



Enhancing English Proficiency: Integrating the Zone of Proximal Development (ZPD) in Vocational High School

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Article Info	Abstract
Received: 2026-04-24 Revised: 2026-04-25 Accepted: 2026-10-01 Keywords: English Proficiency, Vocational High School Zone of Proximal Development (ZPD) DOI: 10.24256/ideas.v14i1.10292 Corresponding Author: Markuna lunamarluna746@gmail.com Pendidikan Guru Madrasah Ibtidaiyyah, Sekolah Tinggi Agama Islam Al-furqan, Makassar Sulawesi Selatan	<i>This study examines the efficacy of the Zone of Proximal Development (ZPD) in improving English proficiency in vocational high schools, specifically within the health sciences domain. The study sought to evaluate the effects of ZPD-based scaffolding techniques on student language proficiency, engagement, and academic performance. A quasi-experimental design was utilized, involving 40 students from two vocational schools in Indonesia, with one group receiving instruction based on the Zone of Proximal Development (ZPD) and the other adhering to traditional pedagogical methods. Data were gathered via pre- and post-assessments, classroom observations, semi-structured interviews, and document analysis. The findings indicated that the experimental group exhibited a substantial enhancement in English proficiency, with an average increase of 23.75 points in their post-test scores, in contrast to 6.1 points for the control group. Observations and interviews indicated that ZPD scaffolding via peer collaboration, task-based learning, and teacher modelling markedly improved student engagement and language utilization. The study emphasizes the theoretical and practical advantages of the Zone of Proximal Development (ZPD) in vocational education, illustrating its capacity to enhance both language proficiency and students' career readiness. The findings indicate that ZPD-based methodologies ought to be incorporated into vocational English curricula to improve learning outcomes, and additional research is necessary to investigate the long-term effects and quantitative impact of ZPD across various vocational domains.</i>

1. Introduction

In an increasingly globalized world, English proficiency has become an essential skill for accessing international knowledge, participating in the global economy, and communicating across professional settings (B. R. -, 2024; Md. I. B. - & -, 2023; Kawsar, 2023). For students in vocational high schools, English is particularly important because many industries, such as healthcare, hospitality, aviation, and tourism, require effective workplace communication (AM et al., 2023; Rahmiani & Marwandi, 2022; Taufik Hidayat, 2024). In Indonesia, vocational high schools are expected to prepare graduates with both technical competence and employability skills (Safira & Azzahra, 2022). However, many students still demonstrate limited English proficiency, especially in speaking, listening, and job-related communication (Kiruthiga E & Christopher, 2024). English is often taught as an academic subject rather than as a practical tool for professional use, creating a gap between classroom learning and industry expectations.

To address this issue, vocational education requires instructional approaches that connect language learning with authentic workplace needs. One relevant framework is the Zone of Proximal Development (ZPD), introduced by Lev Vygotsky within Sociocultural Theory (Arora et al., 2024; Mohammed & Khalid, 2025). ZPD refers to the distance between what learners can do independently and what they can achieve with support from teachers or more capable peers. Through scaffolding strategies such as modelling, guided practice, feedback, and peer collaboration, students can gradually develop higher levels of competence and learning autonomy (Yawiloeng, 2021; Bozovich, 2009).

Previous studies have reported that ZPD-based instruction can improve language learning outcomes, including speaking performance, writing ability, vocabulary development, and student engagement (Mohammed & Khalid, 2025; Rababah et al., 2023). Most of these studies, however, were conducted in general English as a Foreign Language (EFL) classroom. Although several researchers have discussed scaffolding in vocational settings, existing research mainly focuses on isolated classroom tasks rather than the systematic integration of ZPD into vocational English curricula (Xu et al., 2024). As a result, limited evidence is available on how ZPD can support vocational students who need English for specific professional purposes.

This gap is particularly important in the health sciences domain, where students are expected to master both technical knowledge and accurate communication skills. In such contexts, English is needed not only for academic learning but also for interacting with patients, reading medical information, understanding procedures, and participating in wider professional networks adaptations (Yuan, 2025). Despite these demands, research examining integrated ZPD implementation in vocational health education remains scarce, especially in non-Western contexts.

