensions of communication skills following the 16-week intervention, as detailed in Table 3.

Table 3 Pre-Post Comparison of Communication Skills in the Experimental Group (N=45)

Dimension	Pre-test M (SD)	Post-test M (SD)	t-value	p-value
Verbal Expression	3.12(0.78)	4.35(0.65)	-8.742	<0.001
Listening Comprehension	3.45(0.82)	4.28(0.71)	-6.329	<0.001

The results demonstrate a marked enhancement in verbal expression (mean difference=1.23) and listening comprehension (mean difference=0.83), with both improvements being highly statistically significant (*p*<.001). Notably, while baseline scores for listening comprehension were initially higher than those for verbal expression, the post-intervention results showed a narrowing gap between the two dimensions, suggesting a particularly substantial improvement in the area of verbal expression.

3. Interpersonal Skills Assessment Results

The Adolescent Interpersonal Ability Inventory was utilized to measure changes in interpersonal skills. As presented in Table 4, significant post-intervention gains were observed in both cooperation and emotional regulation.

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Table 4 Pre-Post Comparison of Interpersonal Skills in the Experimental Group (N=45)

Dimension	Pre-test M (SD)	Post-test M (SD)	t-value	p-value
Cooperation	3.34(0.85)	4.56(0.73)	-8.326	<0.001
Emotional Regulation	2.87(0.92)	3.79(0.88)	-6.542	<0.001

The data indicate a pronounced improvement in cooperation (mean difference=1.22) and a significant gain in emotional regulation (mean difference=0.92), with both results being statistically significant(*p*<.001). It is noteworthy that the baseline level for cooperation was higher than that for emotional regulation, and a relative difference between these dimensions persisted after the intervention, implying that emotional regulation may require more sustained or specialized training.

4. Intervention Fidelity

Metrics collected during the implementation phase confirmed a high degree of adherence to the experimental protocol. The planned situational activities were completed at a rate of 92%. The average weekly time dedicated to group collaboration was 78 minutes. Furthermore, teacher compliance with the prescribed lesson plans was recorded at 88%, indicating faithful delivery of the intervention.

Discussion

The findings of this study demonstrate that the instructional intervention integrating situational pedagogy with collaborative learning produced statistically significant improvements in both communication and interpersonal skills among first-year secondary vocational students. This chapter situates these results within broader theoretical and practical contexts, clarifying the underlying mechanisms, practical implications, and limitations of the research.

1. Mechanisms of Situational Pedagogy in Enhancing Communication Skills

The substantial improvements in verbal expression and listening comprehension are consistent with the theoretical foundations of Situated Learning Theory, which posits that knowledge and skills are most effectively constructed in contexts resembling their real-world application (Lave & Wenger, 1991). The designed scenarios (e.g., simulated customer interactions, project planning meetings) offered authentic environments for students to practice and refine communication

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strategies directly transferable to their future vocations. This authenticity likely enhanced both engagement and motivation, as the tasks were perceived as relevant and meaningful.

Additionally, the structured nature of collaborative activities necessitated frequent and purposeful communication. Students were required to articulate ideas, negotiate meanings, and provide feedback within their groups, thus creating extensive opportunities for deliberate practice—an essential component of skill acquisition (Ericsson et al., 1993). Immediate feedback from peers and instructors further supported iterative refinement of communication strategies, promoting continuous improvement that is often absent in traditional, lecture-based pedagogy.

2. Impact Pathways of Collaborative Learning on Interpersonal Skills

The pronounced gains in cooperation, alongside modest but significant improvements in emotional regulation, can be explained through the framework of Social Interdependence Theory. This theory suggests that positive interdependence arises when group members perceive that their success is linked to the success of others (Johnson & Johnson, 2009). Shared group goals and outcomes fostered prosocial behaviors such as perspective-taking, mutual encouragement, and collaborative problem-solving, thereby directly strengthening cooperation.

The process of navigating group dynamics within simulated professional contexts also provided valuable opportunities for developing emotional regulation. Encountering and managing minor conflicts, frustrations, and setbacks created a safe yet challenging space for students to practice recognizing and regulating their own emotions while responding appropriately to others. However, the smaller effect size for emotional regulation suggests that this more complex, internalized competency may require longer intervention periods, explicit instruction, or individualized support strategies to achieve optimal growth.