To address this gap, the present study investigates the implementation of ZPD-based instruction in vocational high school English classes within the health sciences field. Using a mixed-methods approach, this study examines the effects of ZPD scaffolding on students' English proficiency, classroom engagement, and perceptions of learning, while also exploring teachers' challenges in implementation.

This study contributes both theoretically and practically. Theoretically, it extends the application of Sociocultural Theory to vocational English learning by demonstrating how ZPD operates in profession-oriented classrooms. Practically, it offers evidence-based insights for teachers, curriculum developers, and vocational institutions seeking to design more relevant and effective English instruction for workforce preparation.

2. Method

This study employed a mixed-methods quasi-experimental design to examine the effectiveness of Zone of Proximal Development (ZPD)-based scaffolding in improving students' English proficiency and classroom engagement. The quantitative component used a pre-test-post-test non-equivalent control group design, while the qualitative component included classroom observations, semi-structured interviews, and document analysis.

Two intact classes were involved: an experimental group receiving ZPD-based instruction and a control group receiving conventional English instruction. This design was selected because random assignment of students was not feasible in the natural school setting.

Participants

The participants were 40 tenth-grade students from Mega Rezky Vocational High School. Students were selected using stratified random sampling based on their vocational program to ensure representation across departments. The strata included: Midwifery, Nursing, Health Analysis, Pharmacy. After selection, students were assigned by existing class membership into two groups:

Table 1. Comparison of Pre-Test and Post-Test Scores between Experimental and Control Groups

Group	Number of students	Number of teachers	Vocational programs
Experimental Group	20	1	Midwifery, Nursing, Health Analysis,
Control Group	20	1	Midwifery, Nursing, Health Analysis,

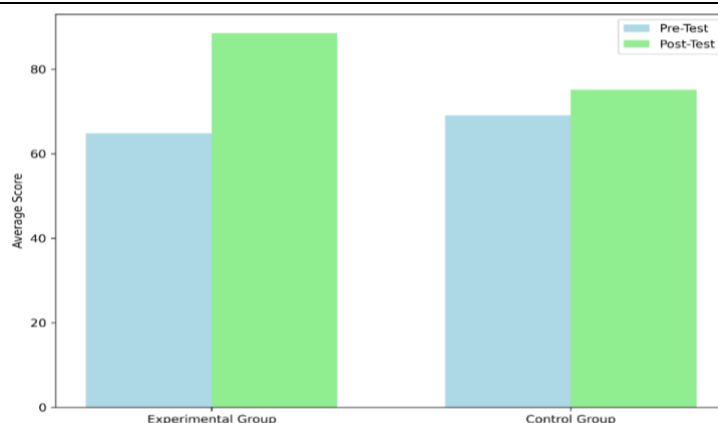


Figure 1. Comparison of Pre-Test and Post test scores between Experimental and Control Group

Figure 1 illustrates the comparison of pre-test and post-test average scores between the experimental and control groups. At the pre-test stage, both groups showed relatively similar levels of English proficiency, although the control group scored slightly higher than the experimental group. After the instructional intervention, both groups improved; however, the experimental group demonstrated a substantially greater increase. Its post-test score rose sharply to nearly 89, whereas the control group reached approximately 75. This difference suggests that students exposed to ZPD-based instruction benefited more than those receiving conventional teaching. Overall, the figure visually confirms the stronger effectiveness of scaffolded learning approaches.

Research Settings

The study was conducted at Mega Rezky Vocational High School, a vocational institution specializing in health sciences education. The school offers programs in midwifery, nursing, health analysis, and pharmacy. English is taught as a compulsory subject to support students' future professional communication.

Classrooms were medium-sized with an average teacher–student ratio of 1:20. Facilities included whiteboards, projectors, and computers. Although specialized language-learning resources were limited, the school environment supported collaborative learning, making it suitable for ZPD-based instruction.

Instruments

Four instruments were employed in this study to collect both quantitative and qualitative data, namely the English proficiency test, observation checklist, semi-structured interview guide, and document analysis checklist.

The first instrument was the English Proficiency Test, which consisted of pre-tests and post-tests designed to measure students' improvement in speaking, listening, and writing skills after the instructional intervention. The speaking section required students to perform role-play tasks based on healthcare communication scenarios, such as interacting with patients, giving instructions, or responding to workplace situations. The listening section included comprehension tasks using short professional dialogues related to health service contexts. Students were asked to identify key information, understand specific details, and respond appropriately. The writing section consisted of short functional texts relevant to workplace communication, such as writing simple reports, messages, or instructions.

A scoring rubric with a scale of 0–100 was used to ensure consistency in assessment. Speaking accuracy and fluency accounted for 40% of the total score, listening comprehension accounted for 30%, and writing organization and grammar accounted for 30%. To ensure content validity, the rubric and test items were reviewed by two experienced English teachers familiar with vocational education. In addition, pilot testing was conducted with students outside the research sample to evaluate clarity, difficulty level, and practicality of administration.

The second instrument was the Observation Checklist, which was used during classroom sessions to record the implementation of ZPD-based instruction and student participation. The checklist focused on teacher scaffolding strategies, modelling, guided practice, peer collaboration, student engagement, classroom interaction, and responsiveness during learning activities. Observations were conducted systematically

throughout the treatment period to capture behavioral patterns and instructional processes.

The third instrument was the Semi-Structured Interview Guide, administered to both teachers and selected students after the intervention. The interviews aimed to explore participants' perceptions of the teaching approach, learning experiences, benefits of scaffolding activities, motivation, and challenges encountered during the learning process. The semi-structured format allowed the researcher to ask predetermined questions while also exploring emerging issues in greater depth.

The fourth instrument was the Document Analysis Checklist, which was used to review lesson plans, instructional materials, worksheets, and assessment documents. This instrument examined whether ZPD principles were reflected in curriculum implementation, task sequencing, collaborative activities, scaffolding procedures, and assessment practices. The use of multiple instruments enabled data triangulation and strengthened the validity and credibility of the study findings.

Data Collection Procedure

The data collection process was conducted in four sequential stages to obtain comprehensive quantitative and qualitative evidence regarding the effectiveness of ZPD-based instruction in vocational English learning. These stages included the pre-test, treatment phase, post-test, and qualitative data collection.

The first stage was the Pre-Test. Before the instructional treatment began, both the experimental group and the control group completed an English proficiency pre-test. The purpose of the pre-test was to determine the students' initial level of competence and to ensure that both groups had relatively comparable English abilities before the intervention. The test measured three language skills: speaking, listening, and writing. Speaking performance was assessed through short role-play tasks, listening ability was measured through comprehension activities based on professional dialogues, and writing ability was evaluated through short workplace-related texts. The results of the pre-test were used as baseline data for later comparison with the post-test scores.

The second stage was the Treatment Phase, which represented the core intervention of the study. During this stage, the experimental group received instruction based on the Zone of Proximal Development (ZPD) framework. Several scaffolding strategies were applied, including teacher modelling, guided practice, peer collaboration, and gradual release of responsibility. Teachers first demonstrated tasks and provided structured assistance, after which students worked collaboratively in pairs or small groups to complete learning activities. Support was gradually reduced as students became more confident and independent.

Activities were contextualized to health science vocational settings, such as patient communication, giving instructions, and workplace problem-solving. In contrast, the control group received conventional English instruction. Teaching in this group focused primarily on teacher explanation, textbook exercises, grammar practice, and individual assignments with limited interaction or collaborative learning opportunities.

The third stage was the Post-Test. After the treatment period had been completed, both groups were administered the post-test using the same skill components as the pre-test. The purpose of the post-test was to measure students' progress in speaking, listening, and writing after participating in different instructional approaches. Comparisons

between pre-test and post-test scores were used to evaluate the impact of the ZPD intervention.

The fourth stage involved Qualitative Data Collection to complement the quantitative findings. Classroom observations were conducted throughout the treatment period to record teaching strategies, student participation, peer interaction, and scaffolding practices. Semi-structured interviews were carried out with teachers and selected students to explore their perceptions, learning experiences, and implementation challenges. In addition, curriculum documents, lesson plans, teaching materials, and assessment records were collected for document analysis. These multiple sources of data enabled triangulation and provided a deeper understanding of how and why the instructional intervention influenced student learning outcomes.

Data Analysis

The data collected in this study were analyzed using a mixed-methods approach that combined quantitative and qualitative procedures. This approach was intended to provide a comprehensive understanding of the effectiveness of ZPD-based instruction in improving students' English proficiency and classroom learning experiences.

a. Quantitative Analysis

The quantitative data were obtained from the pre-test and post-test scores of both the experimental and control groups. These scores were analyzed using descriptive and inferential statistics. First, descriptive statistics were used to summarize the data, including mean scores and standard deviations. The mean scores were used to identify the average level of student performance before and after the intervention, while standard deviations were used to show the spread or variability of scores within each group.