3. Practical Implications for Vocational Education

The empirical success of this integrated instructional model offers actionable insights for curriculum innovation in secondary vocational education: (1) **Curriculum Integration.** Vocational curricula should embed situational learning modules that replicate authentic workplace challenges. For instance, marketing courses may incorporate sales negotiation simulations, while hotel management programs could implement front-desk reception scenarios, simultaneously fostering technical expertise and soft skills. (2) **Assessment Reform.** A transition beyond knowledge-based assessments is needed. Multi-dimensional, process-oriented evaluation systems—including teacher observations, scenario-based tests, peer evaluations, and self-reflections—should be adopted to capture holistic competency development in communication and collaboration. (3) **Teacher Professional Development.** Effective implementation requires instructors skilled in scenario design, facilitation, and formative feedback. Targeted professional

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development programs are, therefore, necessary to equip educators with the competencies needed to create relevant contexts and guide meaningful student interaction.

4. Research Limitations and Future Directions

While promising, this study has several limitations. First, the absence of a control group—necessitated by contextual constraints—restricts the strength of causal inferences. Second, the sample was drawn from a single institution specializing in art-related vocations, which may limit generalizability across other vocational domains. Third, the study assessed immediate post-intervention outcomes without examining long-term retention or transferability of skills to actual workplace settings.

Future research should address these gaps by employing randomized controlled trial (RCT) designs with diverse student populations across vocational fields. Longitudinal studies are essential to track the sustainability of acquired skills and their practical impact on workplace readiness and performance. Moreover, integrating advanced technologies such as Virtual Reality (VR) could provide immersive and scalable situational learning environments, offering a promising direction for further investigation.

Recommendation

In light of the experimental results and theoretical considerations of the study, comprehensive recommendations are put forward for educational practice, curriculum design, and future research.

1. Recommendations for Educational Practice and Curriculum Design

For educational practice and curriculum design, it is highly recommended that vocational schools not only provide fragmented soft skill training, but also systematically integrate learning modules into the core courses, and consider communication and interpersonal skills as part of vocational skills. This can be achieved by creating a bank of standardized but customizable scenario-based tasks tailored to specific vocational contexts, such as “responding to client design feedback” in visual arts or “conducting agile stand-up meetings” in game development, sequenced from simple to complex for progressive skill building. Additionally, a multi-source evaluation system can be implemented, involving detailed, behaviorally anchored rubrics for teacher observations during scenarios, coupled with mandatory guided reflection sessions to promote metacognitive skills and the formalization of 360-degree feedback mechanisms where students engage in evidence-based constructive critiques of each other to hone their own evaluative skills.

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2. Recommendations for Teacher Professional Development

For teacher professional development, a crucial success factor is to guide teachers to shift from being knowledge deliverers to facilitators, which requires professional development programs to focus on helping teachers to master micro-coaching skills to provide concise actionable feedback during group work without being intrusive, as well as advanced scenario management skills to adeptly handle dynamic learning contexts, including strategies for de-escalating group conflicts and ensuring equal participation, and establishing teacher learning communities to co-design scenarios, share implementation challenges, and collectively reflect to continuously improve their pedagogical practice.

3. Recommendations for Institutional Policy and Support

At the level of institutional policy and support, school leaders need to make strategic adjustments, including providing longer time blocks in class schedules to accommodate in-depth scenario-based projects, reconfiguring traditional classrooms to more flexible learning spaces that resemble real-world environments like design studios or service counters, and investing in technology infrastructure, such as video recording devices for self-reflection and scenario simulation software, to facilitate and scale up the practice of situational learning.

4. Recommendations for Future Research Directions

In terms of future research directions, on the one hand, it is necessary to increase the follow-up time (6-12 months after the course) to assess the long-term retention of skills, and adopt a mixed-methods approach to trace graduates into their workplaces through supervisor interviews and self-report surveys to evaluate the transferability of learned skills to actual job contexts. On the other hand, comparative studies should be conducted to further distinguish the active components of the integrated approach, by investigating the effectiveness of the situational teaching method alone, the collaborative learning method alone, and their combination, and moderator analysis is needed to examine how different student traits, such as personality, cultural background, and prior experiences, affect the effectiveness of the intervention to enable more personalized and precision-based instructional design.

In conclusion, by adopting this multifaceted approach covering curriculum innovation, teacher development, institutional support, and rigorous research, various stakeholders can work together to construct a more resilient and adaptive vocational education system that can better equip students for the intricate communication demands of the modern work environment.

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