Second, an independent samples t-test was conducted to compare the post-test scores of the experimental and control groups in order to determine whether there was a statistically significant difference between students who received ZPD-based instruction and those who received conventional instruction. Third, a paired samples comparison was used to examine changes within each group by comparing students' pre-test and post-test scores. This analysis helped identify whether each instructional approach produced measurable improvement over time.

In addition, Cohen's d effect size was calculated to measure the practical significance of the intervention. While statistical significance indicates whether a difference exists, effect size explains the magnitude of that difference. Therefore, Cohen's d was used to determine how strongly the ZPD-based intervention influenced students' English proficiency. All quantitative analyses were conducted to evaluate whether the instructional treatment significantly improved speaking, listening, and writing performance.

b. Qualitative Analysis

The qualitative data consisted of interview transcripts, classroom observation notes, and instructional documents. These data were analyzed using thematic analysis in three stages. The first stage was data coding, in which meaningful statements, recurring ideas, and relevant patterns were identified from the raw data. The second stage was theme categorization, where similar codes were grouped into broader themes such as student engagement, peer collaboration, teacher scaffolding, learning motivation, and

implementation challenges. The final stage was interpretation, in which the themes were examined in relation to the research questions and theoretical framework.

To improve the trustworthiness and credibility of the findings, triangulation was applied by comparing information from multiple sources, including interviews, observations, and documents. This process helped confirm consistency across the data and reduced the possibility of researcher bias.

Integration Analysis

After separate quantitative and qualitative analyses were completed, both sets of findings were integrated during interpretation. This integration enabled the researcher to explain not only whether ZPD-based instruction was effective, but also how and why it influenced students' learning outcomes. Quantitative results provided evidence of improvement, while qualitative findings offered deeper insight into classroom processes, learner experiences, and instructional mechanisms that contributed to those outcomes.

3. Result

Overview of the Results

This study combined quantitative and qualitative data to evaluate the effectiveness of Zone of Proximal Development (ZPD)-based instruction in vocational English learning. Quantitative findings were derived from pre-test and post-test scores of the experimental and control groups, while qualitative findings were obtained from classroom observations, interviews, and document analysis. Overall, the results indicate that students exposed to ZPD-based instruction demonstrated stronger improvement in English proficiency, higher classroom engagement, and more positive learning experiences than students receiving conventional instruction.

Quantitative Results

Pre-Test and Post-Test Performance

Both groups showed relatively comparable proficiency levels at the beginning of the study, although the control group started with a slightly higher mean score. After the intervention, the experimental group demonstrated substantially greater progress than the control group.

Table 2. Descriptive Statistics of Pre-Test and Post-Test Scores

Group	N	Mean	SD	Min	Max
Experimental Pre-Test	20	64.85	7.94	45	78
Experimental Post-Test	20	88.60	3.09	80	93
Control Pre-Test	20	69.05	5.58	54	78
Control Post-Test	20	75.15	3.84	67	82

The experimental group improved by 23.75 points, whereas the control group improved by only 6.10 points. This substantial difference suggests that ZPD-based instruction produced stronger learning gains than conventional teaching.

Inferential Statistics

An independent samples t-test showed a statistically significant difference between the post-test scores of the two groups.

Table 3. Independent Samples t-Test Results Comparing Post-Test Scores of Experimental and Control Groups

Variable	Value
t-value	-9.190
p-value	< .001
Mean Difference	-11.50
95% CI	-14.033 to -8.967

The results indicate that the probability of this difference occurring by chance was very low. The large effect size (Cohen's *d*) further confirms that the intervention had substantial practical impact. These findings suggest that ZPD improved outcomes because students received structured support, collaborative opportunities, and gradual movement toward independent language use.

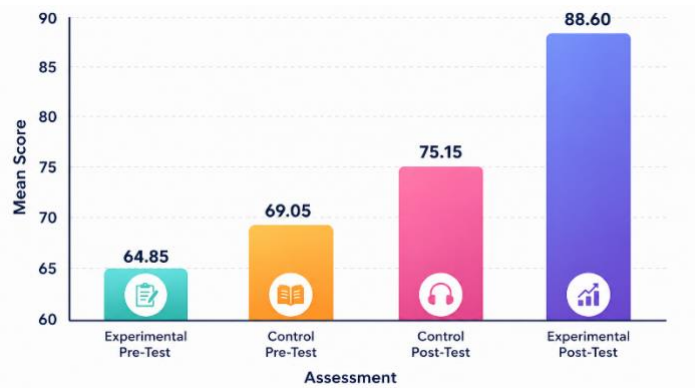


Figure 2. Comparison of Pre-Test and Post-Test Mean Scores between Experimental and Control Groups

Figure 2 presents the comparison of mean scores between the experimental and control groups in the pre-test and post-test assessments. At the beginning of the study, the control group obtained a slightly higher pre-test mean score (69.05) than the experimental group (64.85), indicating relatively comparable initial English proficiency levels. However, substantial differences emerged after the instructional intervention. The experimental group, which received ZPD-based instruction, achieved a post-test mean score of 88.60, representing a remarkable improvement of 23.75 points.

In contrast, the control group, which received conventional instruction, reached a post-test mean score of 75.15, showing a more modest gain of 6.10 points. These findings suggest that students exposed to ZPD-based scaffolding, collaborative learning, and guided practice progressed more effectively than those taught through traditional

methods. The visual trend clearly demonstrates that the experimental group outperformed the control group after treatment. Therefore, the chart provides strong evidence that ZPD-based pedagogy had a significant positive effect on students' English proficiency outcomes.

Qualitative Results

Classroom Observations

Observation data showed clear instructional differences between groups. In the experimental group, teachers frequently used modelling, guided practice, peer collaboration, and contextual tasks. Students actively participated in role-plays, small-group discussions, and problem-solving activities related to health service situations. These activities appeared to increase confidence and meaningful language use. In contrast, the control group relied mainly on teacher explanation, textbook exercises, and individual seatwork. Student participation was more passive, and fewer opportunities existed for communicative practice.

Interview Findings

Interviews with teachers and students supported the quantitative findings. Teachers reported that scaffolding strategies helped them adjust instruction to students' needs and encouraged learner autonomy. Students stated that collaborative activities and role-play tasks made English more relevant to their future professions, especially in speaking and listening.

However, both groups of participants also identified challenges, including limited teaching resources, time constraints, and varying student readiness levels.

Document Analysis

Document analysis revealed that ZPD principles were more visible in the experimental group's lesson plans and materials. These documents included staged tasks, collaborative learning, and profession-based communication activities. However, explicit scaffolding procedures were not consistently written in formal curriculum documents, suggesting that successful implementation depended partly on teacher initiative.

Synthesis of Findings

Taken together, the results demonstrate that ZPD-based instruction was effective because it combined academic support with authentic vocational communication tasks. While statistical gains showed improved proficiency, qualitative evidence explained the mechanism of improvement: guided interaction, peer assistance, and contextualized practice created a more engaging and productive learning environment.

4. Discussion

The findings indicate that ZPD-based instruction was more effective than conventional teaching in improving students' English proficiency in vocational education. Rather than relying on passive reception of knowledge, students in the experimental group learned through guided interaction, peer collaboration, and gradual independence. These processes are consistent with Lev Vygotsky's view that learning develops most effectively when learners receive support slightly beyond their current level of competence (Dendup & Onthanee, 2019).

The success of ZPD in this study can be explained by the vocational context itself. Vocational students often need practical language skills for authentic workplace communication rather than abstract grammatical knowledge. In this study, scaffolding activities such as role-plays, simulations, and collaborative problem-solving created learning experiences directly connected to professional tasks. As a result, English became meaningful, functional, and immediately relevant to students' future careers. This relevance likely increased motivation, participation, and retention of language skills (Katamadze et al., 2025).

ZPD appears especially suitable for vocational education because vocational learning is inherently performance-based and task-oriented. Students are expected to demonstrate competence in real or simulated professional situations. Therefore, instructional approaches that combine modelling, guided practice, and independent performance align closely with vocational pedagogy (Li et al., 2025).

For example, in health science programs, students may need to explain procedures, communicate with patients, or understand technical instructions. These tasks require both language knowledge and situational competence. ZPD helps bridge this gap by allowing teachers and peers to scaffold students through increasingly complex communication tasks until they can perform independently (Jama, 2023).

This suggests that ZPD is not merely a language teaching strategy; it is also a framework for integrating communication skills with occupational competence.

Theoretical Contribution to ZPD and Sociocultural Theory

This study extends Sociocultural Theory by demonstrating that ZPD functions effectively not only in general academic classrooms but also in profession-oriented learning environments. Much previous research has focused on writing, vocabulary, or general EFL settings. The present findings show that ZPD can also support English for Specific Purposes (ESP), particularly in vocational health education (Alghamdy, 2023).

The study therefore broadens the application of ZPD in three ways. First, it confirms that scaffolding can enhance domain-specific communication skills, not only general language ability. Second, it shows that peer collaboration remains effective when tasks are occupationally contextualized. Third, it suggests that workplace simulation can serve as a productive social space for mediated learning (Shimizu et al., 2022). These findings strengthen the argument that learning is socially constructed and context dependent.

Although the intervention was effective, several barriers were identified. Teachers reported limited professional training in applying scaffolding systematically. In some cases, successful implementation depended heavily on teacher creativity rather than institutional support (Fitri & Sinaga, n.d.).

Resource limitations were also evident. Vocational English instruction requires authentic materials, professional scenarios, and flexible classroom resources. Without these supports, teachers may struggle to sustain interactive learning.

Some students initially preferred traditional instruction because they were unfamiliar with collaborative learning and active participation. This indicates that pedagogical transition also requires learner adjustment.

The results suggest that vocational institutions should integrate ZPD principles into curriculum design, teacher training, and instructional materials. English teaching should move beyond textbook exercises toward scaffolded communication tasks linked to specific industries.

When implemented systematically, ZPD-based instruction can help vocational students develop not only language proficiency, but also confidence, autonomy, and workplace readiness. This necessitates a paradigm shift from conventional grammar-focused approaches to more dynamic, communicative methodologies that mirror authentic professional demands.

5. Conclusion

This study investigated the effectiveness of integrating the Zone of Proximal Development (ZPD) into vocational English education to improve students' language proficiency and learning engagement. Focusing on vocational high school students in health-related programs, the study demonstrated that ZPD-based instruction provided a more effective learning model than conventional teaching approaches. Students who participated in scaffolded learning activities showed stronger progress in English performance, particularly in speaking and listening, while also displaying higher levels of classroom participation and confidence.

The findings suggest that the effectiveness of ZPD lies in its ability to connect language learning with authentic vocational tasks. Teacher modelling, peer collaboration, guided practice, and gradual release of responsibility created supportive learning conditions in which students were able to perform beyond their initial level of competence. In vocational contexts, where communication skills must be applied in profession-specific situations, such structured support appears especially valuable. These results indicate that English instruction becomes more meaningful when language development is embedded within occupationally relevant practice.

The study also identified several implementation challenges. Limited instructional resources, insufficient teacher preparation in scaffolding pedagogy, and variations in student readiness reduced the consistency of ZPD application. In addition, curriculum documents did not always provide explicit guidance on how scaffolding principles should be operationalized in daily classroom practice. These findings imply that the success of ZPD depends not only on classroom strategies, but also on institutional support, curriculum alignment, and teacher professional development.

Theoretically, this study extends Sociocultural Theory by demonstrating that ZPD is not confined to general academic learning environments, but is equally relevant in profession-oriented education. It shows that socially mediated learning can facilitate the development of domain-specific communication skills required in vocational settings. In doing so, the study broadens current understandings of how ZPD operates within English for Specific Purposes (ESP) contexts.

Practically, the findings offer implications for vocational schools, teacher educators, and curriculum designers. Vocational English programs should incorporate scaffolded communication tasks, collaborative learning structures, and industry-relevant simulations that reflect workplace realities. Teacher training should also emphasize how to design and sequence support that gradually fosters learner autonomy.

Future research should examine the long-term impact of ZPD-based instruction across different vocational disciplines and educational systems. Multi-site longitudinal studies and cross-cultural comparisons would be particularly valuable for understanding how scaffolded learning can be adapted to diverse vocational contexts while sustaining improvements in language proficiency and employability readiness.

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